PUBLIC REVIEW DRAFT

INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

FOR THE

KAUTZ FARMS RESIDENTIAL SUBDIVISION PROJECT

North Tully Road, Lockeford, CA

Zoning Reclassification and Major Subdivision
PA-2200124 and PA-2200125

November 2025

Prepared for:
SAN JOAQUIN COUNTY
COMMUNITY DEVELOPMENT DEPARTMENT
1810 E. Hazelton Avenue
Stockton, CA 95205

Prepared by:
BaseCamp Environmental, Inc.
802 W. Lodi Avenue
Lodi, CA 95240

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AB	Assembly Bill
ALUCP	Airport Land Use Compatibility Plan
ARB	California Air Resources Board
BMP	Best Management Practice
CalEEMod	California Emissions Estimator Model
CalEnviroScreen	California Communities Environmental Health Screening Tool
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CDP	Census Designated Place
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
dB	decibel
dBA	decibel, A-weighted
DTSC	California Department of Toxic Substances Control
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
IS/MND	Initial Study/Mitigated Negative Declaration
LAFCo	Local Agency Formation Commission
L_{dn}	Day-Night Average Noise Level
LOS	Level of Service
MS4	municipal separate storm sewer system
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
PG&E	Pacific Gas and Electric Company
PM_{10}	particulate matter 10 micrometers or less in diameter
$PM_{2.5}$	particulate matter 2.5 micrometers or less in diameter
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SJCOG	San Joaquin Council of Governments
SJMSCP	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
SJRTD	San Joaquin Regional Transit District

SJVAPCD	San Joaquin Valley Air Pollution Control District
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
SWQCCP	Storm Water Quality Control Criteria Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
VMT	vehicle miles traveled

NEGATIVE DECLARATION

A. General Project Information

Project Title:	Kautz Farms Residential Subdivision and Zone Reclassification
Lead Agency Name and Address:	San Joaquin County Community Development Department 1810 E. Hazelton Avenue Stockton, CA 95205
Contact Person and Phone Number:	Giuseppe Sanfilippo (209) 468-0227
Project Location:	19260, 12390 & 19480 N Tully Road, & 14372, 14380 E SR 88, Lockeford, California
Project Sponsor Name and Address:	Kautz Row Crop Farms 5490 Bear Creek Road Lodi, CA 95240
General Plan Designation:	R-L, Low Density Residential
Zoning:	AU-20 – Agriculture-Urban Reserve, 20-acre minimum
Project Description:	The project is development of a low-density residential subdivision on six parcels totaling approximately 105.11 acres. The proposed subdivision would subdivide the site into 296 lots for single-family residential development, and a drainage/park parcel. The project would require County approval of a Vesting Tentative Subdivision Map and a Zone Reclassification from the current zoning of AU-20 Agriculture to R-L, Low Density Residential. The proposed subdivision would be improved with internal residential streets designed and constructed to County standards, including curb, gutter and sidewalks. Proposed streets would include underground potable water and wastewater collection lines that would extend Lockeford Community Services District (LCSD) utility service to each proposed lot; storm drainage would

	be conducted to the proposed drainage pond in streetside drainage ways and then to Bear Creek via a new pump station and force main along Tully Road. Wastewater would also be collected from the subdivision and pumped to the existing LCSD treatment facility via a new pump station and force main along Tully Road. Underground electrical, communication and data services would be provided by the regulated utilities serving the area.
Surrounding Land Uses and Setting:	
	The project site is within an unincorporated community east of Lodi known as Lockeford; land use in the area is a mix of agricultural land and urban uses concentrated along SR 88. Although unincorporated, Lockeford is served with a range of urban services by the Lockeford Community Services District (LCSD). Commercial development in the area is concentrated along the SR 88 corridor. Light industrial development in Lockeford is located west of SR 88, north of Brandt Rd, and east of Lockeford Road.
Other Public Agencies Whose Approval is Required:	Lockeford CSD (already granted)
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 requests for consultation have been received; see discussion in Section 3.5 Cultural Resources.

B. 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" prior to mitigation, as indicated by the checklist on the following pages.

	Aesthetics		Agriculture/Forestry Resources		Air Quality
✓	Biological Resources	✓	Cultural Resources		Energy
✓	Geology/Soils		Greenhouse Gas Emissions	✓	Hazards/Hazardous Materials
	Hydrology/Water Quality		Land Use		Mineral Resources
	Noise		Population/Housing		Public Services
	Recreation	✓	Transportation	✓	Tribal Cultural Resources
✓	Utilities/Service Systems	✓	Wildfire		Mandatory Findings of Significance

C. Lead Agency 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.

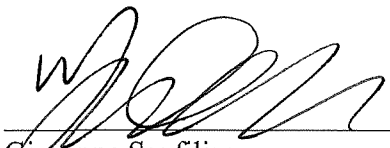
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

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 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL 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.

SAN JOAQUIN COUNTY



11/13/2025

Giuseppe Sanfilippo
Senior Planner, Community Development Department

Date

1.0 INTRODUCTION

1.1 Project Brief

This document is an Initial Study/Mitigated Negative Declaration (IS/MND) for the Kautz Farms Subdivision project (project) in Lockeford, California. The six parcels that comprise the project are located at 19260, 12390 and 19480 North Tully Road and 14372 and 14380 E SR 88(two properties share this street address), which is approximately eight miles east of the City of Lodi in unincorporated San Joaquin County (Figures 1-1 through 1-5). This IS/MND has been prepared in compliance with the requirements of the California Environmental Quality Act (CEQA). For the purposes of this CEQA analysis, San Joaquin County (County) is the Lead Agency for the project.

The project proposes County approval of one Tentative Subdivision Map (TSM) encompassing six existing parcels of land totaling approximately 105.11 acres. The proposed subdivision would divide the project site into 296 lots for single-family residences together with an approximately 8.0 acre lot to be developed as a storm drainage basin and park. Streets, utilities and other infrastructure to be constructed as a part of the project would provide service to each proposed residential lot; underground utilities would be installed within proposed subdivision streets as shown on the TSM (Figure 2-1). The project would require County approval of the TSM, as well as proposed Zone Reclassification of the project site from its current zoning of AU-20 Agriculture-Urban Reserve to R-L Low Density Residential. The project site is presently designated for Low Density Residential use in the San Joaquin County General Plan.

1.2 Purpose of Initial Study

CEQA requires that public agencies document and consider the potential environmental effects of the agency's actions that meet CEQA's definition of a "project." Briefly summarized, a "project" is an action that has the potential to result in direct or indirect physical changes in the environment. A project includes the agency's direct activities as well as activities that involve public agency approvals or funding. Guidelines for an agency's implementation of CEQA are found in the "CEQA Guidelines" (Title 14, Chapter 3 of the California Code of Regulations).

Provided that a project is not exempt from CEQA, the first step in the agency's consideration of its potential environmental effects is the preparation of an Initial Study. The purpose of an Initial Study is to determine whether the project would involve "significant" environmental effects, as defined by CEQA. If the Initial Study does not identify significant effects, then the agency ordinarily prepares a Negative Declaration. If the Initial Study notes significant effects and identifies mitigation measures that would reduce these significant effects to a level that is less than significant, then the agency ordinarily prepares a Mitigated Negative Declaration, subject to inclusion of mitigation measures in the project. If a project would involve significant effects that cannot be readily

mitigated, then the agency must prepare an Environmental Impact Report. The agency may also decide to proceed directly with the preparation of an Environmental Impact Report without an Initial Study, or to terminate consideration of the project.

The proposed County approval of the Kautz Farms Subdivision and Zone Reclassification project is a "project" as defined by CEQA and is not exempt from CEQA consideration. The County has determined that the project may have significant environmental effects and therefore requires preparation of an Initial Study. This Initial Study describes the proposed project and its environmental setting, discusses the potential environmental effects of the project, and identifies feasible mitigation measures that would avoid or eliminate significant environmental effects or reduce them to a level that would be less than significant. The Initial Study considers the project's potential for significant environmental effects in the following subject areas:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- 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/Traffic
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance (including cumulative impacts)

The Initial Study concludes that the project would have potentially significant environmental effects; however, all of the project's effects would be avoided or reduced to a level that would be less than significant with recommended mitigation measures. The project applicant has accepted responsibility for implementing all the recommended mitigation measures. As a result, the County has prepared a Mitigated Negative Declaration and has issued a Notice of Intent (NOI) to adopt the IS/MND for the project. A copy of the NOI is shown inside the front cover of this IS/MND.

1.3 Project Background

The project site is within the unincorporated community of Lockeford of San Joaquin County east of Lodi. The Lockeford community area consists of a mix of commercial, industrial, agricultural, and agricultural support uses, along with large parcels of vacant land and land in active agricultural use, primarily vineyards; the project site itself is currently in vineyard use. Existing residential uses are located north, south and west of the site.

The project site is currently zoned by the County as AU-20, Agriculture-Urban Reserve, 20-acre minimum. The Agriculture-Urban Reserve zone is intended to retain in agriculture those areas planned for future urban development in order to facilitate compact, orderly urban development and to assure the proper timing and economical provision of services and utilities. The San Joaquin County General Plan 2035, adopted in 2016, has designated the project site for Low Density Residential use.

The Lockeford Community Services District (Lockeford CSD) provides potable water, wastewater and storm drainage and other community services to lands within the District boundary. The proposed project site was annexed into the CSD in 2012. At the time, no plan for urban development of the site existed. However, as the landowner's plans took shape, they were eventually made public and presented to the Lockeford Municipal Advisory Council, initially as a 349-lot subdivision. More recently, and as submitted to San Joaquin County for approval, the project has been scaled back to the proposed 296-lot project.

1.4 Environmental Evaluation Checklist Terminology

The project's potential environmental effects are evaluated in the Environmental Evaluation Checklist presented in Chapter 3.0 of this IS/MND. The checklist includes a list of environmental considerations against which the project is evaluated. For each question, the County determines whether the project would involve 1) a Potentially Significant Impact, 2) a Less Than Significant Impact with Mitigation Incorporated, 3) a Less Than Significant Impact, or 4) No Impact.

> A Potentially Significant Impact occurs when there is substantial evidence that the project would involve a substantial adverse change to the physical environment, i.e., the environmental effect may be significant, and mitigation measures have not been defined that would reduce the impact to a level that would be less than significant. If there is a Potentially Significant Impact entry in the Initial Study, then an EIR must be prepared before the CEQA process can be concluded.
>
> An environmental effect that is Less Than Significant with Mitigation Incorporated is a Potentially Significant Impact that can be avoided or reduced to a level that is less than significant with the application of mitigation measures defined in the Initial Study.
>
> A Less Than Significant Impact occurs when the project would involve an environmental impact, but the impact would not cause a substantial adverse change to the physical environment that would require mitigation.
>
> A determination of No Impact is self-explanatory.

This IS/MND identifies several *potentially* significant environmental impacts related to the project. Some of these impacts can be mitigated by implementation of existing provisions of law and standards of practice related to environmental protection. Such provisions are considered in the environmental impact analysis, and the degree to which they would reduce potential environmental effects is discussed. Additional feasible mitigation

measures are identified when necessary to avoid potential environmental effects or to reduce them to a level that is less than significant.

1.5 Summary of Environmental Effects and Mitigation Measures

Table 1-1, which follows Figures 1-1 through 1-5, summarizes the results of the Environmental Evaluation Checklist and associated narrative discussion shown in Chapter 3.0 of this IS/MND. The potential environmental impacts of the proposed project are listed in the left-most column of this table. The potential level of significance of each impact is indicated in the second column. Mitigation measures proposed by the Initial Study to avoid or minimize the impacts are shown in the third column, and the significance of the impact after mitigation measures are applied is shown in the fourth column.

As previously noted, all potentially significant environmental effects identified in the IS/MND would be avoided or reduced to a level that would be less than significant with recommended mitigation measures. For all other issues, the project would have no impact or would have impacts that are less than significant.

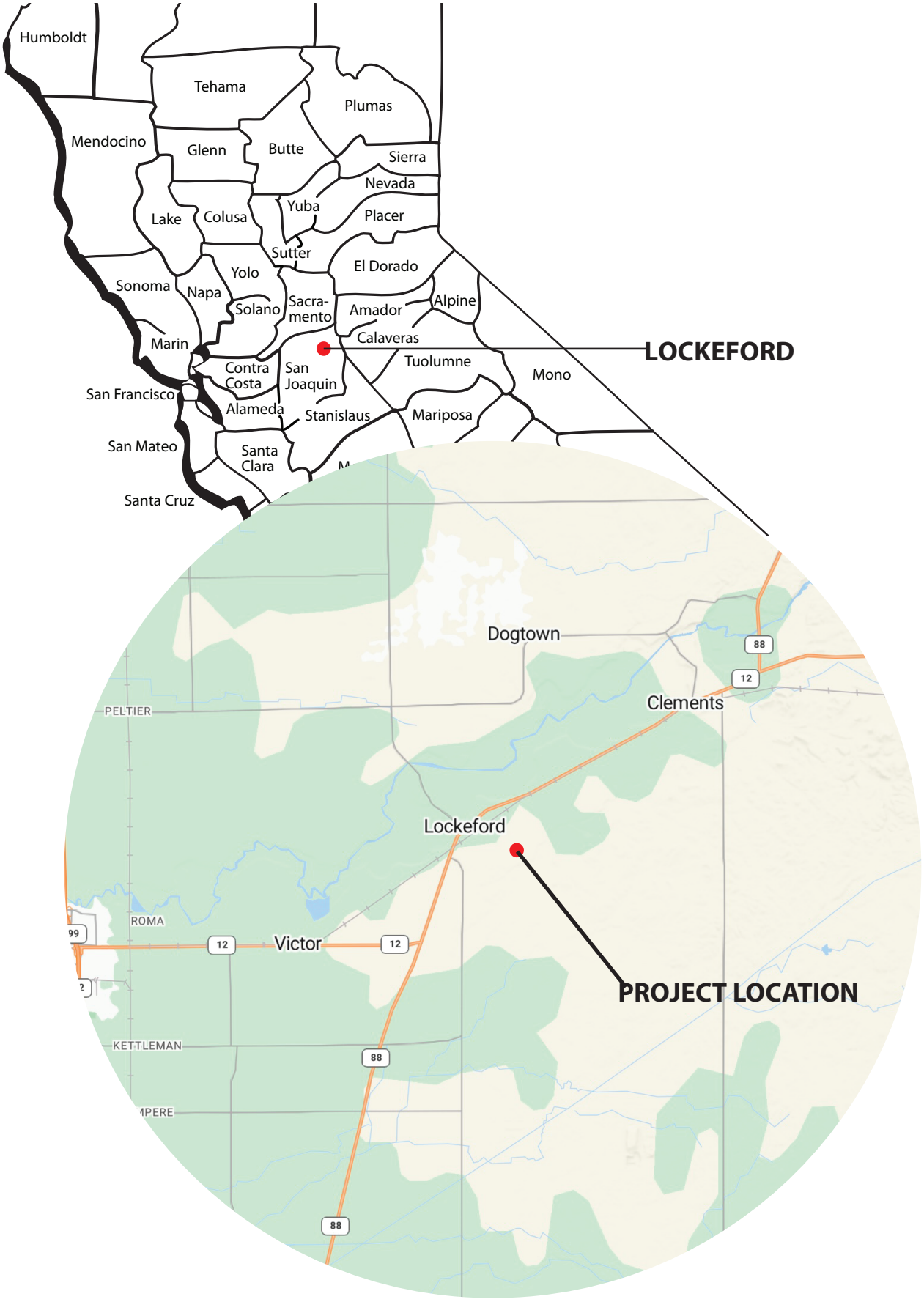


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Figure 1-1
REGIONAL LOCATION MAP

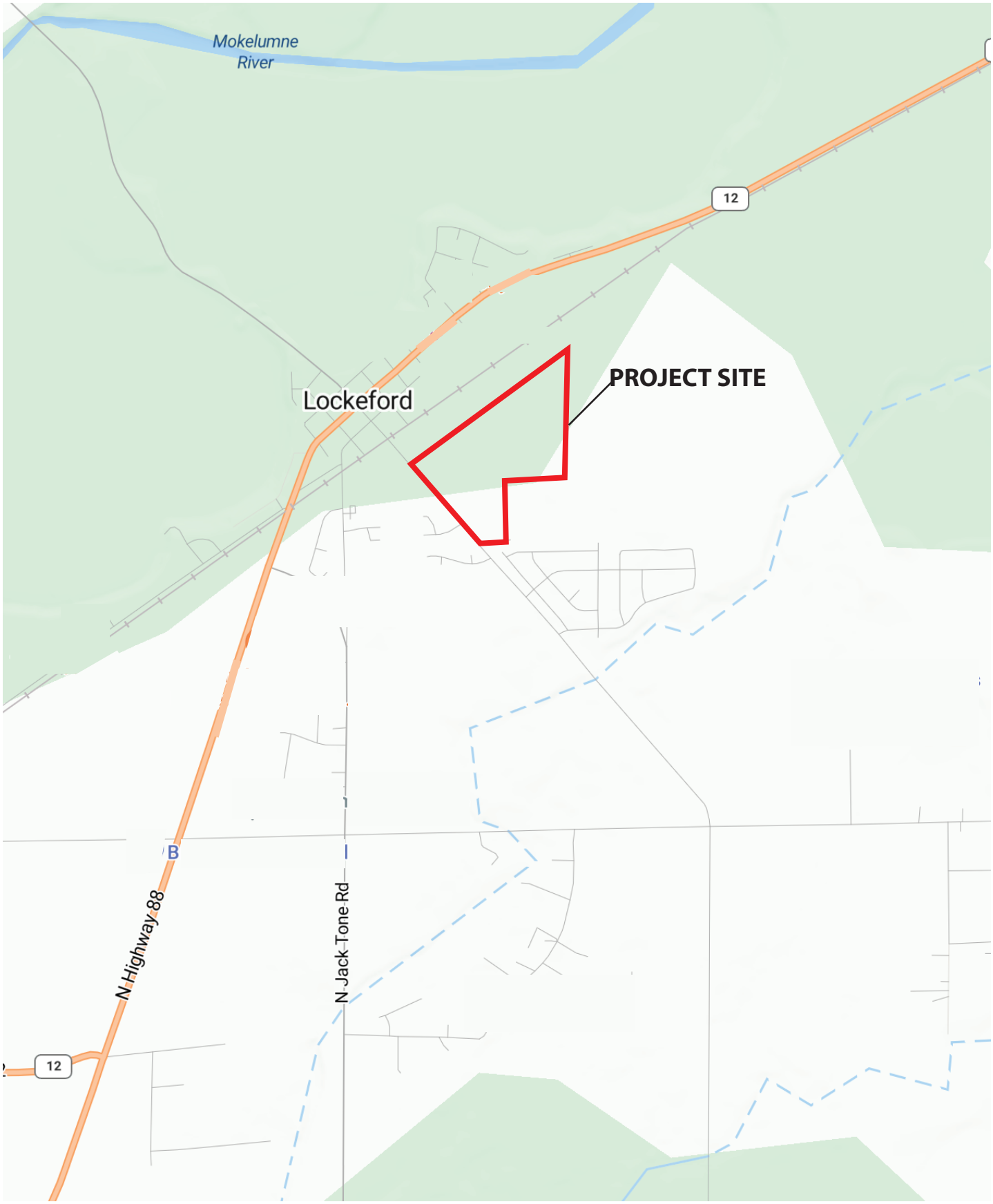

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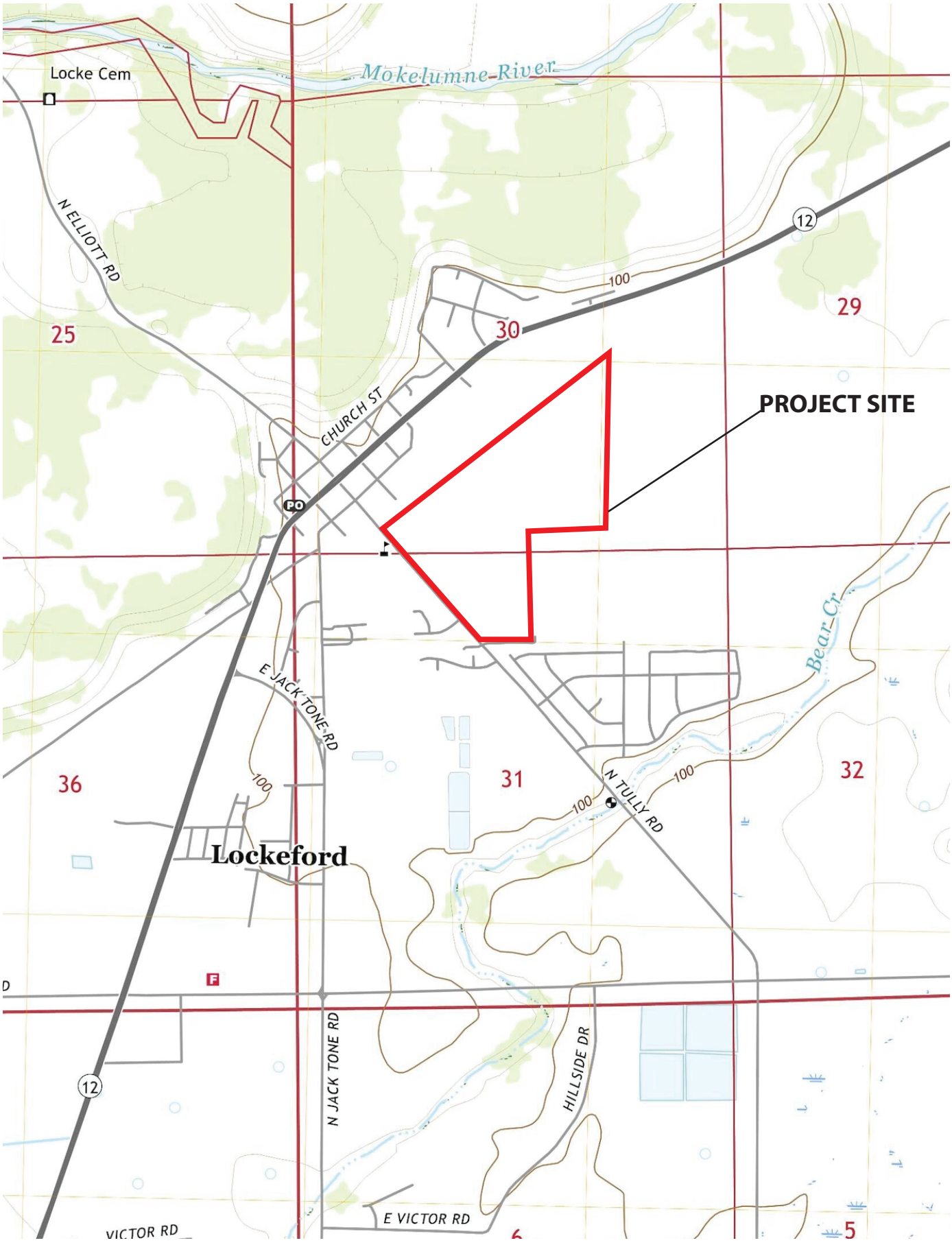
Figure 1-2
STREET MAP



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SOURCE: USGS Quadrangle Map, Lockeford CA, 2021

Figure 1-3
USGS MAP

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Figure 1-4
AERIAL PHOTO

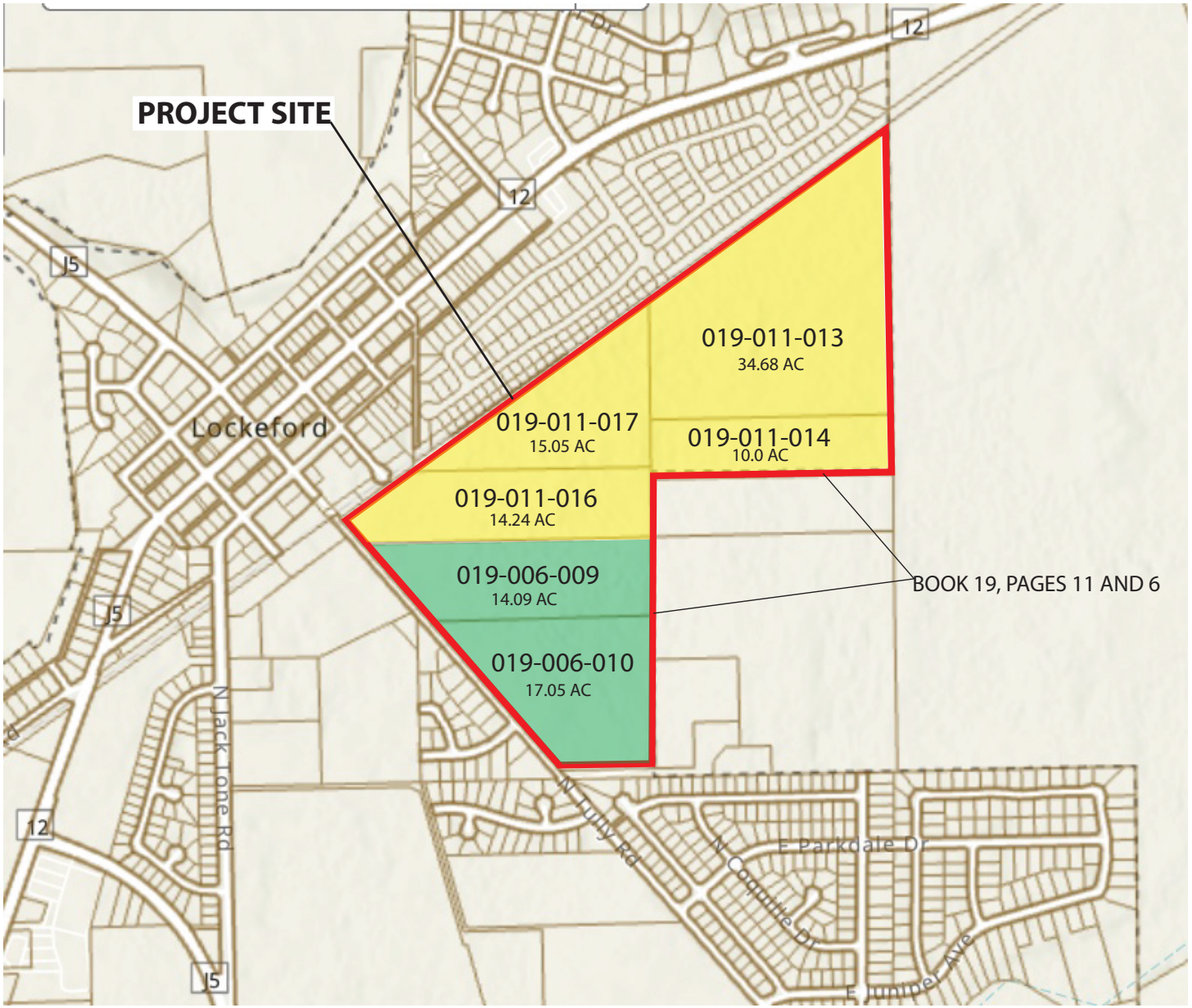

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Figure 1-5
ASSESSOR PARCEL MAP

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
3.1 AESTHETICS			
a) Scenic Vistas	LS	None required.	-
b) Scenic Routes and Resources	LS	None required.	-
c) Visual Character and Quality	LS	None required.	-
d) Light and Glare	LS	None required.	-
3.2 AGRICULTURE AND FORESTRY RESOURCES			
a) Agricultural Land Conversion	LS	None required.	-
b) Agricultural Zoning and Williamson Act	LS	None required.	-
c) Forest Land Zoning	NI	None required.	-
d) Forest Land Conversion	NI	None required.	-
e) Indirect Conversion of Farmland and Forest Land	NI	None required.	-
3.3 AIR QUALITY			
a) Air Quality Plan Consistency	LS	SJVAPCD Requirements Attached to AIA Approval of October 22, 2024 1. The applicant shall pay required Air Impact Fees as prescribed in the AIA approval letter of October 22, 2024. 2. If all or a portion of the project changes ownership, a completed Change in Developer form must be submitted to the District within thirty (30) days following the date of transfer. 3. Dust Control Plan. Applicant may be required to submit a Construction Notification Form or submit and receive	

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		approval of a Dust Control Plan prior to commencing any earthmoving activities as described in District Rule 8021 – Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities. 4. Per District Rule 2010 (Permits Required), applicant may be required to obtain a District Authority to Construct prior to installation of equipment that controls or may emit air contaminants, including but not limited to emergency internal combustion engines, boilers, and baghouses.	
b) Cumulative Emissions	LS	None required.	-
c) Exposure of Sensitive Receptors	LS	None required.	-
d) Odors and Other Emissions	LS	None required.	-
3.4 BIOLOGICAL RESOURCES			
a) Special-Status Species	PS	BIO-1: The applicant will participate in and obtain coverage for the project under the San Joaquin County Multi-Species Habitat Conservation and Open Space (SJMSCP)prior to ground disturbance. The project applicant shall mitigate for the proportionate loss of potential wildlife habitat from the project site by paying required SJMSCP fees and implementing any Incidental Take Minimization Measures prescribed by the San Joaquin Council of Governments (SJCOG). A biologist representing SJCOG will visit the project site prior to the issuance of Incidental Take Minimization Measures.	LS
b) Riparian and Other Sensitive Habitats	LS	None required.	-
c) State and Federally Protected Wetlands.	PS	Implementation of Mitigation Measures BIO-1	-

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		BIO-2: The applicant shall notify CDFW of the proposed sewer line crossing prior to construction.	
d) Fish and Wildlife Movement	LS	None required.	LS
e) Local Biological Requirements	NI	None required.	-
f) Conflict with Habitat Conservation Plans	NI	None required.	-
3.5 CULTURAL RESOURCES			
a) Historical Resources	LS	None required.	-
b) Archaeological Resources	PS	CULT-1: In the event that cultural resources are inadvertently discovered during Project activities, work should be halted within 30 feet of the find and a qualified archaeologist (i.e., archaeologist that meets the qualifications at 36 CFR Part 61) should be retained to assess its potential significance. Construction activities may continue in other areas but may not resume in the area of the find until the significance of the find is assessed and it is appropriately treated. If the find is not significant no additional cultural resources investigations are necessary and Project work may resume in the area of the find. If the find is determined significant, additional cultural resources investigations, such as data recovery excavation, may be warranted and would be determined in consultation with the Project applicant, the County, appropriate Tribes, and any other relevant regulatory agencies or interested parties, as appropriate.	LS
c) Human Burials	PS	CULT-2: In the event of discovery of human remains, which is always a possibility. State of California Health and Safety Code Section 7050.5 covers these discoveries, except on federal lands. This code section states that no further disturbance may occur until the County Coroner has made a determination of origin and	LS

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		disposition of the remains pursuant to PRC Section 5097.98. The County Coroner must be notified of the find immediately upon discovery. If the human remains are determined to be of Native American origin, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendent (MLD). The MLD must complete an inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.	
3.6 ENERGY			
a) Project Energy Consumption	LS	None required.	-
b) Consistency with Energy Plans	NI	None required.	-
3.7 GEOLOGY AND SOILS			
a-i) Fault Rupture Hazards	NI	None required.	-
a-ii) Seismic Ground Shaking	LS	None required.	-
a-iii) Other Seismic Hazards	LS	None required.	-
a-iv) Landslides	NI	None required.	-
b) Soil Erosion	LS	None required.	-
c) Unstable Soils	LS	None required.	-
d) Expansive Soils	LS	None required.	-
e) Adequacy of Soils for Wastewater Disposal	NI	None required.	-
f) Paleontological Resources and Unique Geologic Features	PS	GEO-1: In the event that a paleontological resource is inadvertently discovered during Project-related work, regardless of the depth of work or location, work must be halted within 30	LS

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		feet of the find and a qualified paleontologist (SVP 2010) notified immediately so that an assessment of its potential significance can be undertaken. If the find is determined to be significant, it should be salvaged following the standards of the SVP (2010) and curated with a certified repository such as the UCMP.	
3.8 GREENHOUSE GAS EMISSIONS			
a,b) Project GHG Emissions and consistency with GHG Reduction Plans.	LS	None required.	-
3.9 HAZARDS AND HAZARDOUS MATERIALS			
a) Hazardous Material Transportation, Use and Disposal	LS	None required.	-
b) Release of Hazardous Materials by Upset or Accident	LS	None required.	-
c) Release of Hazardous Materials near Schools	NI	None required.	-
d) Hazardous Materials Sites	LS	None required.	-
e) Airport Operations	NI	None required.	-
f) Emergency Response and Evacuation	PS	HAZ-1: Prior to the start of improvement construction that occurs within or adjacent to a public roadway, a Traffic Control Plan shall be prepared and implemented, The Traffic Control Plan shall include such items as traffic control requirements, resident notification of access closure, and daily access restoration, as required. The plan shall specify dates and times of road closures or restrictions, if any, and shall ensure that adequate access will be provided for emergency vehicles. The Traffic Control Plan shall be coordinated with the San Joaquin County Public Works, Sheriff's Department, and other affected agencies. Transportation as determined by the Project Engineer.	LS

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
g) Wildland Fire Hazards	NI	None required.	-
3.10 HYDROLOGY AND WATER QUALITY			
a) Violation of Water Quality Standards	LS	None required.	-
b) Groundwater Supplies and Recharge	LS	None required.	-
c-i, ii) Drainage Patterns	LS	None required.	-
c-iii) Runoff	NI	None required.	-
c-iv) Flood Flows	LS	None required.	-
d) Release of Pollutants in Flood Zone	LS	None required.	-
e) Conflict with Water Quality or Sustainable Groundwater Plans	NI	None required.	-
3.11 LAND USE AND PLANNING			
a) Division of Established Communities	NI	None required.	-
b) Conflict with Applicable Plans, Policies and Regulations Avoiding or Mitigating Environmental Effects	LS	None required.	-
3.12 MINERAL RESOURCES			
a, b) Loss of Mineral Resource Availability	NI	None required.	-
3.13 NOISE			
a) Increase in Ambient Noise Levels	LS	None required.	-
b) Generation of excessive groundborne vibration	LS	None required.	-

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
c) Exposure to Airport/Airstrip Noise	NI	None required.	-
3.14 POPULATION AND HOUSING			
a) Population Growth Inducement	LS	None required.	-
b, c) Displacement of Housing and People	NI	None required.	-
3.15 PUBLIC SERVICES			
a-i) Fire Protection	NI	None required.	-
a-ii) Police Protection	NI	None required.	-
a-iii) Schools	NI	None required.	-
a-iv) Parks	NI	None required.	-
a-v) Other Public Facilities	NI	None required.	-
3.16 RECREATION			
a, b) Recreational Facilities	NI	None required.	-
3.17 TRANSPORTATION			
a) Conflict with Transportation Plans, Ordinances and Policies	LS	None required.	-
b) Conflict with CEQA Guidelines Section 15064.3(b)	NI	None required.	-
c) Traffic Hazards	PS	Implementation of Mitigation Measure HAZ-2	LS
d) Emergency Access	NI	None required.	-

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
3.18 TRIBAL CULTURAL RESOURCES			
a-i, ii) Tribal Cultural Resources	PS	Mitigation Measures CULT-1 and CULT-2.	LS
3.19 UTILITIES AND SERVICE SYSTEMS			
a) Construction or Relocation of Infrastructure	PS	UTIL-1: Construction plans for the project shall identify existing infrastructure within the project area and provide for avoidance or relocation of the infrastructure as required. To the extent feasible, avoidance of relocation is preferred.	-
b) Water Supply	NI	None required.	-
c) Wastewater Systems	LS	None required.	-
d, e) Solid Waste Services	LS	None required.	-
3.20 WILDFIRE			
a) Emergency Response and Emergency Evacuation Plans	LS	Implementation of Mitigation Measure HAZ-2	-
b) Exposure of Project Occupants to Pollutants	NI	None required.	-
c) Installation and Maintenance of Infrastructure	NI	None required.	-
d) Risks from Runoff, Post-Fire Slope Instability, or Drainage Changes	NI	None required.	-
3.21 MANDATORY FINDINGS OF SIGNIFICANCE			
a) Findings on Biological and Cultural Resources	LS	Mitigations in Sections 3.4 and 3.5	LS

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
b) Findings on Individually Limited but Cumulatively Considerable Impacts	LS	None required.	-
c) Findings on Adverse Effects on Human Beings	LS	None required.	-

LEGEND: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

2.0 PROJECT DESCRIPTION

2.1 Project Location

The project site is adjacent to and northeast of Tully Road, in the unincorporated community of Lockeford, San Joaquin County approximately six miles east of the City of Lodi (see Figures 1-1 through 1-5). The project site consists of six parcels designated as Assessor's Parcel Numbers (APNs):

019-110-013	34.68 ac.	14380 E SR 88
019-110-014	10.0 ac.	14372 E SR 88
019-010-016	14.24 ac.	14380 E SR 88
019-010-017	15.05 ac.	19480 N Tully Road
019-060-009	14.09 ac.	19390 N Tully Road
019-060-010	17.05 ac.	19260 N Tully Road

The total area of the project site is approximately 105.11 acres. The U.S. Geological Survey's Lockeford, California, 7.5-minute quadrangle map shows the site as being within an area Township 4 North, Range 7 East and section 30 and 31 of the Mt. Diablo Base and Meridian. The latitude of the project site is approximately 38° 09′ 44″ North, and the longitude is approximately 121° 08′ 40″ West.

The site is between 600 and 700 feet southeast of SR 88, which is the main regional road connecting Lockeford to SR 99, Lodi, Stockton and I-5 to the south and west as well as Jackson, San Andreas and other Sierra foothill cities distributed along SR 49. The site is bounded on the northwest by Malbec Drive, a new road to be constructed in conjunction with the approved Lockeford Vistas project, a 165-lot subdivision that adjoins the project along its north boundary, and on the southwest by existing North Tully Road, both County roads. The project would obtain vehicular access from both of these roads.

2.2 Project Details

Tentative Subdivision Map

The project proposes to subdivide the six parcels that comprise the 105-acre site into 296 lots for the development of single-family residences. (Figure 2-1). An 8.0-acre lot in the western corner of the proposed subdivision, designated as Lot C on Figure 2-1, is proposed for combined use as a park and a storm drainage retention basin; a site plan for this facility is shown on Figure 2-5. There are no existing structures on the project site. The project would not require any demolition activity.

The subdivision would be accomplished through County approval of a Tentative Subdivision Map (TSM). The project is considered a "major subdivision," as defined by San Joaquin County Code Section 9-110.4, which is a subdivision of land creating five or

more parcels. The tentative subdivision map must comply with the major subdivision provisions of San Joaquin County Code Division 9 – Subdivision Regulations, along with all other provisions applicable to all subdivision maps. This Initial Study will note applicable requirements for major subdivisions as appropriate.

Access to the site would be from an extension of Sierra Drive southeast from its intersection with Malbec Drive and southwest from three other new internal subdivision road intersections with Malbec Drive between Sierra Drive and N Tully Road. The two-lane extensions would have a road pavement width of approximately 44 feet, with sidewalk six feet in width on each side (Figure 2-2). Site access would also be provided via internal Street Q, which would extend northeast from N Tully Road and turn east to join Street.

Each of the proposed lots would be served by these and other internal private streets with a pavement width of approximately 36 feet and sidewalks six feet in width on each side. All internal streets and would have roll curb, gutter, and sidewalk improvements installed on both sides of these streets in accordance with County standards. Curb, gutter, and sidewalk improvements would also be installed along the N. Tully Road frontage of the project site; the exact type and nature of these improvements will be determined during County technical review of the project.

All of the proposed subdivision lots would be served with potable water and sanitary sewer lines installed within the proposed internal subdivision street sections (Figure 2-3). Potable water service would be provided by the Lockeford CSD from existing lines in adjacent public roads. The project will involve construction of a new community water system well with an approximate yield of 1,000 gallons per minute accompanied by a 10,000-gallon storage tank, both to be located on the Lot A Well Site parcel adjacent to the east property line of the project. The new well and storage tank will be connected to the LCSD system to be located in the nearby subdivision access street.

Sanitary sewer service would also be provided by the Lockeford CSD; wastewater generated by the project would be collected in onsite sewer lines, then transmitted from the project site to the existing LCSD wastewater treatment facility (WWTP) south of Brandt Road via a new pump station and force main to be constructed adjacent to Tully Road (Figure 2-4). The onsite system of gravity sewer mains (Figure 2-3), which would flow to a new pump station on a separate lot to be created at the southwest corner of proposed Lot 173 adjacent to N Tully Road. The new 6-inch force main would extend approximately 6,100 feet from the pump station southeast along Tully Road to discharge to the existing LCSD WWTP intake works (Figure 2-4).

Proposed lots would be served with storm drainage collection facilities; storm drainage from proposed lots would surface flow in curbs and gutters along the proposed subdivision streets to the proposed onsite storm water detention basin; this 8.0-acre parcel will provide short-term storage of runoff from the proposed subdivision and also provide the site for proposed public park improvements as shown on Figure 2-5. Storm runoff detained onsite will be pumped by a new 15-20 horsepower pump station, including backup pump, to a new 0.5-mile pipeline to be located parallel to and immediately southwest of Tully Road. The storm drainage pipeline will flow south to a new outfall to Bear Creek on its north bank; the discharge to Bear Creek will be located approximately 50 feet downstream of the

Tully Road bridge. The detention basin, pump station and discharge pipeline will be designed to meet San Joaquin County standards and will be owned and maintained by the Lockeford CSD.

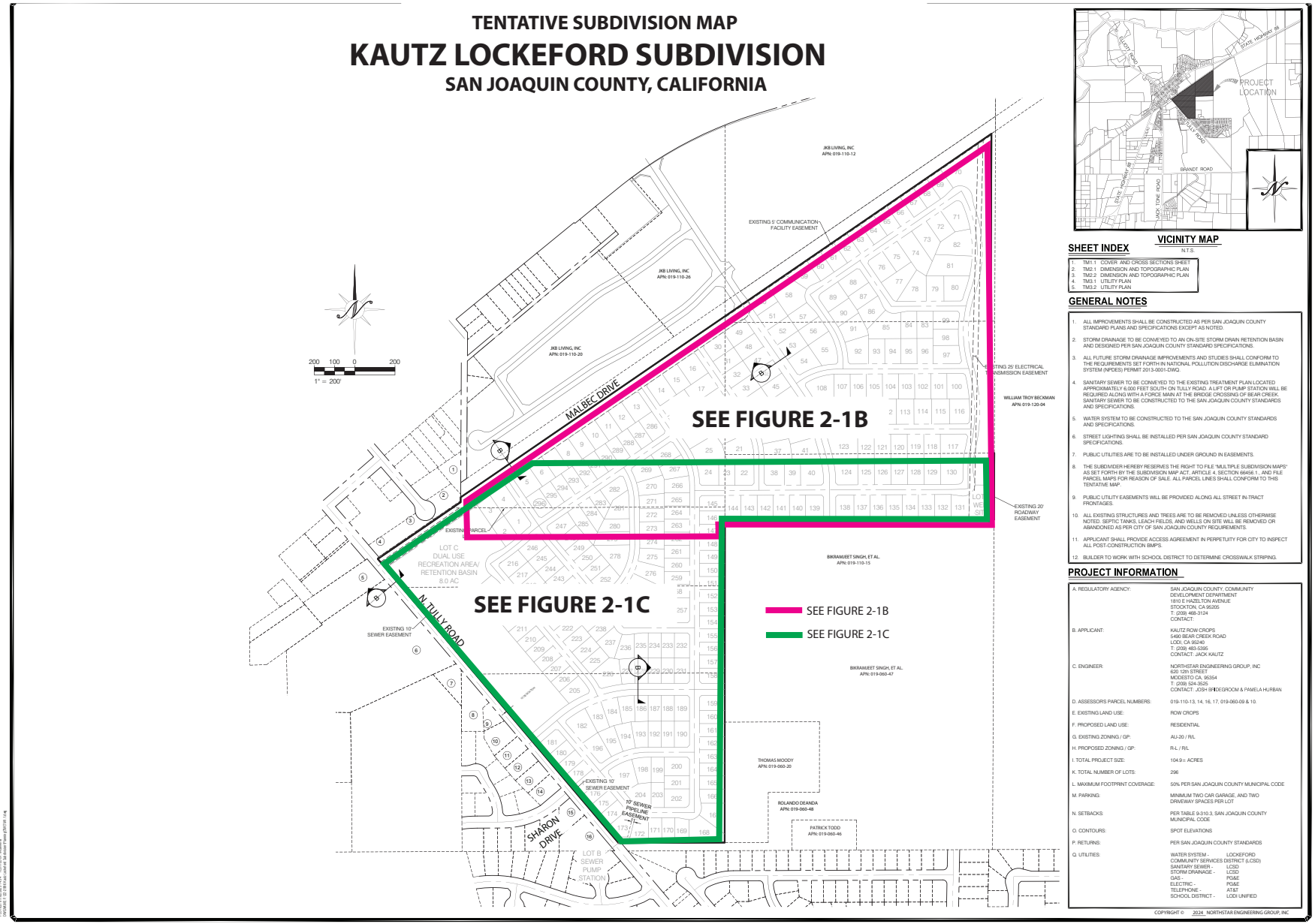
Electrical communication and data lines would be installed underground along both sides of the internal streets within public utility easements approximately 10 feet in width. These services would be obtained from and in coordination with the regulated utilities already located in the project vicinity.

2.3 Permits and Approvals

The project will require the approval of the Tentative Subdivision Map by the County Planning Commission; the TSM decision can be appealed to the County Board of Supervisors. The County Board of Supervisors will approve final subdivision map(s), with findings that the final maps are in substantial compliance with the approved TSM and that the final maps conform to all requirements of the Subdivision Map Act.

The project site is currently zoned AU-20 – Agriculture-Urban Reserve, 20-acre minimum. The project applicant proposes to rezone the site to R/L – Low Density Residential. The County Board of Supervisors would be required to approve the proposed rezoning, with a recommendation from the County Planning Commission.

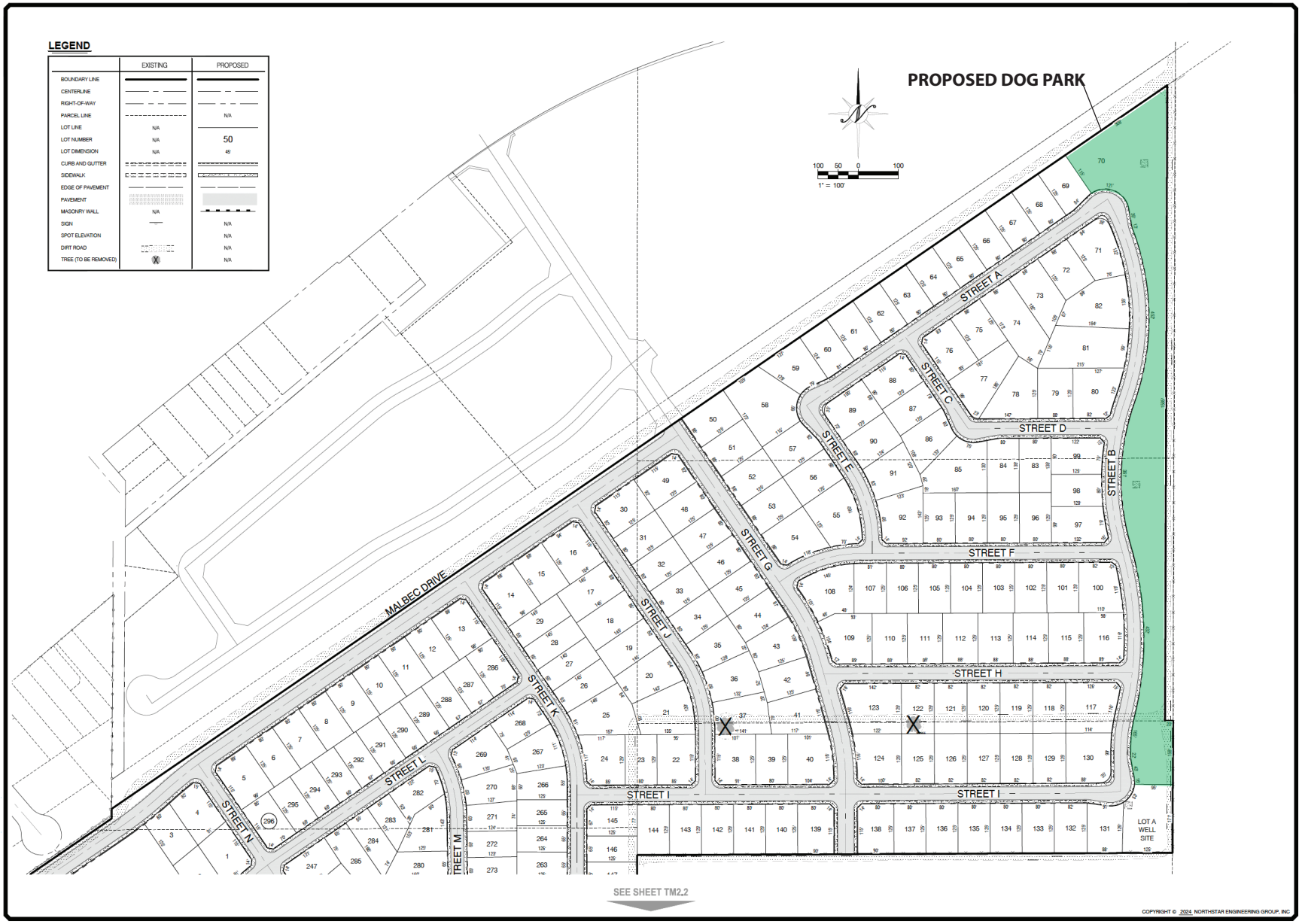
The project site is already within the LCSD, so no annexation to the LCSD is needed; connection to the LCSD utility systems has already been approved by the LCSD Board of Directors. Required improvements to the LCSD utility systems are covered in the adopted LCSD Wastewater Master Plan; CEQA coverage for the Master Plan was provided in a programmatic CEQA document adopted by the LCSD Board in April 2023.



BaseCamp Environmental

SOURCE: North Star Engineering Group

Figure 2-1A
OVERALL TENTATIVE SUBDIVISION MAP

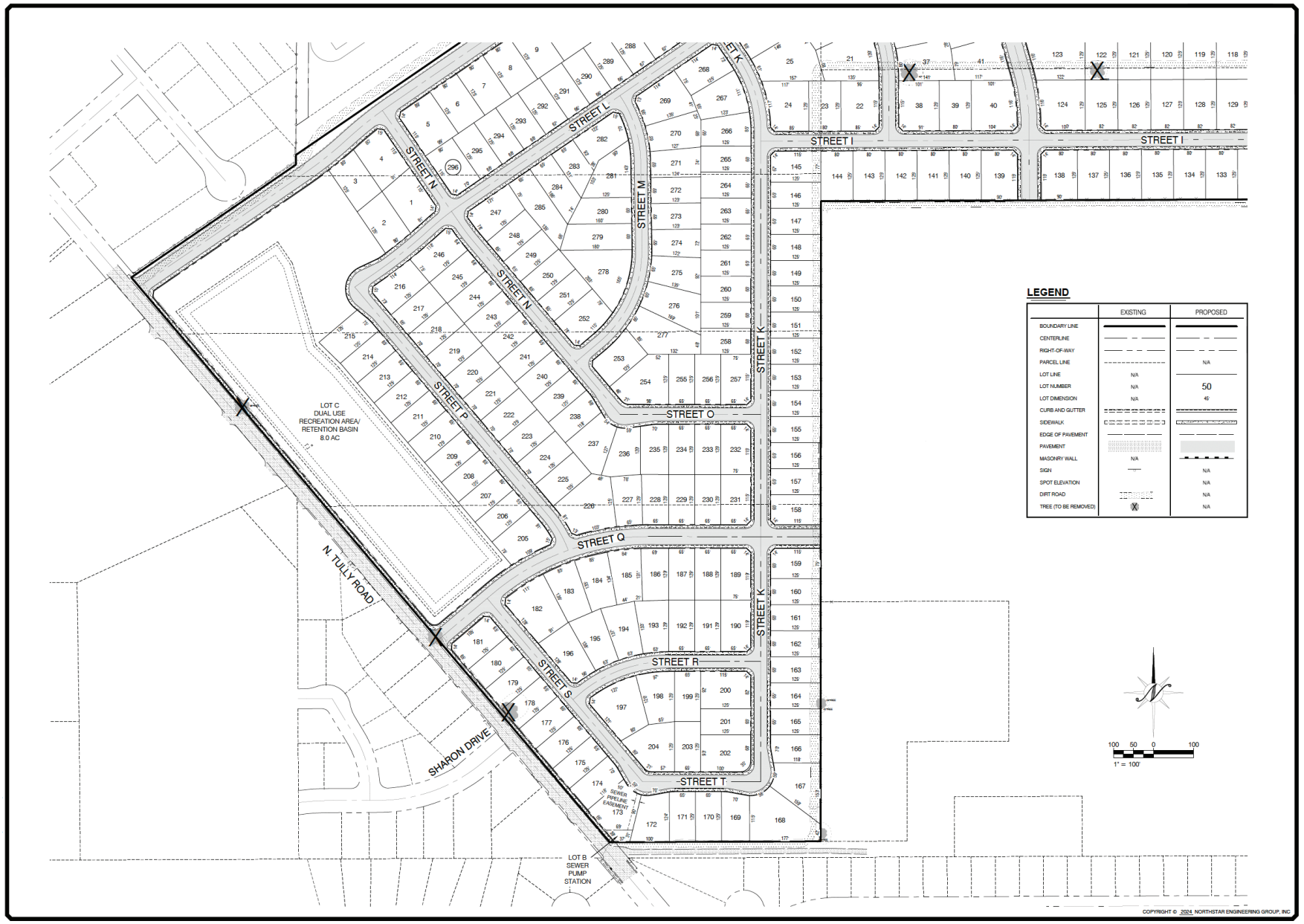


BaseCamp Environmental

SOURCE: North Star Engineering Group

Figure 2-1B

SECTION 2.1 TENTATIVE SUBDIVISION MAP

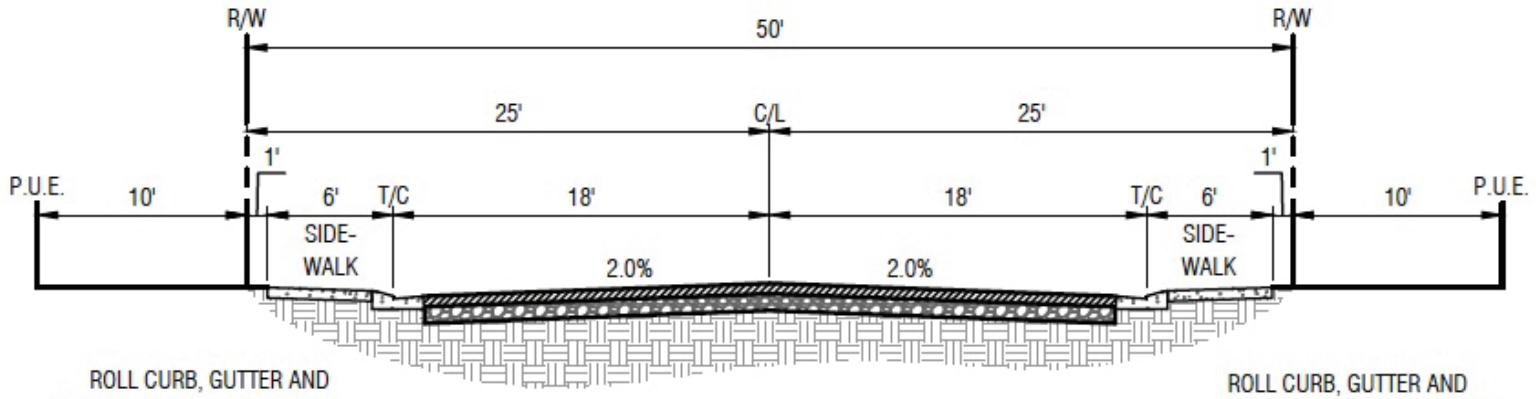


BaseCamp Environmental

SOURCE: North Star Engineering Group

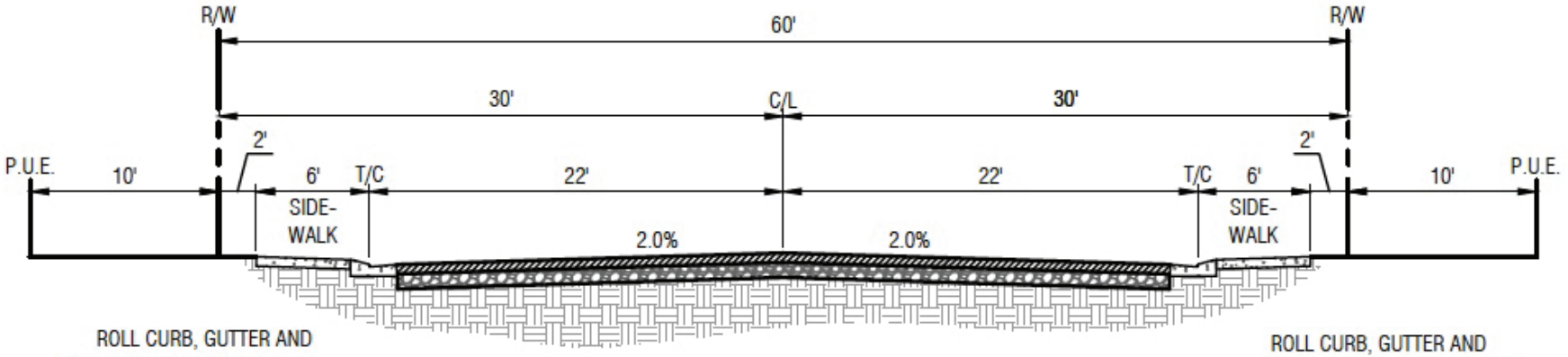
Figure 2-1C

SECTION 2.2 TENTATIVE SUBDIVISION MAP



A 50' TYPICAL RESIDENTIAL STREET

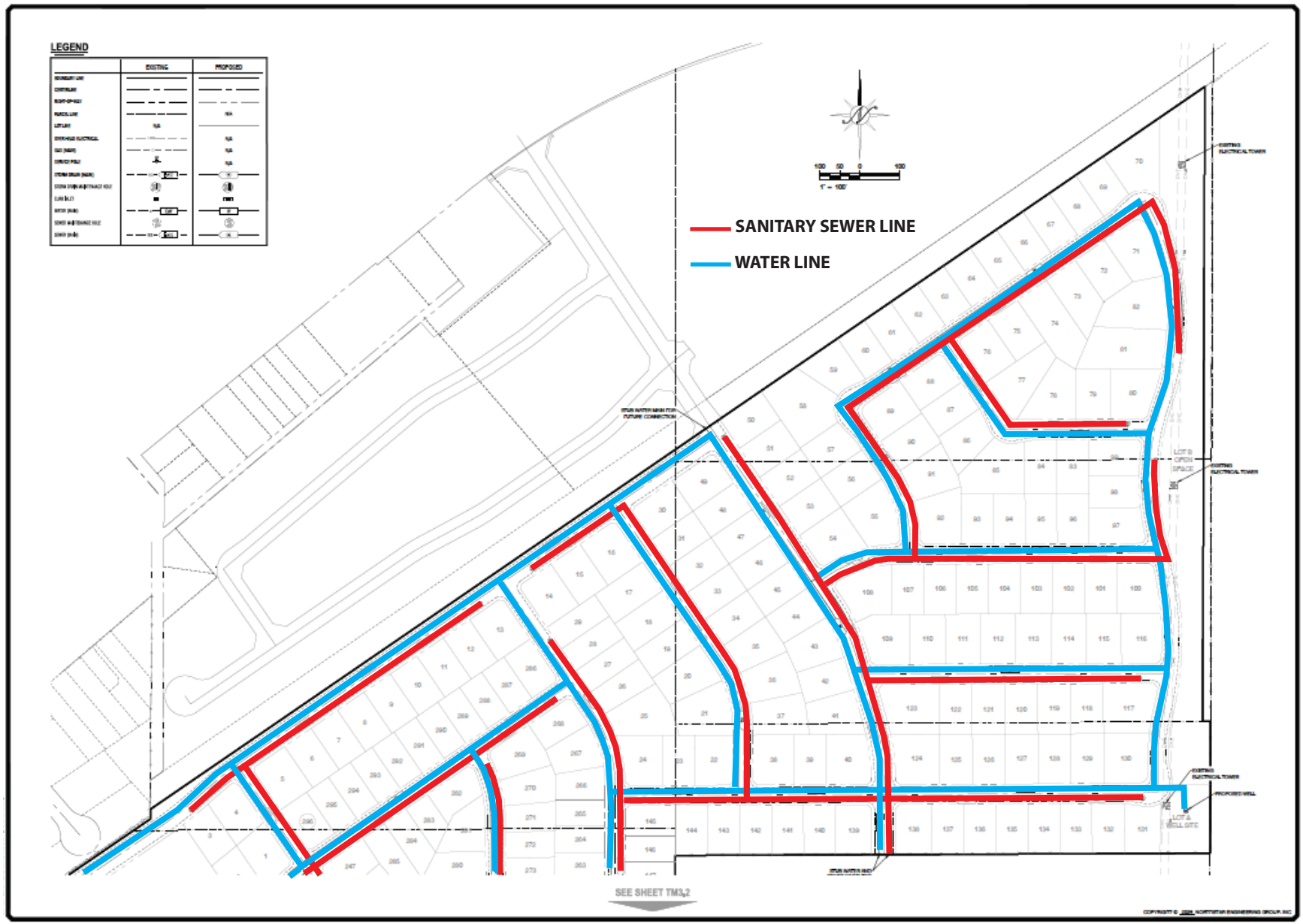
STANDARD CROSS SECTION UNLESS OTHERWISE NOTED
N.T.S.



B 60' COLLECTOR RESIDENTIAL STREET

N.T.S.

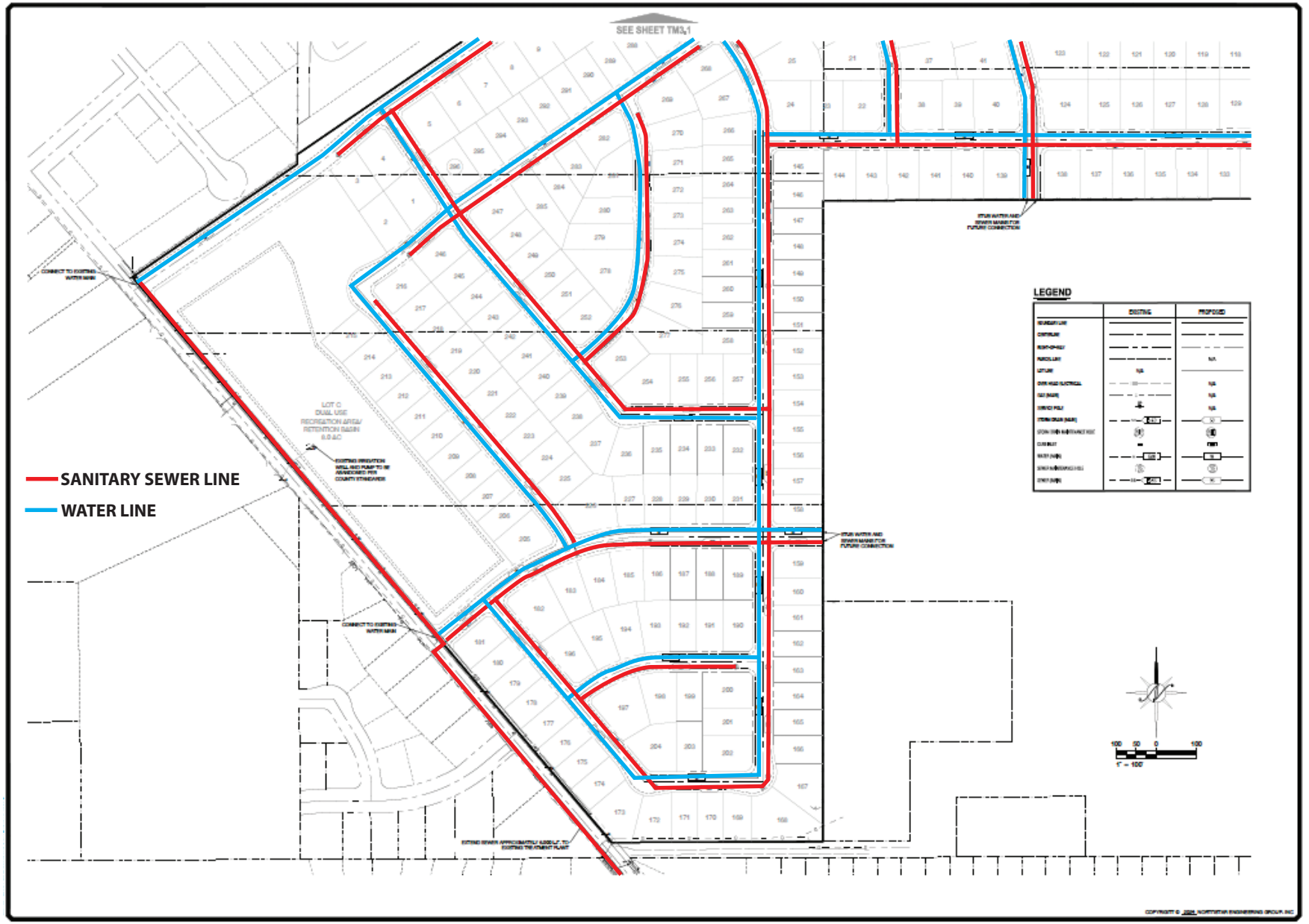
Figure 2-2
ROAD CROSS SECTIONS



BaseCamp Environmental

SOURCE: North Star Engineering

Figure 2-3A
UTILITY MAP (NORTH)



BaseCamp Environmental

SOURCE: North Star Engineering

Figure 2-3B
UTILITY MAP (SOUTH)

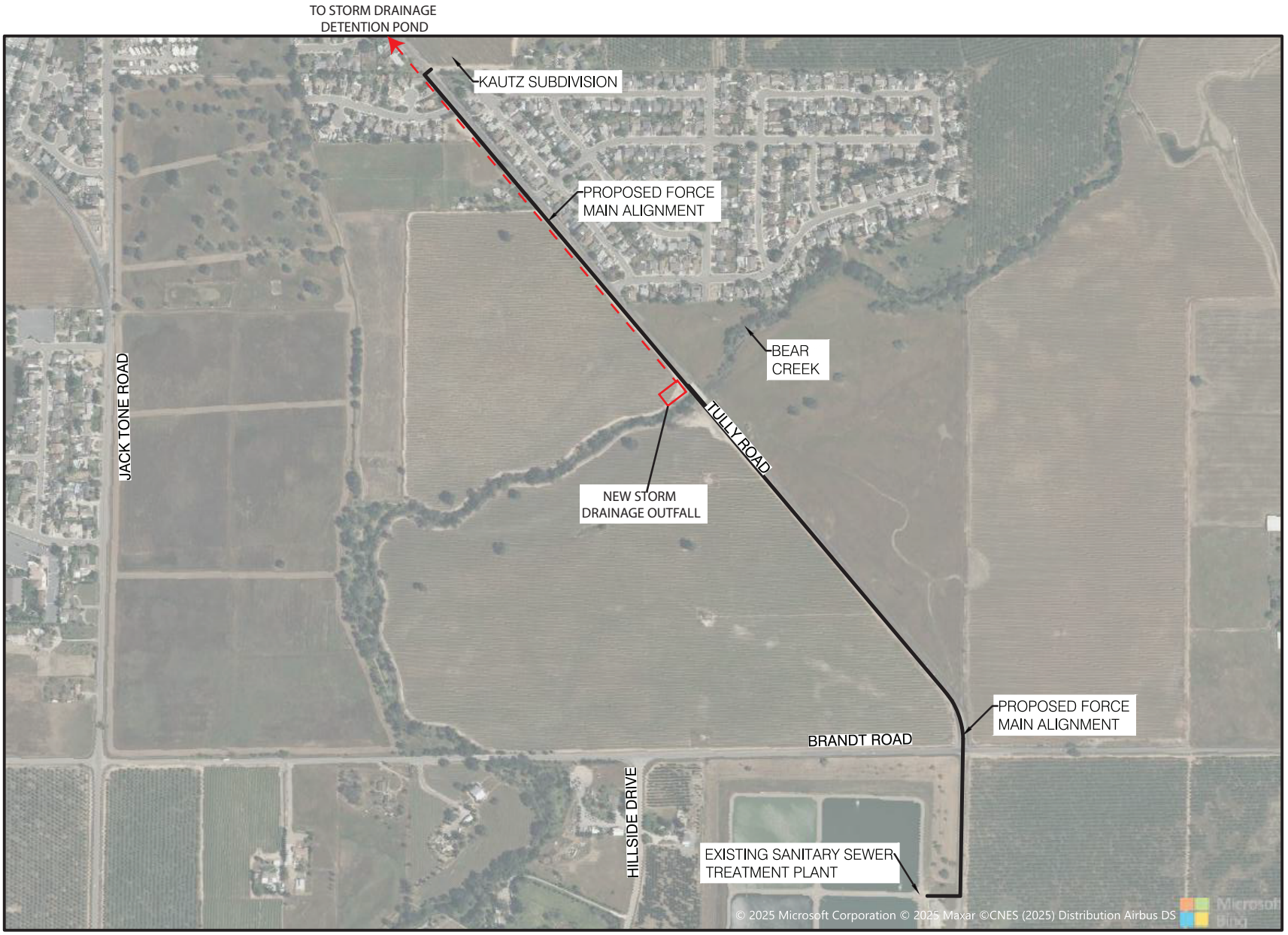


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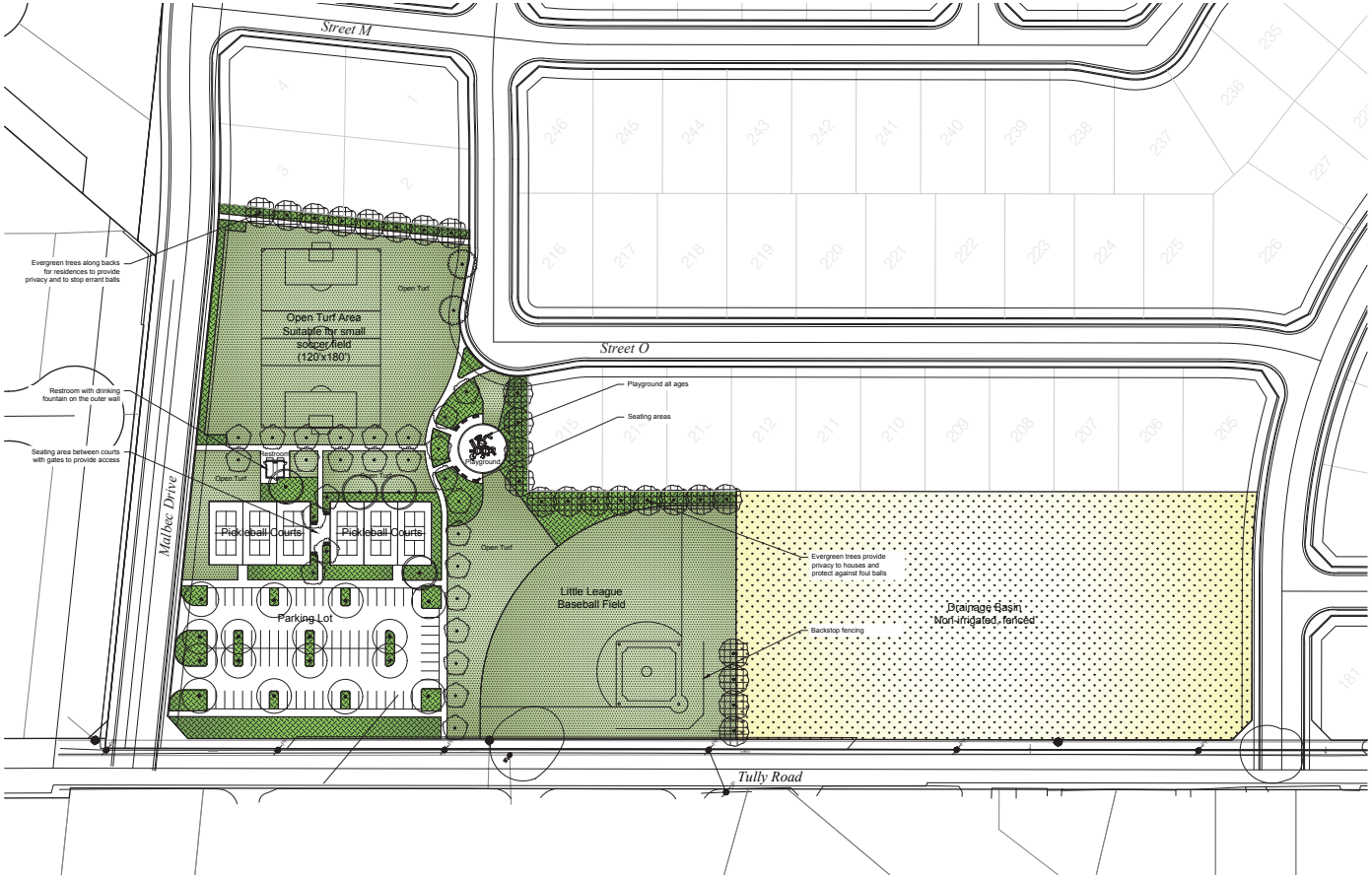
Figure 2-4
STORM WATER & WASTEWATER FORCE MAIN ALIGNMENTS



Sam Harned Landscape Architecture
PO Box 2275
Oakdale, CA 95361
209-380-7376 www.harnedla.com

CONCEPT PLANT SCHEDULE

PARKING LOT SHADE TREE Medium to large trees with spreading canopy for providing shade at the parking lot.	16	
SIGNATURE TREE Tree with interesting form or branch pattern, with fall color, to be the signature tree for the primary circulation and landscape design of this project.	27	
STREET TREE Tree to continue the street theme from the residential neighborhood	2	
SHADE TREE Tree with spreading canopy to provide shade for the project.	4	
EVERGREEN TREE Broadleaf or coniferous tree to provide year-round green and screening.	24	
PLANTER AREA Shrubs, grasses and ground cover		35,770 sf
TURF Natural grass (sod)		130,353 sf
NON-IRRIGATED HYDROSEED		129,932 sf

NORTH
0 25' 50' 100'
scale: 1" = 50'-0"

Concept Site Plan

C:\Users\samha\Dropbox\SHLA\Projects\202525-19-Kautz Subdivision\Tasks-CAD\Prelim\Archive\250703-with picnic area\25-19-LSPrelim.dwg

03 July 2025 | Kautz Subdivision - Lockeford, CA

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Figure 2-5
PARK AMENITIES AND DRAINAGE DETENTION BASIN

3.0 ENVIRONMENTAL EVALUATION CHECKLIST

3.1 AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			✓	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			✓	

NARRATIVE DISCUSSION

Environmental Setting

The project area consists of agricultural land, primarily vineyards together with relatively low-density urban development and vacant land, in the eastern portion of Lockeford rural community. Views west of the site are internal to the community and consist of nearby residential areas and undeveloped oak woodlands and open space. East of the site, views extend over the site and nearby vineyards to the Sierra foothills, weather permitting. Internally, Lockeford contains a number of historic buildings, along with many older single-family homes on small lots as well as many historic commercial and public buildings. The downtown area, with its narrow buildings and pedestrian scale, is considered

reminiscent of the gold rush towns of the Sierra foothills (San Joaquin County 2016).

Outside the developed areas of Lockeford, agricultural lands, and natural landscapes prevail. These include riparian vegetation along Bear Creek and oak woodlands. Besides the existing vineyards that occupy the entirety of the project site, there are, however, no natural landscapes on the site. Oak trees on the site are limited to a single individual tree adjacent to Tully Road along the southwest line of the site.

California Public Resources Code Section 21099 states that the aesthetic and parking impacts of residential, mixed-use residential, or employment center projects on an infill site within a transit priority area shall not be considered significant. The project area does not meet the criteria of Section 21099; therefore, aesthetic impacts are analyzed below.

Environmental Impacts and Mitigation Measures

a) Scenic Vistas.

Scenic vistas are defined as expansive views of highly valued landscapes from publicly accessible viewpoints. In the project area, potential scenic vistas include the Sierra Nevada to the east and nearby agricultural fields. These vistas would not change substantially with the project as these views are obtained primarily from the State highways serving the area; however, the project would involve new building construction that may obstruct views in localized areas. The project would have a less than significant impact on scenic vistas.

b) Scenic Routes and Resources.

Most of the scenic resources in the project area are in downtown Lockeford, with its unusual layout and historical structures. None of the improvements proposed by the project would be located in downtown Lockeford, so the project would not alter the downtown landscape. Outside the downtown area, agricultural fields and scattered oak woodlands, including lands adjacent and near the site; may be considered scenic resources; from SR 88/12, the main public corridor through the Lockeford area, views of new residential development on the project site would be largely obscured by approved new residential development on the adjacent Lockeford Vistas project, which is located between the Kautz Farms property and the highway. Utility improvements associated with the project would be buried underground in existing or proposed street rights-of-way or would be located in other already-developed areas.

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to designated scenic highways. According to the Caltrans list of designated scenic highways under the California Scenic Highway Program, there are only two officially designated state scenic highways within San Joaquin County: Interstate 5 from the Stanislaus County Line to Interstate 580, and Interstate 580 from Interstate 5 to the Alameda County Line (Caltrans 2019). These are in southwestern San Joaquin County and not in the Lockeford area.

San Joaquin County has designated several local highways as having scenic value in the Cultural and Natural Resources Element of its General Plan (San Joaquin County 2016b).

Local scenic highways include SR 12/88 through downtown Lockeford and Elliott Road from SR 12/88 north to Peltier Road. Tully Road south of SR 12/SR 88is not one of these locally designated routes. As noted, no portion of the project is located in downtown Lockeford or along Elliott Road, so these scenic roads/highways would not be affected. Another designated local scenic highway is Jack Tone Road from SR 12/88 south to Eight Mile Road; The project would involve no work on or near Jack Tone Road, so views from this road would not be substantially changed. Project impacts on scenic resources or highways would be less than significant.

c) Visual Character and Quality.

A recent change to the Environmental Checklist in CEQA Guidelines Appendix G emphasizes aesthetic and visual resource impacts on public views in non-urbanized areas. As defined in Appendix G, "public views" are views that are experienced from publicly accessible vantage points. Although not specifically defined, "publicly accessible vantage points" are assumed to include, though not necessarily limited to, public roads, parks, trails, and vista turnouts.

As noted, downtown Lockeford would not be affected by the proposed project. Public views of the existing landscapes along Tully and Malbec Roads County roads in the Master Plan area may be temporarily altered by planned residential development, together with streets, lighting and screening walls, which would involve the removal of existing vineyards and farm roads and replace easterly views from Tully Road with new homes, streets, parked vehicles and related facilities; this change would, however, be confined to the northern 0.3 miles of Tully Road, along which substantial residential development has already occurred along the west side of the road. In addition, approximately 60% of the project frontage on Tully Road would be occupied by the proposed drainage basin and park, which would not involve a significant adverse aesthetic effect.

Where proposed residential development would occur, new housing development would replace existing views of vineyard agriculture and distance views. Similar effects could be expected along the south side of Malbec Road once it is constructed as part of the Lockeford Vistas project.

Construction of the proposed wastewater and storm drainage force mains along the west side of Tully Road would involve generally minor visual and aesthetic effects. These effects would be temporary; beyond the construction season would become unnoticeable as the utility corridor revegetates. Project impacts related to visual character and quality would be less than significant. The proposed wastewater and storm drainage pump stations would not be located adjacent to Tully Road but would not be a visually prominent feature.

d) Light and Glare.

The project would involve substantial lighting improvements throughout the proposed residential development. New lighting would include entry signage, street lighting consistent with County improvement standards and landscape and security lighting on proposed residential lots. Planned lighting would result in substantial change to night views onto and across the undeveloped site; new lighting would be consistent with that existing

in other residential areas in Lockeford including existing residential areas along Tully Road and neighborhoods to be constructed north of the site in the Lockeford Vistas project. These offsite land uses, although sensitive, would not experience any substantial changes in overall illumination levels as a result of the project. The San Joaquin Cunty Development title includes lighting regulation that would minimize spill light and glare effects. Lighting improvements associated with planned residential development would not be expected to produce any glare that could disturb sensitive areas. The project would have a less than significant impact related to light and glare.

3.2 AGRICULTURE AND FORESTRY RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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, 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?				✓

NARRATIVE DISCUSSION

Environmental Setting

Agriculture has been, and continues to be, an important part of the economy in San Joaquin County. Approximately 86.7% of the county's land area was in farms and pasture as of 2017 (U.S. Department of Agriculture 2019). The gross value of agricultural production in the county was $3.22 Billion in 2023, which represented a slight decrease of approximately $24,000,000.00 from 2022. The top five agricultural products in 2023 were milk, grapes, almonds, cherries and eggs and poultry products (San Joaquin County Agricultural Commissioner's Office 2023).

The Lockeford community historically prospered as an agricultural processing center, with dairy and beef cattle, hogs, and produce farmed on the bottomlands of the Mokelumne River. Recent agricultural trends have been toward development of orchards and vineyards, permanent irrigated pastures of Ladino clover, alfalfa, and ryegrass (San Joaquin County 2016). The Kautz property currently supports vineyards, but this property was approved for future residential development in conjunction with its annexation into the Lockeford CSD.

Environmental Impacts and Mitigation Measures

a) Agricultural Land Conversion.

The Important Farmland Maps, prepared by the California Department of Conservation as part of the Farmland Mapping and Monitoring Program, designate the viability of lands for farmland use, based on the physical and chemical properties of the soils. Classifications include Prime Farmland, Unique Farmland, and Farmland of Statewide Importance, which are defined as Farmland by CEQA Guidelines Appendix G, along with other agricultural and non-agricultural classifications.

According to the 2018 Important Farmland Map of San Joaquin County, the project site has two designations, one of which is Prime Farmland and the other is Farmland of Local Importance, which is not considered important Farmland as defined by the CEQA Guidelines.

The 105-acre project site consists of land designated as Farmland and would be entirely converted to non-agricultural uses by the proposed residential development. Project Farmland conversion impacts would ordinarily be potentially significant.

It has been understood via a range of prior County, LAFCo and Lockeford CSD actions, however that the project site would ultimately be developed for residential use. This was acknowledged in the LAFCo action to approve annexation to the Lockeford CSD by San Joaquin County LAFCo on December 8, 2016 based on a Negative Declaration adopted by the Lockeford CSD, together with an expansion of the Lockeford Sphere of Influence to encompass the Kautz property on November 15, 2012. Later the property owner, County and LAFCo processed a change in the then-existing land use designation to the current designation of Low Density Residential, which was applied via County adoption of the

current General Plan Land Use Map in 2016. The LCSD approved assumed future development would involve up to 420 residential units.

b) Agricultural Zoning and Williamson Act.

The project site is zoned Agriculture-Urban Reserve, which is intended to retain in agriculture those areas planned for future urban development to facilitate compact, orderly urban development and to assure the proper timing and economical provision of services and utilities in support of urban development. The Kautz property has been approved for development by the County in conjunction with the annexation into the Lockeford CSD and adoption of the current County General Plan in 2016.

The Williamson Act is State legislation that preserves agricultural land through a program that permits contracts between landowners and local government that keep contracted land in agricultural use in exchange for a lower property tax assessment. As of 2008, there were approximately 1,204 parcels under a Williamson Act contract in the Lockeford Planning Area, which includes most of northeastern San Joaquin County (San Joaquin County 2016). The project site is not under a Williamson Act contract (California Department of Conservation 2016). Project impacts related to agricultural zoning and the Williamson Act would be less than significant.

c, d) Forest Land Zoning and Conversion.

As described in Section 3.1, Aesthetics, the project vicinity contains oak woodlands. However, there are no lands designated as timberland or zoned for timberland uses in the Lockeford area. In addition, as with agricultural land, no existing oak woodland would be converted to non-agricultural use with implementation of the project. The project would have no impact on forest land zoning or conversion.

e) Indirect Conversion of Farmland and Forest Land.

The project proposes residential development that would involve conversion of Farmland, as described in a) above. In addition, the project would tend to support other future development within the general project area, which may also lead to the conversion other of Farmland to non-agricultural uses. As noted, the project site has been anticipated to be developed for residential development or is designated Agriculture-Urban Reserve, which also anticipates future urban development when timing and availability of services align. Nevertheless, potential conversion of Farmland is considered a significant impact.

In adopting its wastewater system Master Plan, the Lockeford CSD determined that county consideration of the agricultural impacts of a project on potential conversion of Farmland should be evaluated; if such a project is to be approved by the County that would affect Farmland, the project would be required to mitigate the impact, which would likely include compliance with the County's Agricultural Mitigation Ordinance (San Joaquin County Code Chapter 9-701). The Agricultural Mitigation Ordinance requires mitigation for lands converted by General Plan amendment or rezoning from agricultural to non-agricultural use. Mitigation needs are satisfied by granting a farmland conservation easement or other farmland conservation mechanism to or for the benefit of a qualifying entity, such as a farmland trust. Alternatively, the project applicant may pay an in-lieu fee with approval of

the County Board of Supervisors. In its consideration of the proposed project the County will need to determine if agricultural land mitigation measures would be required; if so, all available mitigation measures will have been applied.

Infrastructure improvements needed to serve the project would not serve any other areas that are not already planned for development. Therefore, project impacts related to indirect conversion of Farmland would be less than significant. As there are no designated forest lands in the vicinity, the project would have no impact on indirect conversion of forest lands.

3.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan?		✓		
b) 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?			✓	
c) Expose sensitive receptors to substantial pollutant concentrations?			✓	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			✓	

NARRATIVE DISCUSSION

Environmental Setting

Air Quality Background

The project site and Lockeford are within the San Joaquin Valley Air Basin. The San Joaquin Valley Air Pollution Control District (SJVAPCD), which includes San Joaquin County, has jurisdiction over most air quality matters in the Air Basin; regulation of on and off-road vehicle emissions are the responsibility of the California Air Resources Board (ARB). The SJVAPCD is tasked with developing and implementing plans, programs and

regulations that will enable the Air Basin to attain ambient air quality standards set under both the federal and California Clean Air Acts. Under their respective Clean Air Acts, both the State of California and the federal government have established ambient air quality standards for six criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. California has four additional criteria pollutants under its Clean Air Act; none of these additional pollutants are or would be generated in the Lockeford area in substantial quantities.

Table 3-1 shows the current attainment status of the Air Basin relative to the federal and State ambient air quality standards for the criteria pollutants. Except for ozone and particulate matter, the Air Basin is in attainment of, or unclassified for, all federal and State ambient air quality standards. Ozone is not emitted directly into the air but is formed when reactive organic gases (ROG) and nitrogen oxides (NO_x) react in the atmosphere in the presence of sunlight. The SJVAPCD currently has a 2007 Ozone Plan and a 2013 Plan for the Revoked 1-Hour Ozone Standard for the Air Basin to attain federal ambient air quality standards for ozone.

Particulate matter is a mixture of solid and liquid particles suspended in air, including dust, pollen, soot, smoke, and liquid droplets. In San Joaquin County, particulate matter is generated by a mix of rural and urban sources, including agricultural operations, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere. Two types of particulate matter are of concern: particulate matter 10 micrometers or less in diameter (PM_{10}), and particulate matter 2.5 micrometers or less in diameter ($PM_{2.5}$). The SJVAPCD currently has a 2015 $PM_{2.5}$ Plan for the 1997 federal $PM_{2.5}$ standard, a 2012 $PM_{2.5}$ Plan for the 2006 federal $PM_{2.5}$ standard, a 2016 Moderate Area Plan for the 2012 federal $PM_{2.5}$ standard, and a 2007 PM_{10} Maintenance Plan to maintain the Air Basin's attainment status of the federal PM_{10} standard.

TABLE 3-1
SAN JOAQUIN VALLEY AIR BASIN ATTAINMENT STATUS

	Designation/Classification	
Criteria Pollutant	**Federal Primary Standards**	**State Standards**
Ozone - One hour	No Federal Standard	Nonattainment/Severe
Ozone - Eight hour	Nonattainment/Extreme	Nonattainment
PM_{10}	Attainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide (NO_x)	Attainment/Unclassified	Attainment
Sulfur Dioxide (SO_x)	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment

Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: SJVAPCD 2022.

In addition to the criteria pollutants, the California Air Resources Board has identified other air pollutants as toxic air contaminants (TACs) - pollutants that are carcinogenic (i.e., cause cancer) or that may cause other adverse short-term or long-term health effects. Diesel particulate matter, considered a carcinogen, is the most common TAC, as it is a product of combustion in diesel engines. It is present at some concentration in all developed areas of the state. Other TACs are less common and are typically associated with certain industrial operations.

Regulatory Setting

As noted, the SJVAPCD is tasked with implementing regulations designed to attain ambient air quality standards set under both the federal and California Clean Air Acts. SJVAPCD rules and regulations that are potentially applicable to the project are summarized below.

Rule 4101 (Visible Emissions)

This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants, including construction.

Regulation VIII (Fugitive Dust 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 track out, landfill operations, etc.

Rule 9510 (Indirect Source Review)

Rule 9510, also known as the Indirect Source Rule, is intended to reduce or mitigate construction and operational emissions of NO_x and PM_{10} generated by new development, either directly through on-site mitigation and/or by payment of off-site mitigation fees. Construction emissions of NO_x and PM_{10} exhaust projects subject to the rule must be reduced by 20% and 45%, respectively. Operational emissions of NO_x and PM_{10} must be reduced by 33.3% and 50%, respectively. Development projects that have mitigated baseline emissions that are below two tons per year of

NO_x and two tons per year of PM_{10} are exempt from the requirements in Sections 6.0 and 7.0 of the rule, which involve general mitigation requirements and the off-site

emission reduction fee.

Environmental Impacts and Mitigation Measures

a) Air Quality Plan Consistency.

In 2015, the SJVAPCD adopted a revised Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI), which defines an analysis methodology, thresholds of significance, and mitigation measures for the assessment of air quality impacts of land development projects within SJVAPCD's jurisdiction. Table 3-2 shows the CEQA thresholds of significance for pollutant emissions within the SJVAPCD. Emissions that meet or exceed the significance threshold are considered to have a significant air quality impact for CEQA purposes. The significance thresholds apply to emissions from both project construction and project operations.

As noted, project construction and/or operational emissions that meet or exceed the significance thresholds identified in Table 3-2 would be considered a significant environmental impact. As the significance thresholds were established in part to ensure consistency with the objectives of air quality attainment plans adopted by the SJVAPCD, emissions that are below these thresholds would be considered consistent with these plans.

Project construction would generate emissions composed, mainly fugitive dust emissions, exhaust emissions from construction equipment and worker vehicle trips. Construction emissions would be temporary and would cease when work is completed. Potential construction emissions resulting from the project were estimated using the California Emissions Estimator Model (CalEEMod) a predictive model which is in common use and was created and is accepted by the California air quality regulatory community as the best available tool for prediction of air emissions related to construction and operation of new urban and other land development. Model inputs include the site-specific geographic location, type and size of the project; a copy of the CalEEMod results for project construction (and operation) are shown in Appendix A of this Initial Study.

Potential annual construction emissions in tons/year were predicted for project buildout assuming that, worst case, the project would be constructed and occupied within a single year. The applicant or future buyer of the project may also elect to construct the project in phases; potential construction emissions for the project constructed in phases of approximately equal size over 5 years were also modeled. Modeling results are shown in separate columns in Table 3-2.

As illustrated in Table 3-2, construction emissions would not exceed SJVAPCD significance thresholds, even in the worst-case construction year in which the entire project would be constructed in a single phase. Project construction in phases, on the other hand, would result in reduced annual emissions that would be a fraction of the predicted worst-case construction emissions. As a result, the construction air quality impacts of the project are considered less than significant.

Even though predicted emissions would be less than significant, project construction would nonetheless be required to comply with applicable SJVAPCD rules and regulations designed to reduce potential construction impacts, such as Regulation VIII, which is intended to reduce fugitive dust emissions. Dust control provisions are also routinely included in site improvement plans and specifications, along with construction contracts.

Project construction would also be subject to SJVAPCD Rule 9510, which as described above requires construction emission reductions of NO_x and exhaust PM_{10} by 20% and 45%, respectively, or payment of an impact fee in lieu of documented emission reductions. SJVAPCD has been notified of impending project construction as a part of the required filing of an application for coverage under Rule 9510; this application for AIA approval was approved by the SJVAPCD on October 22, 2024, and air quality requirements resulting from this approval are shown at the conclusion of the air impact analysis. The potential emissions reductions associated with this measure are shown in Table 3-3.

TABLE 3-2
SJVAPCD SIGNIFICANCE THRESHOLDS,
PROJECT CONSTRUCTION EMISSIONS

Pollutant	Significance Threshold (tons/year)[1]	Project Construction In One Year (tons/year)	Project Construction in Five Equal Phases (tons/year)
Reactive organic gases (ROG)	10	1.99	0.32
Nitrogen oxides (NO_x)	10	1.45	2.70
Carbon monoxide (CO)	100	2.11	3.24
Sulfur oxides (SO_x)	27	<0.005	0.01
Particulate matter <10 microns (PM_{10})	15	0.22	0.55
Particulate matter <2.5 microns ($PM_{2.5}$)	15	0.10	0.28

[1] Applies to both construction and operational emissions.
Sources: SJVAPCD 2015, CalEEMod

CalEEMod was also used to estimate operational emissions associated with the 296-unit project; like construction emissions, operational emission calculations are shown in the CalEEMod results in Appendix A. Table 3-3 repeats the estimated construction emissions and the degree to which they would be reduced by compliance with Rule 9510. Annual operational emissions together with Rule 9510 reductions are shown for the entire project at buildout, assumed to occur by 2030.

Table 3-3 describes estimated annual unmitigated operational emissions from the project, which would be derived from "area sources" as well as vehicular emissions. The estimated emissions would in all cases fall below SJVAPCD significance thresholds and would therefore be less than significant.

Construction and occupancy of proposed homes would indirectly cause air emissions through the operation of HVAC systems, known as Area Sources, and operation of homeowner vehicles and equipment, including yard maintenance equipment. Household energy consumption would result in other indirect emissions associated with utility generation of energy consumed by proposed homes, which also generates air emissions.

TABLE 3-3
SJVAPCD SIGNIFICANCE THRESHOLDS, MAXIMUM
CONSTRUCTION AND OPERATIONAL AIR POLLUTANT EMISSIONS

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Significance Thresholds (tons/year)[1]	**10**	**10**	**100**	**27**	**15**	**15**
Construction Emissions (tons/year)[2]	1.99	1.45	2.11	<0.0005	0.22	0.10
Exceeds threshold?	*No*	*No*	*No*	*No*	*No*	*No*
Operational Emissions (tons/year)[3]	4.77	3.62	25.9	0.07	6.40	1.69
Exceeds threshold?	*No*	*No*	*No*	*No*	*No*	*No*
With Rule 9510 application	-	*2.43*	--	-	*3.20*	-

[1] Applies to both construction and operational emissions.
[2] Maximum emissions in a calendar year.
[3] Annual emissions.
Sources: CalEEMod Version 2020.4.0, SJVAPCD 2015.

In summary, the impacts of the project on air emissions and significance thresholds, and therefore on air quality plans, would be less than significant; potential project emissions would be further reduced by the required implementation of applicable SJVAPCD rules and regulations and the mitigation measure described below.

The SJVAPCD's approval of the applicant's AIA application on October 22, 2024 included additional air quality mitigation measures that must be implemented in conjunction with the project. These measures, listed below, are incorporated into the Summary of Mitigation Measures shown in Table 2-1 of this document and will be listed in the Mitigation

Monitoring/Reporting Plan (MMRP) for the project, which must be adopted in conjunction with this IS/MND.

SJVAPCD Requirements Attached to AIA Approval of October 22, 2024

1. The applicant shall pay required Air Impact Fees as prescribed in the AIA approval letter of October 22, 2024.
2. If all or a portion of the project changes ownership, a completed Change in Developer form must be submitted to the District within thirty (30) days following the date of transfer.
3. Dust Control Plan. Applicant may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in District Rule 8021 – Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.
4. Permits. Per District Rule 2010 (Permits Required), applicant may be required to obtain a District Authority to Construct prior to installation of equipment that controls or may emit air contaminants, including but not limited to emergency internal combustion engines, boilers, and baghouses.

b) Cumulative Emissions.

As noted in a) above, construction and operational emissions of the project are expected to be less than significant based on project-level analysis. Future attainment of federal and State ambient air quality standards is a function of successful implementation of the SJVAPCD's attainment plans, which are in turn unaffected by projects that do not exceed the District's significance thresholds. Pursuant to the SJVAPCD Guide for Assessing and Mitigating Air Quality Impacts, if project-specific emissions would be less than the thresholds of significance for criteria pollutants, the project would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the SJVAPCD is in nonattainment under applicable federal or State ambient air quality standards. As operational emissions are not expected to exceed the SJVAPCD significance thresholds, the cumulative impacts of these emissions are likewise predicted to be less than significant.

c) Exposure of Sensitive Receptors.

As defined in the Guide for Assessing and Mitigating Air Quality Impacts, "sensitive receptors" include residences, schools, parks and playgrounds, day care centers, nursing homes, and hospitals (SJVAPCD 2015). The most significant air pollutant emissions would come from construction activities. As noted, construction emissions would be temporary and would cease when work is completed. Also, as discussed in a) above, compliance with SJVAPCD rules and regulations, along with implementation of Mitigation Measures AQ-1 and AQ-2, would reduce potential air quality impacts from construction activities to a level that would be less than significant. This would also reduce potential long-term exposure of nearby homes or other sensitive receptors to these emissions.

As shown in Table 3-3, project emissions would be less than significant, subject to SJVAPCD construction requirements and Rule 9510 mitigation requirements; therefore, sensitive receptors in the project vicinity would be unlikely to be more than infrequently exposed to these emissions. Project impacts related to exposure of sensitive receptors would therefore be less than significant.

d) Odors and Other Emissions.

Proposed residential units are not expected to generate any substantial or unpleasant odors that would be objectionable. New sewer lines and the force main would be buried underground. The new pump station facility would be underground in a concrete wet well, and substantial odors from collected wastewater are unlikely to be generated, as predicted in the LCSD Wastewater Master Plan. The existing Bear Creek Pump Station operates in a residential area, and no odor complaints have been received by the CSD (Colwell pers. comm.).

Other emissions of potential concern are TACs, specifically diesel particulate matter emissions. Diesel particulate matter emissions would be generated on a temporary basis by construction equipment and vehicles used during construction of proposed subdivision improvements and homes. Some of this construction may occur near residences, which would potentially be exposed to these emissions. As noted, construction emissions would be temporary and would cease when work is completed. Diesel particulate matter emissions would pose a risk to health only with long-term exposure, so emissions from construction activities would not be a health hazard. Operations are not expected to generate any substantial diesel particulate matter emissions.

A preliminary screening model, known as a "facility prioritization," is used by SJVAPCD to calculate potential health risks generated by potential toxic emission sources, based on their estimated emissions. If the model indicates that a project has a cancer facility prioritization score of 10 or more, or a chronic or acute score of 1 or greater, then a formal Health Risk Assessment may be required to further evaluate the potential health risk effects of the project, both carcinogenic and non-carcinogenic. BaseCamp conducted a facility prioritization for proposed project, considering the potential DPM emissions during construction derived from the CalEEMod modeling report for the project. A receptor distance of <100 meters was assumed.

It should be noted that heavy-duty truck PM_{10} emissions, which include DPM, have substantially declined in recent decades and will continue to decline based on State air toxic reduction programs. Based on EMFAC2021 factors used in emission analysis, the running exhaust emissions of PM10 generated by heavy-duty diesel trucks in California was 1.0108 grams per mile in 1978. In 2022, it was 0.0027 grams per mile – an approximately 99.7% decrease from the 1978 level.

The results of the model indicate that the construction cancer scores at the nearest sensitive receptor would be below the SJVAPCD significance threshold, while the scores for chronic risks during project construction would be <1; in both cases, these values are both well below the SJVAPCD thresholds that would require a formal Health Risk Assessment; a

formal Health Risk Assessment is not necessary for the project, and potential health risks are considered to be less than significant.

In summary, the project is not expected to increase odors associated with wastewater collection and treatment, and potential TAC emissions would not be at a level that poses a potential risk to health. Project impacts related to odors and other emissions are considered less than significant.

3.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Adversely impact, either directly or through habitat modifications, any endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)?		✓		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			✓	
c) Have a substantial adverse effect on state or federally protected wetlands (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 Conservation				✓

Community Plan, or other approved local, regional, or state habitat conservation plan?				

NARRATIVE DISCUSSION

Moore Biological Consultants was retained to prepare a Biological Assessment (BA) for the proposed project. The purposes of the Biological Assessment is to describe existing biological resources in the site, identify potentially significant impacts to biological resources from the project, and provide recommendations for how to reduce those impacts to a less-than-significant level. The work involved reviewing available biological databases, aerial photographs, and documents, and conducting field surveys to document vegetation communities, potentially jurisdictional Waters of the U.S. and/or wetlands, and potentially suitable habitat for or presence of special-status species. A copy of the September 2025 report is shown in Appendix B.

Environmental Setting

Existing Vegetation

Moore conducted a search of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database: an updated search was conducted in June 2025. The CNDDB search extended 5 miles beyond the site boundary, which includes portions of the Lockeford, Clements, Waterloo, and Linden USGS 7.5-minute topographic quadrangles (Attachment B). The United States Fish and Wildlife Service (USFWS) IPaC Trust Resource Report of Federally Threatened and Endangered species that may occur in or be affected by projects in the project vicinity was also reviewed. This information was used to identify wildlife and plant species that have been documented in the project vicinity or that may have the potential to occur if suitable habitat is present.

Moore reviewed the National Marine Fisheries Service (NMFS) on-line-maps of designated critical habitat (NOAA, 2025). The USFWS on-line-maps of designated critical habitat and the National Wetland Inventory (NWI) were also reviewed (USFWS, 2025b; 2025c). Finally, we reviewed the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (HCP) maps (SJCOG, 2000).

Biologists Diane Moore, M.S. and Colleen A. Laskowski, M.S. conducted field surveys on June 7 and 25, 2024. The surveys consisted of walking and driving throughout the site observing habitat conditions and noting surrounding land uses, general habitat types, and plant and wildlife species. The surveys included an assessment of the site for potentially jurisdictional Waters of the U.S. (a term that includes wetlands) as defined by the ACOE, 1987; 2008) and/or Waters of the State, including wetlands.

The site was for searched for special-status species and potentially suitable habitat for special-status species (e.g., areas with unusual soils, blue elderberry shrubs). Additionally, trees in and near the site were assessed for the potential use by nesting raptors, especially

Swainson's hawk. The grassland areas in the site were searched for burrowing owls or ground squirrel burrows with evidence of past occupancy.

A table of "Special-Status Species" pursuant to CEQA was compiled from the results of the database searches and is shown following as Table 3-4. Special-status species include those listed as threatened or endangered, or species that are candidates for listing at the state or federal level, rare plants, and animals considered sensitive by CDFW. The Special-Status Species table includes species documented in the CNDDB within five miles of the site and species listed in the IPAC; common species identified in the CNDDB were excluded.

The body of the site, which is envisioned for residential development, is currently a vineyard and a small hay field, both of which have been intensively farmed for decades. Land uses in this portion of San Joaquin County are primarily agricultural and residential. N. Tully Road borders the southwest edge of the site and a majority of the northwest edge of the site is adjacent to a hay field. The remaining edges of the site are either bounded by orchards, residential subdivisions, or fallow grassland. Parcels adjacent to the sewer and the off-site storm drain alignment consist of vineyards, developed areas, or disturbed ruderal grassland along the N. Tully Road alignment.

Vegetation

Habitats in the site are highly disturbed from intensive farming and development of parcels adjacent to the site. There is highly disturbed grassland vegetation between the rows of vines, edges of the hay field, and along the N. Tully Road shoulder. Foxtail barley, soft chess, and oats are the dominant grasses in the site. Other grassland species found in the site include bull thistle, field bindweed, long-beak filaree, and yellow star-thistle. Table 3-4 is a list of plant species observed in the site.

There are a few trees along the edges of the vineyard, adjacent to the farm roads, along N. Tully Road, and along the banks of Bear Creek. Trees in the site include volunteer almonds, blue oak, valley oak, and live. There are some relatively large trees in surrounding parcels, most of which are either orchard trees or ornamental species associated with nearby residential subdivisions. No blue elderberry shrubs were observed in or adjacent to the site, or in the Bear Creek riparian corridor near the N. Tully Road bridge.

Wildlife

A variety of bird species were observed in the site during the field surveys. Turkey vulture, red-tailed hawk, American crow, California scrubjay, northern mockingbird, mourning dove, and house finch are representative bird species observed in the site (Table 3-5).

TABLE 3-4

PLANT SPECIES OBSERVED IN THE SITE

Acmispon americanus		Spanish clover
Amaranthus albus		tumbleweed
Amsinckia menziesii		Menzies' fiddleneck
Avena sp.		oat
Bromus hordeaceus		soft chess
Centaurea solstitialis		yellow star-thistle
Cirsium vulgare		bull thistle
Conium maculatum		poison hemlock
Convolvulus arvensis		morning glory
Cucurbita sp.		wild melon
Cynodon dactylon		Bermuda grass
Dittrichia graveolens		stinkwort
Epilobium brachycarpum		willowherb
Eremocarpus setigerus		turkey mullein
Erigeron bonariensis		flax-leaved horseweed
Erigeron canadensis		Canadian horseweed
Erodium botrys		long-beak filaree
Hordeum marinum		seaside barley
Hordeum murinum		foxtail barley
Lactuca serriola		prickly lettuce
Leontodon saxatilis		long-beaked hawkbit
Lolium perenne		perennial ryegrass
Malva neglecta		common mallow
Phytolacca americana		American pokeweed
Plantago lanceolata		English plantain
Poa annua		annual blue grass
Quercus douglasii		blue oak
Quercus lobata		valley oak
Quercus wizlisenii		interior live oak
Raphanus sativa		radish
Sinapis arvensis		field mustard
Sonchus asper		spiny-leaf sow-thistle
Sorghum halepense		Johnson grass
Tragopogon porrifolius		purple salsify
Tribulus terrestris		puncture vine

TABLE 3-5

WILDLIFE SPECIES OBSERVED IN THE SITE

Great egret		Ardea alba
Turkey vulture		Cathartes aura
Swainson's hawk		Buteo swainsoni
Red-tailed hawk		Buteo jamaicensis
American kestrel		Falco sparverius
Mourning dove		Zenaida macroura
		Melanerpes formicivorus

Acorn woodpecker Northern mockingbird California scrub jay American crow Western bluebird Yellow-rumped warbler Brewer's blackbird European starling Tree swallow House finch California ground squirrel Western fence lizard		Mimus polyglottos Aphelocoma californica Corvus brachyrhynchos Sialia mexicana Setophaga coronata Euphagus cyanocephalus Sturnus vulgaris Tachycineta bicolor Carpodacus mexicanus Otospermophilus beecheyi Sceloporus occidentalis

There are a few trees along the edges of the site and several large trees in nearby parcels that are suitable for nesting raptors, including Swainson's hawk. A Swainson's hawk was observed standing on the ground in a hay field to the northwest of the site during the June 18, 2024 survey. The hawk flew off after several minutes and began soaring over the area, presumably foraging.

Habitats in the site, although heavily managed and farmed, provide suitable nesting habitat for a variety of smaller birds, such as songbirds. Trees along the edges of the site and even grape vines provide suitable nesting habitat for smaller birds, such as mourning dove, northern mockingbird, California scrub jay, and other common birds. Red-winged blackbird may also nest in the hay field and killdeer may nest in gravel areas or on bare ground.

A variety of mammals common to urban and agricultural areas may occur in the site periodically, but none are expected to occur in the site in an intensive capacity. For example, coyote may move through and forage in the site but is not expected to den in the intensively cultivated vineyard or hay field. No mammals were observed in the site during the field surveys; only a few California ground squirrel burrows were observed. Common mammals such as raccoon striped skunk and Virginia opossum may occur in the site. Finally, a number of species of small rodents including mice and voles also likely occur.

Based on habitats present, the site provides suitable habitat for only a few species of reptiles and amphibians. Western fence lizard was the only reptile observed in the site; no amphibians were observed. The site provides potentially suitable habitat for common species such as Pacific chorus frog, gopher snake, common king snake, western skink, and common garter snake.

Aquatic Resources

Waters of the U.S., including wetlands, are defined under 33 Code of Federal Regulations (CFR) 328 to include navigable waterways, their tributaries, and adjacent wetlands. State and federal agencies regulate these habitats and Section 404 of the Clean Water Act

requires that a permit be secured prior to the discharge of dredged or fill materials into any Waters of the U.S. The California Regional Water Quality Control Board (RWQCB) implements Section 401 of the Clean Water Act by issuing 401 Certification in support of 404 permits. Many jurisdictional Waters of the U.S. in California are also Waters of the State and also fall under the jurisdiction of CDFW.

"Waters of the U.S.", as defined in 33 CFR 328.4, encompasses Territorial Seas, Tidal Waters, and Non-Tidal Waters; Non-Tidal Waters includes interstate and intrastate rivers and streams, their tributaries, and their adjacent wetlands. The limit of federal jurisdiction of Non-Tidal Waters of the U.S. extends to the "ordinary high water mark" (OHWM). The OHWM is established by physical characteristics such as a natural water line impressed on the bank, presence of shelves, destruction of terrestrial vegetation, or the presence of litter and debris.

Wetlands are vegetated areas that meet specific vegetation, soil, and hydrologic criteria defined by the ACOE Wetlands Delineation Manual and Regional Supplement. Wetlands that are adjacent to and hydrologically very closely associated with jurisdictional lakes, rivers, streams, and tributaries can also fall under ACOE jurisdiction as "adjacent wetlands". Geographically and hydrologically isolated wetlands are outside federal jurisdiction but are regulated by RWQCB as a "Water of the State".

Jurisdictional Waters of the U.S. and wetlands include, but are not limited to, most perennial and intermittent creeks and lakes, as well as adjacent wetlands such as riparian wetlands along the edges of rivers. Waters of the U.S., wetlands, and other aquatic habitats provide critical habitat components, such as nest sites and a reliable source of water, for a wide variety of wildlife species.

Under Section 1600-1616 of the Fish and Game Code of California (FGCC), project proponents are required to notify CDFW prior to initiating activities for any project that would divert water from, or obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement.

There are no potentially jurisdictional Waters of the U.S. or wetlands in the project site. There are also no areas in the site meeting the criteria of Waters of the State or meet the technical criteria of wetlands (i.e., presence of hydrophytic vegetation, hydric soils, and wetland hydrology). The site is vegetated with upland grasses and has soils that appear to be well draining.

Bear Creek, which flows generally northeast to southwest approximately 2,000 feet south of the site, is a jurisdictional Water of the U.S. The limit of federal jurisdiction is the OHWM along the banks of the Creek. As described above, the sewer line will either be attached to the side of the Bear Creek bridge or installed under the creek using bore and jack technology. As neither of these construction methods involve the placement of fill in jurisdictional Waters of the U.S., authorization from ACOE and RWQCB will not be needed for the force main crossing of Bear Creek crossing. In contrast, because either

method would involve some excavation in the top of bank and work within a riparian corridor, notification to CDFW pursuant to FGCC Section 1602 is warranted.

Construction of the proposed storm drain outfall will involve approximately 0.01 acres of permanent impact to jurisdictional Waters of the U.S. Permits from ACOE and RWQCB will be needed prior to the placement of any fill material (e.g., fill dirt, concrete, rock) in Bear Creek. The ACOE is expected to authorize the work under Nationwide Permit 58. As the outfall will involve the modification of the bed and bank of Bear Creek, notification to CDFW pursuant to FGCC Section 1602 for the outfall is also warranted; CDFW is expected to issue a Streambank Alteration Agreement to authorize the work.

Special-Status Species

Special-status species are plants and animals that are legally protected under the state and/or federal Endangered Species Act or other regulations. The Federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California species. Special-status plants are those, which are designated rare, threatened, or endangered and candidate species for listing by the USFWS. Special-status plants also include species considered rare or endangered under the conditions of Section 15380 of the California Environmental Quality Act Guidelines, such as those plant species identified on Lists 1A, 1B and 2 in the Inventory of Rare and Endangered Vascular Plants of California. Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on CNPS List 3.

The likelihood of occurrence of listed, candidate, and other special-status species in the site is generally low. Table 3-6 provides a summary of the listing status and habitat requirements of special-status species that have been documented within 5 miles from the site and those listed in the IPac Trust Report. This table also includes an assessment of the likelihood of occurrence of each of these species in the site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations.

Special-Status Plants

Sanford's arrowhead is the only special-status plant identified in the CNDDB within five miles from the site. The IPaC Trust Resource Report also includes fleshy owl's clover and does not include any other special-status plants.

Special-status plants generally occur in relatively undisturbed areas in vegetation communities such as vernal pools, marshes and swamps, and areas with unusual soils. Habitats in the subdivision site and along Tully Road are highly disturbed and do not provide suitable habitat for any of the plants in Table 3-4 or other special-status plants. There are no vernal pools in the site to support fleshy owl's clover and no aquatic habitat in the site for Sanford's arrowhead. Due to lack of suitable habitat, no special-status plants

are expected to occur in the site. concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on CNPS List 3.

The likelihood of occurrence of listed, candidate, and other special-status species in the site is generally low. Table 3-6 provides a summary of the listing status and habitat requirements of special-status species that have been documented within 5 miles from the site and those listed in the IPac Trust Report. This table also includes an assessment of the likelihood of occurrence of each of these species in the site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations.

Special-Status Wildlife

The potential for intensive use of habitats in the project site by special-status wildlife species is generally low. Special-status wildlife identified in the CNDDB (2025) within five miles from the site include Swainson's hawk, tricolored blackbird, yellow warbler, California tiger salamander, northwestern pond turtle, western spadefoot, Central Valley steelhead, valley elderberry longhorn beetle, and vernal pool tadpole shrimp.

The IPaC Trust Report also contains a few of the same wildlife species identified in the CNDDB (2025) search area and also includes riparian brush rabbit, giant garter snake, monarch butterfly, and Conservancy fairy shrimp.

While the project site may have provided habitat for special-status wildlife species at some time in the past, farming and development have substantially modified natural habitats in the greater project vicinity. Of the wildlife species identified in the CNDDB and IPaC Trust Report, Swainson's hawk is the only species with potential to occur in the site on more than a transitory or occasional basis and is discussed further below. Giant garter snake is also discussed below because Bear Creek is viewed as "potential giant garter snake habitat" in the HCP. Finally, northwestern pond turtle is discussed below as it has been documented in creeks near Lockeford and Bear Creek is viewed as "potential northwestern pond turtle habitat" in the HCP.

TABLE 3-6

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status 1	Federal Status 1	CNPS LIST 2	Habitat	Potential for Occurrence in the Project Site
Plants						
Fleshy owl's clover	Castilleja campestris var. succulenta	T	E	1B	Vernal pools.	Vernal pools. None: there is no aquatic habitat in the site. The nearest occurrence of this species in the CNDDB (2025) is 2.5 miles southwest of the site.
Sanford's arrowhead	Sagittaria sanfordii	None	None	1B	Marshes and swamps (shallow freshwater).	Low: the small hay field provides suitable foraging habitat for Swainson's hawk and large trees in and near the site may be used for nesting. A Swainson's hawk was seen foraging near the site during the June 2024 surveys. There are several records of Swainson's hawk in the CNDDB (2025) within a few miles of the site, with one record being just southwest of the site and a second along the sewer alignment.
Wildlife Birds						
Swainson's hawk	Buteo swainsoni	None	T	N/A	Breeds in stands of tall trees in open areas; foraging habitats include grasslands, annual cropland, and alfalfa fields supporting rodents.	Low: the small hay field provides suitable foraging habitat for Swainson's hawk and large trees in and near the site may be used for nesting. A Swainson's hawk was seen foraging near the site during the June 2024 surveys. There are several records of Swainson's hawk in the CNDDB (2025) within a few miles of the site, with one record being just southwest of the site and a second along the sewer alignment.

Tricolored blackbird	Agelaius tricolor	None	T	N/A	Requires open water and protected nesting substrate, usually cattails and riparian scrub with surrounding foraging habitat	Unlikely: the site provides a minimal amount of foraging habitat for tricolored blackbird, but there is no suitable open water habitat in close proximity to the site to provide nesting habitat for this species. The nearest occurrence of tricolored blackbird in the CNDDB (2025) is approximately 0.5 miles south of the south end of the sewer alignment.
Yellow warbler	Setophaga petechia	None	SC	N/A	Nests in riparian areas, usually in willows, alders, and cottonwoods.	Unlikely: although there is riparian habitat associated with Bear Creek, this species is known to occur in larger river systems. The only occurrence of yellow warbler in the CNDDB (2025) is approximately 1 mile northeast of the site, along the Mokelumne River.
Mammals						
Riparian brush rabbit	Sylvilagus Bachmani riparius	E	E	N/A	Riparian thickets in Stanislaus and southern San Joaquin Counties.	Unlikely: Bear Creek does not contain well-developed riparian habitat to support riparian brush rabbit. This species is not known from this part of the county and there are no occurrences of riparian brush rabbit in the CNDDB (2025) search area.
Reptiles & Amphibians						
California tiger salamander – central California DPS	Ambystoma californiense pop. 1	T	T	N/A	Seasonal water bodies without fish (i.e., vernal pools and stock ponds) and grassland/ woodland habitats with summer refugia (i.e., burrows).	Unlikely: the vineyard, routinely disked cropland, and disturbed road shoulders do not provide suitable habitat for California tiger salamander. Developed areas and heavily trafficked roads are significant movement barriers between potentially suitable off-site breeding habitat and the site. The nearest record of this species in the CNDDB (2025) is an oak woodland area with vernal pool grasslands just southwest of the site. The site is not in designated critical habitat for California tiger salamander (USFWS, 2005b).

Giant garter snake	Thamnophis gigas	T	T	N/A	Freshwater marsh and low gradient streams; drainage canals and irrigation ditches, primarily for dispersal or migration.	Unlikely: due to its intermittent flow regime, Bear Creek does not provide suitable habitat for giant garter snake. This species is not known from this part of the county and there are no occurrences of giant garter snake in the CNDDB (2025) search area.
Northwestern pond turtle	Actinemys marmorata	PT	SC	N/A	Ponds, marshes, streams, and ditches with emergent aquatic vegetation and basking areas.	Unlikely: while the site does not provide suitable habitat for northwestern pond turtle, it could potentially occur in Bear Creek. The nearest occurrence of northwestern pond turtle in the CNDDB (2025) is approximately 4 miles north of the site.
Western spadefoot	Spea hammondii	PT	SC	N/A	Breeds and lays eggs in seasonal water bodies such as deep vernal pools or stock ponds.	Unlikely: the vineyard, routinely disked cropland, and disturbed road shoulders do not provide suitable habitat for western spadefoot. The nearest occurrence of western spadefoot in the CNDDB (2025) is in an area of vernal pool grasslands approximately 0.25 miles east of the sewer alignment.
Fish						
Steelhead - Central Valley DPS	Oncorhynchus mykiss irideus pop. 11	T	SC	N/A	Riffle and pool complexes with adequate spawning substrates within Central Valley drainages.	None: Steelhead do not occur in this reach of Bear Creek. The nearest occurrence of Central Valley steelhead in the CNDDB (2025) is approximately 0.5 miles north of the site in the Mokelumne River. The site is not in designated critical habitat for steelhead (NOAA, 2005).
Invertebrates						
Valley elderberry longhorn beetle	Desmocerus californicus dimorphus	T	None	N/A	Elderberry shrubs, usually in Central Valley riparian habitats.	None: No blue elderberry shrubs were observed in or adjacent to the subdivision site or along the sewer alignment. The nearest occurrence of valley elderberry longhorn beetle in the CNDDB (2025) is mapped along Bear Creek, extending east

						and west of N. Tully Road. The site is not in designated critical habitat of this species (USFWS, 1980).
Vernal pool fairy shrimp	Branchinecta lynchi	T	None	N/A	Vernal pools.	None: there are no vernal pools or seasonal wetlands in the site. There are no occurrences of vernal pool fairy shrimp in the CNDDB (2025) search area. The site is not in designated critical habitat for this species (USFWS, 2005a).
Vernal pool tadpole shrimp	Lepidurus packardi	E	None	N/A	Vernal pools.	None: there are no vernal pools in the site. The nearest occurrence of vernal pool tadpole shrimp in the CNDDB (2025) is a large, nonspecific record around the City of Lodi, several miles southwest of the site. The site is not in designated critical habitat for vernal pool tadpole shrimp (USFWS, 2005a).
Conservancy fairy shrimp	Branchinecta conservatio	E	None	None	Vernal pools.	None: there are no vernal pools or seasonal wetlands in the site. There are no occurrences of this species recorded in the CNDDB (2025) search area. The site is not in designated critical habitat for Conservancy fairy shrimp (USFWS, 2005a).
Monarch butterfly	Danaus plexippus	E	None	None	Variety of habitats in California, primarily associated with coastal environments; larvae dependent on milkweed.	Unlikely: there is no suitable habitat in the site to support monarch butterfly. No milkweed, on which the larvae of this species depend on, was observed in the site. Monarch butterfly may fly over the site during its migration. There are no occurrences of this species in the CNDDB (2025) search area.

1 T= Threatened; E = Endangered; PT = Proposed Threatened; SC=State of California Species of Special Concern. 2 CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere.

Swainson’s hawk

The Swainson’s hawk is a migratory hawk listed by the State of California as a Threatened species. The Migratory Bird Treaty Act (MBTA) and FGCC protect Swainson’s hawks year-round, as well as their nests during the nesting season (March 1 through September 15). Swainson’s Hawk are found in the Central Valley primarily during their breeding season, a population is known to winter in the San Joaquin Valley.

Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds consisting of grasslands, irrigated pasture, hay, and wheat crops. Most Swainson's hawks are migratory, wintering in Mexico and breeding in California and elsewhere in the western United States. This raptor generally arrives in the Central Valley in mid-March and begins courtship and nest construction immediately upon arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their breeding territories by late August.

The site is within the nesting range of Swainson’s hawks and the CNDDB (2025) contains three records of nesting Swainson’s hawks within a mile of the site, with the nearest nesting territory being in an oak woodland area just southwest of the site. The larger oak trees in the site and large trees in the project vicinity that could support nesting Swainson’s hawks. A Swainson’s hawk was observed foraging in the field just northwest of the site during one of the June 2024 field surveys, which is a time of year when most Central Valley Swainson’s hawks are tending to young. It is likely there are nesting territories in the general project vicinity.

The project is participating in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (HCP). The HCP involves payment of fees and compliance with standard Incidental Take Minimization Measures (ITMMs) that are issued on a project by project basis. Pursuant to the HCP, if construction is scheduled to commence during the nesting season (i.e., between February 15 through August 31), and Swainson’s hawks are nesting in or near the site, a construction setback of twice the diameter of the dripline of the nest tree (as measured from under the nest) would be required until nesting is complete.

Giant Garter Snake

The giant garter snake is listed as threatened both under FESA and CESA and critical habitat for this species has been designated. Giant garter snake is endemic to the Sacramento and San Joaquin valleys where it is found in lowland areas. Historically, this species was found throughout the Central Valley from Butte County in the north to Kern County in the south. Currently, giant garter snake is only known to occur in 9 discrete populations in the Sacramento and San Joaquin valleys.

The giant garter snake is one of the most aquatic of garter snakes and is usually found in streams, marshes, and sloughs with mud bottoms. This species prefers slow moving waters with emergent herbaceous wetland vegetation for cover and foraging, and grassy banks and openings for basking. Giant garter snakes feed primarily on small fishes, tadpoles, and

frogs. Since they are aquatic hunters, they must have access to permanent, though not necessarily extensive, water.

Giant garter snake is apparently absent from large rivers, other water bodies that support introduced populations of large predatory fish, and from wetlands with sand, gravel or rock substrates. Historically, oxbows, overflow areas, and backwater sloughs or channels could have provided suitable habitat. Riparian woodlands do not typically provide suitable habitat because of excessive shade, lack of basking sites, and the absence of prey populations.

Essential habitat components of giant garter snake consist of: (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter; giant garter snakes inhabit small mammal burrows and other soil crevices for aestivation.

Due to its intermittent nature, paucity of escape cover and foraging habitat, and lack of connection with tidal delta waters, Bear Creek provides poor quality aquatic habitat for giant garter snake. Additionally, the grasslands in the site and near Bear Creek do not provide suitable aestivation habitat for giant garter snake. There are no occurrence of giant garter snake in the CNDDB (2025) search area.

Pursuant to the HCP, Bear Creek is considered “potential habitat” for giant garter snake, triggering an automatic “no construction” buffer extending 200 feet from the centerline of the creek. A buffer reduction to reduce the standard buffer to 0 feet was granted by San Joaquin Council of Governments (SJCOG) in March 2025, effectively allowing construction to occur near and in Bear Creek. Standard ITMMs for giant garter snake include a suite of avoidance and minimization measures for giant garter snake including conducting pre-construction surveys, dewatering the work area, if needed, implementing a worker environmental awareness program (WEAP), and restricting initial ground disturbance within 200 feet of potential habitat (i.e., Bear Creek) to between May 1 and October 1.

Northwestern Pond Turtle

Northwestern pond turtle has recently been proposed as Threatened at the Federal level and is a state Species of Special Concern. Northwestern pond turtles are associated with permanent or nearly permanent bodies of water with adequate basking sites such as logs, rocks or open mud banks. Pond turtles construct nests in sandy banks along slow-moving streams and ponds in the spring and the young usually hatch in 2 to 3 months. The nearest occurrence of northwestern pond turtle in the CNDDB (2025) is approximately four miles north of the site.

Although Bear Creek is dry much of the year, northwestern pond turtle could potentially occur in Bear Creek, swimming in the creek and basking on woody debris along the bank. The ruderal grassland in close proximity to the creek, including the sewer and storm drain

alignment, does not provide high quality nesting habitat for this species. No northwestern pond turtles were observed in the site during the field surveys.

Pursuant to the HCP, Bear Creek is considered "potential habitat" for northwestern pond turtle, triggering an automatic "no construction" buffer extending 300 feet from the centerline of the creek. A buffer reduction to reduce the standard buffer to 0 feet was granted by SJCOG in March 2025, effectively allowing construction to occur near and in Bear Creek. Standard ITMMs for northwestern pond turtle will include conducting pre-construction surveys for northwestern pond turtle and their nests and implementing temporary construction setbacks around any active nests.

Other Special-Status Species

The site does not provide highly suitable habitat for other special-status wildlife species. Tricolored blackbird may fly over or forage near the site on occasion, but the site and adjacent areas lack dense stands of emergent wetland habitat and open water, in which this species is highly associated during its nesting period. Yellow warbler is associated with well-developed riparian forest habitats adjacent to larger river systems. The only record of this species in the CNDDB (2025) is along the Mokelumne River further north of the site.

Due to being intermittent and lacking well-developed riparian vegetation, Bear Creek is not suitable for riparian-associated species such as riparian brush rabbit. Bear Creek does not contain a hydrologic regime for special-status fish, such as delta smelt or Central Valley steelhead.

There are no vernal pools or seasonal wetlands in or adjacent to the site for California tiger salamanders to breed and it is unlikely this species aestivates (i.e., live underground) in the vineyard or hay field in the site or in the disturbed road shoulders along the sewer and storm drain alignment. There is a record of California tiger salamander from 2002 (CNDDB, 2025) just southwest of the site in an oak woodland area that contains a few seasonal wetlands and vernal pools scattered in the grasslands. There are significant barriers to movement between this oak woodland/grassland area where the species has been found and the site, such as residential subdivisions, a school, and heavily trafficked roads. Similarly, western spadefoot is unlikely to occur on-site due to barriers to movement and a lack of suitable habitat in and adjacent to the site.

The lack of vernal pool and seasonal wetland habitat in the site also precludes the presence of vernal pool tadpole shrimp or Conservancy fairy shrimp. There are no blue elderberry shrubs in the site or along the sewer and storm drain alignment to support valley elderberry longhorn beetle. Monarch butterfly could fly over the site during its migration but would not be expected to occur in the site in a meaningful capacity due to a lack of suitable habitat; this species is also more common in southern California and coastal environments.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The project will participate in the HCP, which involves the payment of fees and implementation of ITMMs to avoid impacts on nesting birds and other special-status species. ITMMs are usually prescribed a few months prior to the start of construction by a SJCOG contract biologist based on habitats present in and near a project site.

The project is situated in a part of San Joaquin County that was not envisioned for near-term development when the HCP was being developed two to three decades ago. In conjunction with USFWS and CDFW, SJCOG brings such "un-mapped" areas into the HCP through a request to the Habitat Technical Committee (HTAC). The project was approved for participation in the HCP in March 2025, at which time SJCOG also corrected the habitat classification of the vineyard and approved buffer reductions for giant garter snake and northwestern pond turtle in support of off-site improvements near and in Bear Creek. This approval is documented in Attachment D to the Moore Biological Assessment (Appendix B).

A SJCOG contract biologist will prescribe the ITMMs a few months prior to the start of construction. Based on current habitat conditions and location of the site, we anticipate ITMMs will be prescribed for Swainson's hawk, giant garter snake, and northwestern pond turtle. ITMMs may also be prescribed for birds that nest along riparian corridors, burrowing owl, and/or other HCP covered species.

Critical Habitat

The site is not within designated critical habitat of federally listed vernal pool branchiopods, fleshy owl's clover, or other listed vernal pool plant species, California tiger salamander, valley elderberry longhorn beetle, Central Valley steelhead, delta smelt, or other federally listed species. Wildlife Movement Corridors

Well-developed riparian corridors are often utilized for movement by wildlife species such as deer, coyote, red fox, and bobcat, as well as a variety of amphibians, reptiles, and fish. Bear Creek contains riparian vegetation and common wildlife species likely occur in and around the creek. The placement of a sewer line along Bear Creek, either strapped to the Bear Creek bridge or bored and jacked under Bear Creek will not impede wildlife movement within and along the riparian corridor.

Groundwater Dependent Ecosystems

No potential Groundwater Dependent Ecosystems ("GDEs") are identified in or near the project site in the Eastern San Joaquin Basin Groundwater Sustainability Plan (ESGJA, 2022). The majority of the GDEs mapped in the subbasin are further west along the San Joaquin River and its tributaries. The site has a history of pumping groundwater to support agricultural production. While the proposed project will also rely on ground water, it will be less water intensive than under current conditions. The project is expected to result in in-lieu groundwater recharge and will have either no effect or a beneficial effect on groundwater levels and associated GDEs in the greater project vicinity.

Environmental Impacts and Mitigation Measures

a) Special-Status Species.

Of the special-status species identified in the Biological Assessment, most are considered unlikely to occur on the project site due to lack of suitable habitat. Of the special-status plant species, potential habitat along Bear Creek was identified for Sanford's arrowhead, listed on the California Native Plant Society's Rare Plant Inventory. However, the nearest

recorded occurrence of Sanford's arrowhead is approximately 2.5 miles southwest of the project site; therefore, occurrence of this species is considered unlikely.

While the project site may have provided habitat for several special-status wildlife species at some time in the past, farming and development have substantially modified natural habitats in the greater project vicinity, including most of the project site. Of the wildlife species identified in the CNDDB, Swainson's hawk are the special-status species with potential to occur in the project site on more than a transitory or occasional basis. Swainson's hawk could be adversely affected by conversion of foraging habitat to development and/or disturbed by construction if construction occurs in close proximity to active nests, which could result in nest abandonment.

The Biological Assessment noted that take authorization for project construction and in related improvements included in the proposed project will be best accomplished through participation in the SJMSCP. The SJMSCP covers potential take of the special-status wildlife species that may occur on the project site; conformance with Incidental Take Minimization Measures for each species will be required in conjunction with participation in the SJMSCP. Mitigation prescribed requires participation in the SJMSCP for the project and each related infrastructure improvement.

A buffer reduction to reduce the standard buffers for giant garter snake and western pond turtle was granted by SJCOG in March 2025, effectively allowing installation of the sewer line across Bear Creek. The ITMMs are expected to be include the standard avoidance measures for giant garter snake and western pond turtle outlined in the HCP.

Standard Take Avoidance measures outlined in the SJMSCP for nesting Swainson's hawks will likely be required. These will include pre-construction surveys for nesting Swainson's hawks within 0.5 miles of the site for construction activities between February 15 and August 31. If active nests are found, temporal restrictions on construction as outlined in the SJMSCP will be required.

Level of Significance: Potentially significant

Mitigation Measures:

BIO-1: The applicant will participate in and obtain coverage for the project under the San Joaquin County Multi-Species Habitat Conservation and Open Space (SJMSCP)prior to ground disturbance. The project applicant shall mitigate for the proportionate loss of potential wildlife habitat from the project site by paying required SJMSCP fees and implementing any Incidental Take Minimization Measures prescribed by the San Joaquin Council of Governments (SJCOG). A biologist representing SJCOG will visit the project site prior to the issuance of Incidental Take Minimization Measures.

Significance After Mitigation: Less than significant

b) Riparian and Other Sensitive Habitats.

There are no sensitive vegetation communities on the project site excepting the riparian woodlands along Bear Creek. As discussed above, the project is being used for farmland or vegetated in ruderal grasses and weeds. The potential removal of few oak trees along the pipeline alignments and minimal trimming and/or vegetation removal would result in less than significant impacts to sensitive vegetation communities.

A limited amount of riparian vegetation, including oaks, willows and Himalayan blackberries may also need to be removed and/or trimmed to allow for pipeline installation at the Bear Creek pipeline crossing. Tree removal and vegetation clearing/trimming associated with the project will be limited and is viewed as a less than significant impact. The project will involve construction of a new storm drain outfall in Bear Creek approximately 50 feet downstream of the N. Tully Road bridge. Additionally, the proposed sewer force main along N. Tully Road will cross over or under Bear Creek.

c) State and Federally Protected Wetlands.

Construction of the storm drain outfall will involve approximately 0.01 acres of permanent impact to jurisdictional Waters of the U.S. Permits from ACOE and RWQCB will be needed prior to the placement of any fill material (e.g., fill dirt, concrete, rock) in Bear Creek. The ACOE is expected to authorize the work under Nationwide Permit 58. As the outfall will involve the modification of the bed and bank of Bear Creek, notification to CDFW pursuant to FGCC Section 1602 for the outfall is also warranted; CDFW is expected to issue a Streambank Alteration Agreement to authorize the work. Level of Significance: Potentially significant

Mitigation Measures:

BIO-2: The applicant shall obtain Section 404 and 401 permit approvals for the proposed storm drain outfall. The applicant shall also notify CDFW of the proposed storm drain outfall and the sewer line crossing prior to construction.

Significance After Mitigation: Less than significant

d) Fish and Wildlife Movement.

The only wildlife movement corridors in the project area is the riparian corridors along Bear Creek. Well-developed riparian corridors, such as those along Bear Creek, are often utilized for movement by wildlife species such as deer coyote, and red fox as well as a variety of amphibians, reptiles, and fish. Habitat disturbance would be limited to a small amount of vegetation clearing and/or trimming during the installation of the proposed sewer force main. which will either be attached to the existing bridge or installed under the creek using trenchless technology, minimizing impacts to habitats to Bear Creek, its riparian corridor and its biological values. The force main crossing of Bear Creek will not impede wildlife movement, and the project is expected to result in less than significant impacts to wildlife movement.

e) Local Biological Requirements.

A few oaks and other trees may need to be removed along the proposed pipeline alignments. It can be expected that tree removal will be minimized to the maximum extent possible to install the pipeline. Tree removal and vegetation clearing/trimming associated with the project will be limited and is viewed as a less than significant impact.

Trees and grasslands in the site could be used by birds protected by the MBTA and/or FGCC. If vegetation removal or construction commences during the general avian nesting season (March 1 through July 31), a pre-construction survey for all species of nesting birds is recommended. If active nests are found, work in the vicinity of the nests should be delayed until the young fledge.

The project will not result in adverse impact to wildlife movement corridors. The sewer line across Bear Creek will not impede wildlife movement and Bear Creek is expected to continue to be used for wildlife movement.

The project is expected to result in in-lieu groundwater recharge and will have either no effect or a beneficial effect on groundwater levels and associated GDEs in the greater project vicinity.

f) Conflict with Habitat Conservation Plans.

As noted, Mitigation Measure BIO-1 would require the project to participate to in the SJMSCP and compliance with any applicable incidental take provisions as determined by SJCOG. No other habitat conservation plans apply to the project site. In the event that the applicant elects not to participate in the SJMSCP for a project, alternative mitigation that accomplishes the same purposes is required. The project would have no impact related to conflict with habitat conservation plans.

3.5 CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?			✓	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		✓		
c) Disturb any human remains, including those interred outside of formal cemeteries?		✓		

NARRATIVE DISCUSSION

Information for this section was provided primarily from a technical report prepared by Natural Investigations, Inc. The Natural Investigations report is available in Appendix C of this Initial Study. Analysis of potential cultural resource impacts described in the report involved a records search conducted by the Central California Information Center at California State University Stanislaus, along with a search of historic maps as detailed in the report

Environmental Setting

Human occupation of the northern San Joaquin Valley is believed to date before the terminal Pleistocene Epoch, 12,000 years before the present (BP). Although few archaeological sites demonstrate evidence of human occupation of the San Joaquin Valley during the late Pleistocene and early Holocene (12,000–6,500 BP), this is likely a deficiency of the archaeological record itself rather than lack of use of this area. Most Pleistocene- and early Holocene-epoch sites are deeply buried in accumulated gravels and silts or have eroded (Moratto, 1984). The earliest sites are on the San Joaquin Valley–Sierra Nevada foothills interface. Artifacts associated with this period are dominated by stemmed points and formed flake tools with diagnostic shapes; plant-processing stone tools are evident at between 6750 and 6500 BP.

Archaeological evidence from the Middle Holocene (6500–4500 BP) for the northern San Joaquin Valley is also limited to the San Joaquin Valley–foothills interface. Three sites have produced artifacts that date to the Middle Holocene. Artifacts from include stemmed projectile points and formed flake tools of the Early Holocene with the addition of Pinto Series projectile points.

Late Holocene (4500 BP–present)

The Early Period (4500–2500 BP) of the Late Holocene (4500 BP–present), attributed to the Windmiller Pattern, is known from several lower Sacramento Valley, and one Stockton area site. The Windmiller Pattern is characterized by the exploitation of a wide variety of terrestrial mammals, fish, and birds, and by an emphasis on hard-seed procurement. The artifact assemblage includes large spear and projectile points; trident fish spears; at least two types of fishhooks; quartz crystals and a diversity of charmstone styles; and baked clay net sinkers, pecan-shaped fish-line sinkers, and cooking balls. Groundstone items include both handstones and milling slabs, and the mortar and pestle. The bone tools include awls, needles, and flakes. Utilitarian items were often acquired as finished products through trade with outlying areas. Formal cemeteries appear to have been located both within and away from the village, and the deceased were often buried with red ochre and rich grave offerings.

The Middle Period (2500–1300 BP)

The Middle Period extended from approximately 2500–1300 BP in Central California and is commonly identified with the Berkeley Pattern. The primary difference between the Berkeley Pattern and the Windmiller Pattern is the greater emphasis on acorn consumption

within the Berkeley Pattern, reflected by more numerous and varied mortars and pestles. The Berkeley Pattern also possessed a well-developed bone industry and such technological innovations as ribbon flaking of chipped stone artifacts. Also, the arrow point replaced the dart point in the later reaches of this period.

Late Period (450–100 BP)

The final period is the Late Period (450–100 BP) identified with the Augustine Pattern. The Augustine Pattern appears to be related to the Berkeley Pattern, and the differences between the two may be the result of the combination of Berkeley traits with those carried into the central California region by migrating populations from the north, an event that began approximately 1800 BP.

The Augustine Pattern exhibited great elaboration of ceremonial and social organization. Exchange became well developed, and acorns were exploited with even greater intensity, as evidenced by shaped mortars and pestles and numerous hopper mortars. Other notable elements of the material culture assemblage included smaller arrow points, flanged tubular smoking pipes (cloud blowers); harpoons; an especially elaborate baked clay industry, including figures and pottery vessels (Cosumnes Brownware); and clamshell disk beads. Other traits included the introduction of the burning of offerings in a grave pit during the mortuary ritual, increased village sedentism, population growth, and an incipient monetary economy in which beads were used as a standard of exchange.

Ethnographic Overview

The project is located on lands historically occupied by the Northern Valley Yokut. Prior to Euro-American contact, the Northern Valley Yokut in the lower San Joaquin River watershed and its tributaries extending from Calaveras River in the north to approximately the large bend of the San Joaquin River eastward near Mendota. The lower San Joaquin River meanders through the territory making bends, sloughs, and marshes full of tule reeds as it meanders. Farther from the rivers and marshes, the valley floor would have been dry and sparely vegetated.

Northern Valley Yokut habitation areas were most commonly situated in proximity to rivers and tributaries, more often on the east side of the river. Yokut populations and habitation areas were generally concentrated near the San Joaquin River and in the foothills to the east. This focus on waterways can also be seen in their dietary resources, which included various fish, waterfowl, antelope, elk, acorns, tule roots, and various seeds. In particular, salmon was an abundant food during the fall spawning and in springtime. A focus on fishing is also seen in the material culture consisting of net sinkers and harpoons, likely used from rafts constructed from tule reed bundles.

Traditional larger habitation areas were often situated upon mounds, on or near riverbanks. Northern Valley Yokut dwellings were constructed of tule reed woven mats placed over a pole frame oval or round structure. These structures were generally from 25 to 40 feet in diameter and typically housed a single family. This is in contrast to the larger multifamily dwellings erected sometimes by the Southern Yokuts. In addition to dwellings, earth-covered ceremonial sweat lodges were constructed. While there were permanent, or semi-

permanent, habitation areas in association with riverine resources, peripheral camps used when gathering, hunting, and processing resources such as acorns and seeds were common.

The Northern Valley Yokuts saw a sharp and devastating decline from disease and relocation to coastal missions immediately after Spanish contact. This served to further increase with the large influx of cattle ranching, agriculture, and Anglo Americans after the gold rush.

Post-contact California history is divided into three distinct periods: the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–present). Although there were brief visits by Spanish, Russian, and British explorers from 1529 to 1769, the first significant settlement in California was established by the Spanish at San Diego in 1769. Between 1769 and 1823, 21 missions were built by the Spanish and the Franciscan Order along the coast between San Diego and San Francisco. The Spanish expeditions into the Central Valley in 1806 and 1808 led by Lieutenant Gabriel Moraga explored the main rivers, including the American, Calaveras, Cosumnes, Feather, Merced, Mokelumne, Sacramento, San Joaquin, and Stanislaus. Moraga is said to have named the lower Sacramento River and the valley region ‘Sacramento’ in honor of 'the Holy Sacrament' (Hoover et al. 2002).

In 1813, Moraga led another expedition in the lower portion of the Central Valley and gave the San Joaquin River its name (Hoover et al. 2002). The abundance of wildlife, such as waterfowl, fish, and fur-bearing animals, within or along the banks of the rivers attracted immigrants to this region. The last Spanish expedition into California’s interior was led by Luis Arguello in 1817. He and his men traveled up the Sacramento River, past the future site of the City of Sacramento to the mouth of the Feather River, before returning to the coast (Beck and Haase 1974:18, 20; Gunsky 1989:3–4).

The first American trapper to enter California was Jedediah Smith, who explored the Sierra Nevada in 1826 and 1827, entering the Sacramento Valley and traveling along the American and Cosumnes Rivers. In 1827, Smith also traveled through the San Joaquin Valley. Other trappers soon followed, including employees of the Hudson’s Bay Company in 1832 (Hoover et al. 2002). Between 1830 and 1833, and again in 1837, diseases were introduced by non-indigenous explorers, trappers, and settlers. These along with relocation to the missions, military raids, and settlement by non-native groups, decimated native Californian populations, communities, and tribes in the Sacramento and San Joaquin valleys (Cook 1976a; 1976b).

The American Period was initiated in 1848 with the signing of the Treaty of Guadalupe Hidalgo, which ended the Mexican–American War (1846–1848) and incorporated California as a territory of the United States. Gold was discovered at John Sutter’s Mill on the American River in Coloma the same year, and by 1849, nearly 90,000 people had journeyed to the gold fields to share in the riches. In 1850, largely as a result of the Gold Rush, California became the thirty-first state. Four years later, the bustling boomtown of Sacramento became the state capital.

Immigrants to California seeking their fortune in the gold fields arrived from around the world. Some “argonauts” arrived by ship in San Francisco, while others came over the

Sierra Nevada using previously established trails. Two of these trails are the California Trail and the Mormon Emigrant Trail (MET). The MET soon became a popular route to Placerville and the gold fields of the Sierra Nevada. A spur of this trail also turned north at Placerville and headed to Georgetown. Another major spur of the MET was identified between 1851 and 1853 by John Calhoun, better known as "Cock-Eyed" Johnson (Petershagen 1991; Supernowicz 1983, 1993). Johnson's Cut-Off left the MET and followed a trail over the Sierra Nevada near Echo Summit and into Placerville generally following the current Highway 50 corridor. In addition, another route, the Georgetown Cut-Off or Georgetown Junction Road, split off from Johnson's Cut-Off near Wright's Lake Road and headed directly to Georgetown. Some of these roads in the area were so heavily used that they became major thoroughfares and in some cases toll roads. In 1853 Placerville persuaded the county to declare the wagon road over the Sierra Nevada to Nevada Territory as a public thoroughfare, and in 1858 county officials approved the creation of privately run toll roads along the route, which eventually became the Placerville Road. Some of these roads also supported overland stage traffic after 1850 and the Pony Express between 1860 and 1861.

Mining was a major enterprise across the Georgetown and surrounding area throughout the latter half of the 19th century. During the late 1870s and 1890s, however, national economic crises drove down the price of gold and generally made mining an unprofitable endeavor. The gold mining industry recovered at the beginning of the 20th century and expanded to include prospecting for other potentially valuable minerals. Mining activity

ceased once again during World War I through the following decade. Mining activity was briefly revived during the Depression, as individuals turned toward prospecting as a way to either supplement or generate an income. With the onset of World War II, mining activity diminished and did not recover as a major industry in the area.

Gold mining attracted people to the Sierra Nevada and also opened the region to new business enterprises and occupations. The growth of many of these businesses and occupations is directly related to mining. For example, miners generated a need for a wide variety of supplies and services. Indeed, some of the most successful people in the region were not miners, but rather businessmen who supplied the miners. Many of these businessmen and businesses were established by discouraged miners who were not very successful in the gold fields. Consequently, new businesses and occupations, including farming, dairying, ranching, and logging, were established in the region. Indeed, by the 1870s, grazing of both sheep and cattle was one of the largest industries in El Dorado and Placer Counties, and by the 1880s commercial fruit orchards covered a large expanse of the foothills in the region. Both mining and agriculture placed water at a premium. Water companies, such as the California Water Company, were established to construct dams, reservoirs, and ditch systems to both satisfy and profit from the water demand. Some of these water conveyance systems are still in use.

Regional economic boom and population growth, however, had a negative impact on Native American populations. The loss of land and territory (e.g., traditional hunting and gathering locales), malnutrition, starvation, and violence contributed to the decline of Native Americans across the Sierra Nevada foothills and the rest of the state.

San Joaquin County

San Joaquin County saw limited settlement during the Spanish and Mexican periods. However, after the California Gold Rush, the area experienced a surge in population as former gold seekers recognized the agricultural potential of the region, particularly for wheat farming and later the cultivation of row and orchard crops, as well as cattle ranching. The establishment of numerous small towns was facilitated by railroad development, which provided access to goods and employment, thus shaping settlement patterns in the broader San Joaquin Valley. Agriculture and ranching have historically been the primary land uses in this area, a tradition that continues today.

Woodbridge, one of the earliest communities in the county, began in 1852 as a ferry crossing serving those bound for the eastern gold fields. The town was formally laid out in 1859 with the construction of a bridge across the Mokelumne River, leading to the rapid development of ranches and farmhouses across the hillsides and valley floor. By the mid-1850s, the landscape featured fenced pastures, corrals, cultivated fields, and various structural complexes as depicted on historic maps.

Another significant early settlement was on Charles M. Weber's land grant from the 1840s. By 1850, the incorporation of Stockton as a city had occurred, and by 1854, it boasted a population of 7,000, making it the fourth-largest city in the state. Stockton's location as a river port fueled its growth into a vibrant center of trade and commerce. The area saw significant development in freighting, staging, agriculture (primarily wheat and grains), livestock raising, and local commerce. By the 1860s, grains emerged as a major commercial crop, with Stockton becoming a pivotal shipping point for California's grain trade, much of which was destined for foreign markets.

The presence of the railroad also contributed to the growth of Placer County’s agricultural industry, mainly fruits and nuts, since the rail line provided access to a large market east of the Sierra Nevada.

Lockeford

Lockeford, located in San Joaquin County, California, was established in the mid-19th century by Dr. Dean Jewett Locke and his brother Elmer H. Locke. In 1851, the Locke brothers built the first cabin in the area, initially spending their nights in oak trees to avoid grizzly bears. Recognizing the strategic importance of the location, Dr. Locke constructed and maintained a ford across the Mokelumne River, facilitating travel and trade. In 1859, his wife, Delia Hammond Locke, named the emerging settlement "Lockeford" in honor of this crossing.

The town's development accelerated with the establishment of essential services and infrastructure. A general store known as the "White House" and a hotel were among the early structures, serving the growing community. Chinese laborers contributed significantly by molding and firing bricks for these buildings. Lockeford maintained strict temperance views, striving to remain free of alcohol. In 1882, the arrival of a narrow-gauge railroad from Brack's Landing included Lockeford as a stop, further enhancing its connectivity and growth.

Today, many of Lockeford's original structures remain, reflecting its rich historical heritage. The town's early commitment to infrastructure and community services laid a strong foundation for its continued development.

Sacred Lands File Search

Natural Investigations requested a Sacred Lands File search from the Native American Heritage Commission to identify any sensitive Native American cultural resources in or near the project area and received results of the NAHC search on March 12, 2025. The results of the SLF search were negative for sensitive Native American cultural resources in the project area.

The NAHC also provided contact information for tribal members and organizations affiliated with the region. Natural Investigations sent letters and maps to all tribal contacts included on the NAHC list on March 12, 2025, informing them of the Project and requesting any information regarding the project area that they would be willing to share. If no response was received, follow-up phone calls were made on March 25, 2025. To date, three responses to the request have been received.

- Ms. Anna Starkey, Cultural Regulatory Manager, of the United Auburn Indian Community of the Auburn Rancheria, responded by email stating that the project falls outside their geographic and cultural affiliation area and thus, they have no comment.
- Mr. Ketchum of the Amah Mutsum Tribal Band replied by email stating the project is outside their traditional tribal territory and to contact the North Valley Yokuts Tribe. No response from the Yokuts has been received.
- Ms. Reyes from the Chicken Ranch Rancheria of Me-Wuk Indians responded by email stating the Tribe has no comments, concerns, or questions at this time.

Field Survey

An intensive-level pedestrian survey within the 105-acre project area was conducted by Natural Investigations archaeologists, Dylan Stapleton and Olivia Bohmann on February 14, 2025. All portions of the 105-acre project area were surveyed intensively using transects spaced no greater than 15 meters apart.

During the pedestrian survey, all visible ground surface within the project area was carefully examined for cultural material (e.g., flaked stone tools, tool-making debris, stone milling tools, or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Ground disturbances (e.g., animal burrows, drainages, dirt roads, etc.) were visually inspected. A digital camera was used to take photographs of the Study Area, a Munsell® Soil Color Chart was used to record soil color, and a handheld BE-3300-GPS global positioning system (GPS) unit with sub-meter accuracy was used to record locational data.

No new prehistoric sites, features, or ethnographic sites were recorded during the survey. Three newly identified historic era sites were recorded: NIC-2025-Lockeford-01 (transmission line segment), NIC-2025-Lockeford-02 (North Tully Road segment), and NIC-2025-Lockeford-03 (Brandt Road segment). California Department of Parks and Recreation (DPR) 523 Series site records were completed for the resources and are provided in the Natural Investigations report; the written report is not provided in this IS/MND but is available to qualified reviewers at the San Joaquin County Community Development Department. Natural Investigations evaluated the site against the California Register of Historical Resources (CRHR) criteria to determine its eligibility for listing. The evaluation is detailed in Appendix C. The sites do not meet the eligibility requirements for listing on the CRHR under any of the four criteria. Their common design, continuous modifications, and lack of historical significance indicate they do not contribute meaningfully to California's historical or cultural heritage. Additionally, the loss of original integrity further diminishes any potential eligibility.

Potential For Buried Archaeological Deposits

The project area rests upon the Modesto Formation, consisting of geologically recent sediments (i.e., around 12,000 years before present to present). However, due to the highly disturbed nature of the project area, the likelihood of uncovering undisturbed subsurface archaeological deposits through Project implementation is low.

Environmental Impacts and Mitigation Measures

a) Historical Resources.

The Central California Information Center records search revealed that three previously documented historic-era sites were located on the general project vicinity. No recorded historic sites were located on the project site itself. None of the recorded resources would be impacted by project development. Therefore, project impacts on historical resources are considered less than significant.

b) Archaeological Resources.

Natural Investigations record search and pedestrian survey of the project site did not reveal any archaeological resources and no resources of archaeological importance; their report found that the likelihood of inadvertent discoveries during project construction was low. Based on these findings, the project would not involve a significant archeological impact.

However, it is conceivable that ground disturbance activities associated with construction of improvements could unearth archaeological materials of significance that are currently unknown. The Natural Investigations report project recommended procedures to address archaeological discoveries if they should occur. These procedures are set forth in the mitigation measure below. Implementation of this mitigation measure would reduce potential impacts on archaeological resources to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

CULT-1: In the event that cultural resources are inadvertently discovered during project activities, work should be halted within 30 feet of the find and a qualified archaeologist (i.e., archaeologist that meets the qualifications at 36 CFR Part 61) should be retained to assess its potential significance. Construction activities may continue in other areas but may not resume in the area of the find until the significance of the find is assessed, and it is appropriately treated. If the find is not significant no additional cultural resources investigations are necessary, and project work may resume in the area of the find. If the find is determined significant, additional cultural resources investigations, such as data recovery excavation, may be warranted and would be determined in consultation with the project applicant, the County, appropriate Tribes, and any other relevant regulatory agencies or interested parties, as appropriate.

Significance After Mitigation: Less than significant

c) Human Burials.

It is unlikely that construction of improvements would encounter Native American or other burials. Should burials be uncovered during construction, however, CEQA Guidelines Section 15064.5(e) and California Health and Safety Code Section 7050.5 describe the procedure to be followed when human remains are uncovered in a location outside a dedicated cemetery. Mitigation described below would ensure compliance with these requirements, which would ensure that project impacts on human remains if any would be less than significant. Section 3.18, Tribal Cultural Resources, also discusses potential impacts on Native American burials.

Level of Significance: Potentially significant

Mitigation Measures:

CULT-2: In the event of discovery of human remains, which is always a possibility, State of California Health and Safety Code Section 7050.5 covers these discoveries, except on federal lands. The referenced code requires that no further disturbance may occur until the County Coroner has made a determination of origin and disposition of the remains pursuant to PRC Section 5097.98. The County Coroner must be notified of the find immediately upon discovery. If the human remains are determined to be of Native American origin, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendent (MLD). The MLD must complete an inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

Significance After Mitigation: Less than significant

3.6 ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?			✓	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				✓

NARRATIVE DISCUSSION

Environmental Setting

Electricity is a major energy source for residences and businesses in California. In San Joaquin County, electricity consumption in 2020 totaled approximately 5,737 million kilowatt-hours (kWh), of which approximately 3,621 million kWh were consumed by non-residential uses and the remainder by residential uses (CEC 2022a). Natural gas is another major energy source. In San Joaquin County, natural gas consumption in 2020 totaled approximately 184 million therms, of which approximately 95 million therms were consumed by non-residential uses and the remainder by residential uses (CEC 2022b). Motor vehicle trips also account for substantial energy usage. The SJCOG estimated countywide daily vehicle miles traveled (VMT) was 17,868,785 miles in 2015, which led to the consumption of approximately 511 million gallons of gasoline and diesel fuel (SJCOG 2018).

California has adopted a Renewables Portfolio Standard, which requires all electricity retailers in the state to generate 33% of electricity they sell from renewable energy sources (solar, wind, geothermal, etc.) by the end of 2020. As of the end of 2019, most of the retail sellers were on track to meet or exceed the 2020 target (CEC 2020). In 2015, SB 350 was signed into law, which increased the electricity generation requirement from renewable sources to 50% by 2030. In 2018, SB 100 was enacted, which accelerated the schedule for 50% electricity generation from renewable sources to 2026 and set a goal of 60% electrical generation from renewable sources by 2030. It also set the goal that zero-carbon resources will supply 100% of electricity to California by 2045.

Environmental Impacts and Mitigation Measures

a) Project Energy Consumption.

Project construction activities would involve fuel consumption and use of other non-renewable resources. Construction equipment activities typically runs on diesel fuel or

gasoline. The same fuels typically are used for vehicles that transport equipment and workers to and from a construction site. However, construction-related fuel consumption would be finite, short-term, and consistent with construction activities of a similar character. This energy use would not be considered wasteful, inefficient, or unnecessary. In addition, as discussed in Section 3.3, Air Quality, implementation of Mitigation Measure AQ-1 would require equipment that uses less fossil fuel, including electrical equipment whenever feasible.

It is expected that more electrical construction equipment would be used increasingly in the future, as it would generate fewer air pollutant emissions. Electricity consumption would be consistent with construction activities of a similar character; therefore, the use of electricity to power construction equipment would not be considered wasteful, inefficient, or unnecessary, especially since direct fossil fuel consumption would be reduced. Moreover, indirect consumption of fossil fuels for electricity would be reduced as electricity providers comply with the Renewables Portfolio Standard, thereby providing more electricity from renewable sources.

Gasoline and diesel fuels would be consumed by employee vehicles and maintenance vehicles and equipment as part of project operations. The fuel consumption would be consistent with the anticipated number of employees and maintenance work. Excessive fuel consumption is not anticipated, especially since a range of actions at the federal and State level are being taken to improve vehicle fuel economy (Congressional Research Service 2021). As noted in Section 3.3, Air Quality, backup generators that may run on diesel fuel may be used, but only during power outages. Therefore, only infrequent fuel consumption by generators is anticipated.

Proposed residences would be constructed in accordance with California Building Code energy requirements (CalGreen), which would resulting in reduced energy demand, consistent with current efforts to minimize and avoid wasteful energy usage. Overall, project construction and operations are not predicted to consume energy resources in a manner considered wasteful, inefficient, or unnecessary. Project impacts related to energy consumption are considered less than significant.

b) Consistency with Energy Plans.

San Joaquin County has no known local renewable energy or energy efficiency plans. As such, the project would have no impact related to consistency with energy plans.

3.7 GEOLOGY AND SOILS

Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

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 strata or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site 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, creating substantial direct or indirect risks to life or property?			✓	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✓
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		

NARRATIVE DISCUSSION

Environmental Setting

The Lockeford and the project site are in the Central Valley, which is a topographically flat, northwest-trending trough about 50 miles wide and 450 miles long. The Geologic Map of the Sacramento Quadrangle (Wagner et al. 1981) indicates the underlying geology of the area as a combination of the Modesto and Riverbank Formations. The Modesto

Formation, ranging in depth from 10 to 200 feet, consists primarily of sand, silt, and clay seams deposited by rivers. The Riverbank Formation, ranging in depth from one to more than 200 feet, consists of weathered gravel, sand, and silt (DWR 2014).

The project area includes a two soil types: Bruella sandy loam, hard substratum, 0-2 percent slopes and Tokay fine sandy loam, 0-2 percent slopes (NRCS 2025). These soils are generally loamy, productive, deep, well-drained and considered prime with irrigation.

There are several faults and potential fault traces located within San Joaquin County, concentrated along its eastern and western margins. No active or potentially active faults have been identified in the project area – the nearest active fault is the Foothills Fault Zone in the Sierra Nevada foothills east of San Joaquin County. However, the County is in a region that lies between two areas of substantial seismic activity – the Foothills Fault Zone and the San Andreas Fault System of the greater San Francisco Bay Area to the west. Active faults associated with the San Andreas Fault System include the Concord, Calaveras, Hayward, and San Andreas Faults, all of which can cause ground shaking that could potentially be felt within the County (San Joaquin County 2016).

The San Joaquin Valley contains exceptionally productive Pliocene-age (approximately 2 to 4.5 million years old) fossil-bearing beds, particularly in the western portions of the region. The rock deposits in this area produce a world-famous supply of paleontological treasures, including but not limited to abundant and perfectly preserved sand dollars, Pectens, and various freshwater mollusks. These fossils are entombed in the sediments deposited within a complex intergrading of fresh water, estuarine, and marine paleo conditions directly related to the last great inland sea that periodically inundated the modern Central Valley of California (Impact Sciences, Inc. 2014).

A record search of the Museum of Paleontology at the University of California in Berkeley indicated that 97 paleontological finds have been made in the County (UCMP 2020). Most specimens from the County have been found in rock formations in the foothills of the Diablo Mountain Range. However, remains of extinct animals, such as mammoth, may be found in the predominant Modesto Formation but may also be found virtually anywhere in the County, especially along watercourses such as the San Joaquin River and its tributaries.

No unique geologic features, fossil-bearing strata, or paleontological sites have been recorded within the immediate project area. While the underlying metavolcanic rocks mapped in the area have the potential to contain fossilized remains, the overall paleontological resource sensitivity is considered moderate based on SVP criteria (SVP 2010). At this time, no further paleontological resource work is recommended.

Environmental Impacts and Mitigation Measures

a-i) Fault Rupture Hazards.

There are no known faults within or near the project area. It is not within an Alquist-Priolo Special Studies Zone, nor is it on a seismic hazard zone map prepared under the Seismic Hazards Mapping Act (California Geological Survey 2022). The project would have no impact related to fault rupture hazards.

a-ii) Seismic Ground Shaking.

As noted, the project area may be subject to ground shaking from earthquakes occurring outside the County. Proposed site improvements and housing development would be required to comply with applicable provisions of the California Building Code adopted at the time of their construction. The 2022 California Building Code is the current version adopted by the County. The California Building Code includes seismic safety provisions that would minimize ground shaking impacts. Project impacts related to ground shaking would be less than significant.

a-iii) Other Seismic Hazards.

A great deal of soil compaction and settlement can result from seismic ground shaking. If the sediments which compact during an earthquake are saturated, water from voids is forced to the ground surface, where it can emerge in the form of mud spouts or sand boils – a phenomenon known as liquefaction. Soils experiencing liquefaction lose their supporting capacity, with the result that structures may settle into the ground. Based on known information, the Delta and other areas of the County with groundwater less than 50 feet from ground surface in unconsolidated sediment are susceptible to liquefaction (San Joaquin County 2016). According to the most recent available groundwater report, the groundwater level in the project area is approximately100 feet below ground surface (San Joaquin County Flood Control District 2024). The groundwater level is considered too deep for liquefaction to be an issue. Additional information related to liquefaction is provided in the soils/geotechnical report for the project.

Lurching is defined as sudden lateral ground movement toward steep, unsupported embankments during seismic shaking. Due to the general low-lying topography, the risk of lurching in San Joaquin County is low except near dam structures or levees (San Joaquin County 2016). The project site is not near any dam structures or levees.

As noted, the proposed site improvements and residential development would comply with the seismic requirements of the California Building Code in effect at the time of construction, which would reduce potential seismic impacts. Project impacts related to other seismic hazards would be less than significant.

a-iv) Landslides.

The project site is relatively flat. There are no slopes that could be subject to landslides within the project site. The project would have no impact related to landslide risk.

b) Soil Erosion.

Construction activities associated with many of the proposed improvements would disturb soils, making them more susceptible to water erosion. Projects that disturb one acre of ground or more are required to obtain a Construction General Permit from the SWRCB; this would apply to all phases of the project. Conditions of the Construction General Permit would require preparation of a Storm Water Pollution Prevention Plan (SWPPP) by a Qualified SWPPP Developer; the SWPPP would include implementation of Best Management Practices to avoid or minimize adverse water quality impacts from erosion

and sedimentation. Best Management Practices fall within the categories of Temporary Soil Stabilization, Temporary Sediment Control, Wind Erosion Control, Tracking Control, Non-Storm Water Management, and Waste Management and Materials Pollution Control. Implementation of the conditions of this permit would reduce project impacts related to soil erosion to a level that would be less than significant.

c) Unstable Soils.

The proposed improvements required to prepare proposed lots for house construction would be constructed on essentially flat land. There are no known concerns with soil stability in the area other than expansive soils, the potential for which is discussed in d) below.

Subsidence occurs when a large land area settles due to over saturation or extensive withdrawal of groundwater, oil, natural gas, or by hydrocompaction or oxidation of peat. Within San Joaquin County, subsidence is usually the result of pumping groundwater or oxidation of peat in the Delta (San Joaquin County 2016). The Lockeford area is not within the Delta, but it is within the Eastern San Joaquin Groundwater Subbasin, which is in an overdraft condition (see Section 3.10, Hydrology and Water Quality). Land subsidence has not historically been an area of concern in the Subbasin, and there are no records of land subsidence caused by groundwater pumping in the Subbasin (ESJGA 2019). As noted, proposed improvements would comply with the adopted California Building Code, which addresses potential seismic and other geotechnical issues. Project impacts related to unstable soils would be less than significant.

d) Expansive Soils.

Certain soil types expand or shrink based on the moisture content of the soil. Soils rich in clay are usually more susceptible to expansion or shrinking. Expansive soils can cause significant damage to structures and foundations.

As noted, two soil types have been identified in the project area. Of these soil types, the following were rated as having at least a moderate expansive potential: Bruella sandy loam, hardpan and Tokay sandy loam. These soils have relatively low shrink swell potential and will not cause any expansiveness threat to the proposed project. This is considered a less than significant impact.

e) Adequacy of Soils for Wastewater Disposal.

The project would be connected to the CSD's wastewater collection and treatment system. It would not involve the use of any septic tanks or alternate wastewater disposal systems. Therefore, the adequacy of soils for wastewater disposal from such systems is not relevant to this analysis. The project would have no impact on this issue.

f) Paleontological Resources and Unique Geologic Features.

As noted, paleontological resources are more likely to be found in other parts of San Joaquin County than in the Lockeford area. However, the project site is underlain by a geological unit consisting in part of the Modesto Formation, which has in the past been

associated with discovery of paleontological resources. It is conceivable that excavation and ground disturbance associated with the project could unearth paleontological materials of significance. The establishment of mitigating procedures to address the occurrence of paleontological discoveries during construction would reduce any potential impacts to a level that would be less than significant. These procedures are set forth in the mitigation measure presented below. Implementation of this mitigation measure would ensure that impacts on paleontological resources would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

GEO-1: In the event that a paleontological resource is inadvertently discovered during project-related excavation work, regardless of the depth of work or location, work must be halted within 30 feet of the find and a qualified paleontologist (SVP 2010) notified immediately so that an assessment of its potential significance can be undertaken. If the find is determined to be significant, it should be salvaged following the standards of the SVP (2010) and curated with a certified repository such as the UCMP.

Significance After Mitigation: Less than significant

3.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

NARRATIVE DISCUSSION

Global climate change is a change in the average weather conditions, such as temperature and rainfall, of the Earth over a long period of time. Recent scientific observations and studies indicate that global climate change, linked to an increase in the average global temperature that has been observed, is now occurring. There is a consensus among climate

scientists that the primary cause of this change is greenhouse gas (GHG) emissions generated primarily by human activities (CAPCOA 2009).

Environmental Setting

Background

Greenhouse gases (GHGs) are gases that absorb and emits radiation within the thermal infrared range, trapping heat in the earth's atmosphere. There are several types of GHGs, which are both naturally occurring and generated by human activity. Increased atmospheric concentrations of GHGs are considered a primary contributor to global climate change, which is a subject of significant concern for the State of California. Potential climate change impacts occurring in the San Joaquin Valley include more intense and frequent heat waves, higher frequency of catastrophic floods, more intense and frequent drought, and more severe and frequent wildfires (Fernandez-Bou, et.al. 2021).

GHG emissions in California in 2021, the most recent year for which data are available, were estimated at approximately 381.3 million metric tons carbon dioxide equivalent (CO_2e) – a decrease of approximately 21.5% from the peak level in 2004 but an increase of 3% from 2020. Transportation was the largest contributor to GHG emissions in California, with almost 40% of total emissions. Other significant sources include industrial activities, with approximately 22% of total emissions, and electric power generation, both in-state and imported, with approximately 16% of total emissions (ARB 2023).

Unlike the criteria air pollutants described in Section 3.3, Air Quality, GHGs have no "attainment" standards established by the federal or State government. In fact, GHGs are not generally thought of as traditional air pollutants because their impacts are global in nature, while air pollutants mainly affect the general region of their release to the atmosphere. Nevertheless, the U.S. Environmental Protection Agency has found that GHG emissions endanger both the public health and public welfare under Section 202(a) of the Clean Air Act due to their impacts associated with climate change (EPA 2009).

Regulatory Framework

The State of California has implemented GHG emission reduction strategies through Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, which requires total statewide GHG emissions to reach 1990 levels by 2020, or an approximately 29% reduction from 2004 levels. Total state GHG emissions in 2019 were almost 13 million metric tons CO_2e below the 2020 target established by AB 32 (ARB 2021).

In 2016, Senate Bill (SB) 32 became law. SB 32 extends the GHG reduction objectives of AB 32 by mandating statewide reductions in GHG emissions to levels that are 40% below 1990 levels by the year 2030. The State has adopted an updated 2022 Scoping Plan that sets forth strategies for achieving the SB 32 target. The 2017 Scoping Plan proposes various measures to achieve the 2030 target. Most of these are State measures, such as use of the cap-and-trade program, the Short-Lived Climate Pollutant Plan, and achievement of the 50% renewable sources of electricity in the Renewables Portfolio Standard. The updated Scoping Plan continues many existing programs such as low-carbon fuel standards,

renewable energy, and methane reduction strategies, along with a proposed 20% reduction in GHG emissions from refineries. It also addresses for the first time GHG emissions from the natural and working lands of California, including the agriculture and forestry sectors.

The County currently does not have a GHG emission reduction plan, also known as a Climate Action Plan. Policy PHS-6.2 of the County General Plan states that the County shall reduce community GHG emissions by 15% below 2005 levels by 2020 and shall strive to reduce GHG emissions by 40% and 80% below reduced 2020 levels by 2035 and 2050, respectively. These goals are consistent with State reduction goals.

In 2008, the State enacted SB 375, which requires a metropolitan planning organization to include a Sustainable Communities Strategy (SCS) in its Regional Transportation Plan . The SCS demonstrates an approach to how land use development and transportation can work together to meet GHG emission reduction targets for cars and light trucks. These targets, set by ARB, call for the region to reduce per capita GHG emissions. If a metropolitan planning organization is unable to meet the targets through the SCS, then an alternative planning strategy must be developed which demonstrates how targets could be achieved. SJCOG is the metropolitan planning organization for San Joaquin County and its incorporated cities.

The ARB provided GHG reduction targets for SJCOG in 2019, setting them at a 12% per capita reduction relative to 2005 levels by 2020, and a 16% per capita reduction relative to 2005 levels by 2035 (SJCOG 2021aThe SCS includes policies and supporting strategies designed to attain the GHG per capita reduction targets. Among the strategies that may be relevant to the project are improving air quality by reducing transportation-related emissions; promoting safe and efficient strategies to improve the movement of goods by air, water, rail, and roadways; and promoting electric power, alternative fuels, and autonomous technologies for freight and agriculture.

Environmental Impacts and Mitigation Measures

a, b) Project GHG Emissions and Consistency with GHG Reduction Plans.

Estimates of GHG emissions of the project were developed using the CalEEMod program (see Section 3.3, Air Quality). Table 3-7 presents the results of the CalEEMod run. “Mitigated emissions” are the result of project compliance with applicable laws, rules, and regulations, including SJAPCD requirements. These include the following:

Construction:

Use of dust suppressants and watering
Limit vehicle speeds
Use of low VOC paint
Observe heavy equipment idling requirements

Operation:

Improve street connectivity

Pedestrian network improvement
Improve bike facility, orient project to bike/pedestrian facility
Locate project near bike path, school
Infill development
Buildings exceed 2019 Title 24
Limit wood burning devices
All-electric residences
Stormwater retention

As shown in Table 3-7, mitigated operational GHG emissions would be approximately 7.1% less than under business-as-usual (unmitigated) conditions. Construction GHG emissions would remain essentially unchanged.

TABLE 3-7
PROJECT GHG EMISSIONS

GHG Emission Type	Unmitigated Emissions (metric tons CO_2e)	Mitigated Emissions (metric tons CO_2e)
Construction[1]	450	450
Operational[2]	7,453	6,981

[1] Total GHG emissions for construction period.
[2] Annual emissions.
Source: California Emissions Estimator Model v. 2020.4.0.

SJVAPCD has not established quantitative significance thresholds for GHG emissions. However, nearby air districts such as the Bay Area Air Quality Management District and the Sacramento Metropolitan Air Quality Management District have established a quantitative threshold of 1,100 metric tons CO_2e to determine significance of project GHG emissions for CEQA purposes (BAAQMD 2017, SMAQMD 2021). This threshold applies to both construction and operational emissions. CEQA Guidelines Section 15064.7 allows for the use of significance thresholds established by other agencies.

The GHG construction emissions of the proposed project are well below the threshold of 1,100 metric tons CO_2e. Based on this threshold, project construction GHG emissions are less than significant. GHG construction emissions would be limited due to the length of time of construction activity, and these emissions would cease once work is completed. However, projected project GHG operational emissions would exceed this threshold, so further analysis is required.

As the County has no GHG reduction plan, analysis of project impacts will be based on the State's 2017 Scoping Plan, especially since County General Plan Policy PHS-6.2 is

consistent with the targets the Scoping Plan intends to achieve. Most of the measures the 2017 Scoping Plan proposes to achieve the 2030 target are State measures, including:

California Cap-and-Trade program
California Air Resources Board ow-carbon fuel standards
California vehicle emission standards, transitioning to zero-emission requirements
CalGreen renewable energy and energy conservation requirements
State methane emission reduction strategies

Based on estimates in the 2017 Scoping Plan, State actions would account for 89.8% of GHG reductions needed by 2030, with local actions accounting for approximately 9.3% of reductions. Applying this ratio to the percentage reduction for 2030, approximately 6.0% of the reduction from 2030 business-as-usual levels would be achieved by local measures. Therefore, a project that can show GHG reductions greater than 6.0% can be said to be consistent with the reduction goals of SB 32. With application of the project features listed above, project GHG operational emissions would be approximately 6.3% less than business-as-usual levels, which would exceed the 6.0% local reduction share. Therefore, the project would be consistent with the reduction goals of SB 32 and County General Plan Policy PHS-6.2.

The State of California has comprehensive GHG regulatory requirements, with laws and regulations requiring reductions that affect project emissions. The project is subject to several State regulations applicable to project design, construction, and operation that would reduce GHG emissions, increase energy efficiency, and ensure compliance with the Climate Change Scoping Plan (ARB 2017). Legal mandates to reduce GHG emissions from vehicles, for example, would reduce project-related vehicular emissions. Other mandates that would reduce GHG emissions include reducing per capita water consumption and imposing waste management standards to reduce methane and other GHGs from solid wastes.

As discussed in Section 3.6, Energy, the project would be subject to codes that require energy efficiency measures, which would reduce the amount of electricity produced by fossil fuels – a major source of GHG emissions. Also, as discussed in Section 3.6, attainment of the targets of the Renewables Portfolio Standard would reduce the amount of electricity generated by fossil fuels, further reducing GHG emissions from energy sources.

Based on the information provided above, the project would be consistent with GHG reduction plans of the State and with the County General Plan policy on mitigation of GHG emissions. Project impacts related to consistency with GHG emission reduction plans would be less than significant.

3.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 one-quarter mile 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 two miles of a public airport or public-use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				✓
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?		✓		
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				✓

NARRATIVE DISCUSSION

Environmental Setting

The State of California maintains two hazardous material site databases: the EnviroStor database, maintained by the Department of Toxic Substances Control (DTSC); and the GeoTracker database, maintained by the SWRCB. A summary of the results of the database searches is provided later in this section. A list of solid waste disposal sites identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit did not show any locations in San Joaquin County (CalEPA 2021a). Likewise, a list by SWRCB containing sites under Cease and Desist Orders and Cleanup and Abatement Orders showed no locations in the project area (CalEPA 2021b).

The Unified Hazardous Waste and Hazardous Management Regulatory Program, enacted in 1993, is a state and local effort to consolidate, coordinate, and make consistent existing programs regulating hazardous waste and hazardous materials management. The Unified Program is implemented at the local level by a Certified Unified Program Agency (CUPA). The San Joaquin County Environmental Health Department was approved by the State as the CUPA for the County and its incorporated cities.

Among other responsibilities, the CUPA provides the management and record keeping of hazardous materials through the Hazardous Materials Program, which inspects businesses for compliance with the State's Hazardous Waste Control Law and issues hazardous materials/waste permits to businesses that handle quantities greater than or equal to 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas at any given time. Businesses issued these permits are required to submit a Hazardous Materials Business Plan, which includes an inventory of hazardous materials and wastes and an emergency response plan for hazardous material incidents. These requirements typically do not apply to residential projects but rather to businesses involving use and storage of hazardous materials or production of hazardous waste.

Environmental Impacts and Mitigation Measures

a) Hazardous Materials Transportation, Use and Disposal.

Construction of proposed site improvements and homes would involve use of heavy equipment, fuels and construction materials with potential for hazardous materials spills or release to the environment. Potential hazard incidents would be localized and contained using materials on hand.

Proposed residential uses would not involve substantial storage, use or environmental releases of hazardous materials, other than consumer use of motor vehicles, household cleaning supplies and other chemical substances, which would vary in type and amount by household. Following completion of construction, the project would not involve any substantial storage or use of hazardous materials. Project operational impacts related to hazardous materials transportation, use and disposal would be less than significant.

b) Release of Hazardous Materials by Upset or Accident.

Project construction activities would involve the use of hazardous materials such as fuels and solvents, which would create a localized potential for hazardous material spills at construction sites. Construction and maintenance vehicles would transport and use fuels in ordinary quantities. Fuel spills would as a routine be avoided; if any occur, would be minimal and would not have significant effects outside the immediate vicinity of the spill. Contractors typically have absorbent materials at construction sites to clean up minor spills. Other substances used in the construction process would be stored in approved containers and used in relatively small quantities, in accordance with the manufacturers' recommendations and/or applicable regulations.

c) Release of Hazardous Materials near Schools.

As noted) above, hazardous materials spills, if any, associated with the project construction would be localized discharges to the soil; project construction would not involve the potential for substantial air toxic releases. The nearest school to the project site is Lockeford Elementary School, which is adjacent to and west of the project site. It is unlikely that any potential releases of hazardous materials on the project site would extend beyond its property boundaries. The project would have no impact related to hazardous material releases near schools.

d) Hazardous Materials Sites.

The EnviroStor and GeoTracker databases were searched for possible hazardous material sites that could affect the proposed project. Altogether, 12 sites were identified (DTSC 2022, SWRCB 2022). Two sites at Lockeford Elementary School are under investigation for possible contamination, and the Lockeford Vista/Luchessi Properties site is under a voluntary project clean-up. All three properties are located approximately one-quarter mile north of the project. Eight leaking underground storage tank sites were recorded in the Lockeford area. All eight sites have been cleaned up, and the investigations are now closed.

Innovative and Creative Environmental Solutions (ICES) conducted a preliminary investigation at the project site. to assess the potential presence of organochlorine pesticides, arsenic, lead, and mercury associated with former agricultural activities. A copy of the Preliminary Site Investigation is shown in Appendix C of this IS/MND.

ICES notes that the site had been used for agricultural applications since 1937. ICES collected soils samples on March 1, 2022; total of five soil samples were collected from five test pit locations. The approximate test pit locations shown in Figure 2 of the ICES report (Appendix C). Additional sampling and testing information is provided in the report. Samples were sent to a state-certified laboratory and analyzed for the presence of organochlorine pesticides using EPA method 8081B; and arsenic, lead, and mercury using EPA method 6020. Sample testing indicated that organochlorine pesticides, lead, and mercury were all below their respective residential environmental screening levels (ESLs). Arsenic concentrations ranging from 1.9 mg/kg to 3.0 mg/kg were above the residential ESL of 0.067 mg/kg; however, contaminant concentrations that are within background

levels are considered acceptable by regulatory agencies where their background levels exceed the corresponding ESL.

In 2024 ICES conducted a supplementary Site Investigation at the project site. The purpose of the supplementary investigation was to collect additional soil samples to further assess the potential presence of organochlorine pesticides, arsenic, lead, and mercury within the surficial soil that were associated with former agricultural activities on the site. ICES collected additional soil samples indicating that organochlorine pesticides, lead and mercury were all below their respective residential environmental screening levels (ESLs) and that arsenic concentrations were within background levels.

The results of the supplementary site investigation were generally consistent with the results of the initial preliminary site investigation. ICES believes that the results of the thirty soil samples were more than adequate to fully characterize the surficial sediments at the project site based on the firm's experience with similar agricultural properties. Based on these findings, it appears that the project site soils have not been adversely impacted by past agricultural activities. Therefore, the project would have a less than significant exposure to hazardous material contamination.

e) Airport Operations.

There are no public or public-use airports within two miles of the project area. The nearest public airport is Lodi Airport, approximately 6.7 miles northwest of Lockeford. Given this distance, proposed residential development would not expose people to potential safety hazards from Lodi Airport operations. The project would have no impact related to airport hazards.

f) Emergency Response and Evacuation.

Some of the subdivision improvements would require construction in or adjacent to public roadways, such as Tully Road. Improvement work along roadways would occur mainly within existing road rights-of-way; however, some work may occur within the roadway section itself. This could hinder responses by emergency vehicles and evacuations that may occur.

Improvement work or construction with public road rights-of-way would require an encroachment permit from the San Joaquin County Department of Public Works. An encroachment permit typically sets conditions on construction work to minimize its impact on roads and traffic. Construction work would be temporary and would cease once work is completed. Nevertheless, such work has the potential to restrict or obstruct roadways such that it would interfere with emergency responses or emergency evacuations. Mitigation presented below would ensure that vehicle and emergency access would be maintained during construction activities along roadways, reducing potential impacts to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

HAZ-1: Prior to the start of improvement construction that occurs within or adjacent to a public roadway, a Traffic Control Plan shall be prepared and implemented, The Traffic Control Plan shall include such items as traffic control requirements, resident notification of access closure, and daily access restoration, as required. The plan shall specify dates and times of road closures or restrictions, if any, and shall ensure that adequate access will be provided for emergency vehicles. The Traffic Control Plan shall be coordinated with the San Joaquin County Public Works, Sheriff's Department, and other affected agencies. Transportation as determined by the Project Engineer.

Significance After Mitigation: Less than significant

g) Wildland Fire Hazards.

The proposed project is in an area of mixed urban development and agricultural land. They are not located adjacent to any significant natural open spaces where wildland fires may occur. Agricultural land, due to its cultivated character and typical irrigation, does not involve an accumulation of fuel or otherwise create a significant fire hazard. The project would not involve any substantial increases in to fuel conditions or introduce new ignition sources except during construction; construction equipment must be fitted with approved spark arrestors.

Because of this, the project would have no impact related to wildland fire hazards. Refer to Section 3.20, Wildfire, for more detailed information on wildfire hazards.

3.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			✓	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			✓	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or				

through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or off-site?			✓	
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			✓	
iii) 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?				✓
iv) Impede or redirect flood flows?			✓	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			✓	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				✓

NARRATIVE DISCUSSION

Environmental Setting

Surface Water Hydrology

There are no surface water resources on or adjacent to the site. The unincorporated area south of the project site is traversed by Bear Creek. Bear Creek, an intermittent stream, originates in the Sierra Nevada foothills and flows in a generally southwest direction to Stockton, where it discharges into sloughs that eventually discharge into the San Joaquin River.

Slightly more than three-quarters mile north of Lockeford is the Mokelumne River. The Mokelumne River, with surface flows year-round, flows westward from its headwaters in the Sierra Nevada to the eastern edge of the Delta, where it meets the Cosumnes River. Snowmelt comprises a large portion of the Mokelumne River watershed's runoff (San Joaquin County 2016). The Mokelumne River is subject to storage and release standards at upstream reservoirs including Camanche Lake.

Groundwater Hydrology

As discussed in Section 3.19, Utilities and Service Systems, groundwater is the only source of water in the Lockeford area. Lockeford overlies the Eastern San Joaquin Subbasin of the San Joaquin Valley Groundwater Basin. Groundwater levels may fluctuate over time depending on precipitation, aquifer recharge, and pumping demands. As noted in Section 3.7, Geology and Soils, the groundwater level in the project area is greater than 100 feet below ground surface (San Joaquin County Flood Control District 2019).

As noted in Chapter 1.0, Introduction, the Eastern San Joaquin Subbasin is critically overdrafted, meaning significantly more groundwater has been withdrawn from the Subbasin than has been replenished. This has led to significant groundwater level depressions south of Lockeford. The Lockeford CSD currently withdraws approximately 400 acre-feet of groundwater per year from the Subbasin.

In 2014, the California Legislature passed the Sustainable Groundwater Management Act, the purpose of which is to give local agencies greater authority to manage groundwater supplies. The legislation requires the formation of local groundwater sustainability agencies that must assess conditions in their local water basins and adopt locally based management plans known as Groundwater Sustainability Plans. Plans for critically overdrafted basins must be adopted by January 31, 2020.

The Eastern San Joaquin Groundwater Authority, which oversees the Eastern San Joaquin Subbasin, submitted a Groundwater Sustainability Plan for the Subbasin to the California Department of Water Resources on January 29, 2020. Achieving sustainability in the Subbasin requires implementation of projects and management actions, including water supply projects that either replace groundwater use or supplement groundwater supplies to attain the current estimated pumping offset and/or recharge need. A list of 23 potential projects. representing a variety of project types, is included in the Subbasin's Groundwater Sustainability Plan. These include direct and in-lieu recharge, intrabasin water transfers, demand conservation, water recycling, and stormwater reuse (ESJGA 2019).

Flooding

The Federal Emergency Management Agency (FEMA) prepares maps that delineate areas subject to potential flooding. FEMA floodplain maps indicate that most of the Lockeford area is outside an identified floodplain. The only area within a floodplain is the area immediately adjacent to Bear Creek, which has been identified as a Special Flood Hazard Area. The Special Flood Hazard Area is the 100-year floodplain, which is the area of occurrence of a flood that is expected once every 100 years on average; the project site is not within the 100-year floodplain. It is the area of concern for FEMA's National Flood Insurance Program.

In 2007, the State of California approved SB 5 and a series of related Senate and Assembly bills known as "the SB 5 bills." The SB 5 bills define the State standard for flood protection in urban and urbanizing areas in the Central Valley as protection from the 200-year flood; they also establish requirements for implementing the 200-year standard such as changes

to zoning ordinances. The project site is not within a 200-year floodplain; therefore, SB 5 requirements do not apply.

Water Quality

The Central Valley RWQCB has prepared a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins. The Basin Plan identifies water quality standards that are based on identified beneficial uses and water quality objectives based on those uses. Beneficial uses listed for surface water bodies in the vicinity of the Lockeford area include municipal and domestic supply, agriculture supply, and industrial process and service supply, among others (RWQCB 2018a). In 2018, the Central Valley RWQCB adopted amendments to the Basin Plan that established a Central Valley-wide Salt and Nitrate Control Program, which would implement a plan for the control and permitting of salt discharges to surface and groundwater and of nitrate discharges to groundwater (RWQCB 2018b).

The Lockeford CSD wastewater system operates under WDR Order No. R5-2007-0179, issued by the Central Valley RWQCB. The WDR sets limitations on the effluent discharged from the WWTP treatment pond. These include a monthly average of no greater than 40 mg/L of biochemical oxygen demand, 10 mg/L of total nitrogen, and 550 mg/L of total dissolved solids. Additionally, as noted in Section 3.3, Air Quality, the treatment ponds are required to maintain a dissolved oxygen concentration of at least 1.0 mg/L in the upper one foot of the ponds to minimize odors. Treated effluent is not discharged into a stream or other water body; rather, it is used to irrigate a pasture in Reclamation Area 1.

Environmental Impacts and Mitigation Measures

a) Violation of Water Quality Standards.

As noted, the CSD's WWTP is required to comply with the conditions of WDR Order No. R5-2007-0179. The project would not impact WWTP operations; planned improvements to the LCSD system would not alter are expected to ensure that the wastewater system would continue to comply with the WDR even with anticipated additional wastewater generation. As noted, the wastewater system does not discharge effluent into any surface water bodies. Project impacts on water quality would be less than significant.

b) Groundwater Supplies and Recharge.

The proposed project and related improvements would include installation of rooftops, roadways, driveways and impervious surfaces that would have the potential to reduce groundwater recharge. The LCSD Wastewater Master Plan proposes the use of a planned Reclamation Area as potential discharge/recharge sites, which have the potential to increase the available groundwater recharge area.

The project and other future development in the Lockeford area would lead to increased demand on LCSD groundwater supplies. Kautz currently irrigates the project site vineyards with well water drawing on the underlying groundwater aquifer; this groundwater use will be reduced as the project site converted from agricultural to residential use. Although potable water service will be provided to the residential project from the LCSD system, the

future residential and open space uses will require additional withdrawal of groundwater via a new LCSD well to be constructed in conjunction with the project.

Additional water withdrawals to support the proposed residential uses will be offset by reductions in irrigation water use. This relationship was quantified in a 2020 engineering study by NEXGEN performed in conjunction with LCSD's consideration of Kautz Farms' request to LCSD for water service for a proposed residential development of 410 units, which is considerably larger than the proposed 296-lot project. Existing water use in the Kautz vineyards was quantified as ranging from 186 – 212 acre-feet per year, and potential water requirements for the assumed 410-unit residential project, based on existing usage records, were quantified at approximately 187 acre-feet per year; this calculated demand would substantially overstate the demand associated with the proposed 296-unit project. The NEXGEN study concluded that the net result of the assumed project would be a decrease in demand on the local groundwater resource; the potential reduction associated with the scaled-back project would be even greater. As a result, the project's groundwater effect would be considered less than significant. Project impacts related to groundwater would be less than significant.

c-i, ii) Drainage Patterns.

Project development and associated grading and paving and would modify existing drainage on the project site; drainage from this agricultural property would be redirected to streets and streetside drainage ways leading for the proposed stormwater retention pond and park. Runnoff water is expected to percolate into the soil, contributing to groundwater recharge, or evaporate.

c-iii) Runoff.

While implementation of the Master Plan would lead to additional improvements, they would not result in additional impervious surfaces. Because of this, no additional runoff would be generated. The project would have no impact on runoff.

c-iv) Flood Flows.

As noted, most of the Master Plan area is not within a Special Flood Hazard Area. However, proposed pipeline improvements along Tully Road and Brandt Road would cross the Special Flood Hazard Area designated for Bear Creek. As described in Section 3.4, Biological Resources, Mitigation Measure BIO-3 would require these pipelines to be installed either beneath the creek bed through a jack-and-bore method or attached to a bridge crossing the creek. In either case, the pipelines would not be installed in a manner that would impede or redirect any flood flows that occur along Bear Creek. Most of the other proposed improvements would be either outside a designated floodplain or would be undergrounded or too small to affect flood flows. Project impacts on flood flows would be less than significant.

d) Release of Pollutants in Flood Zone.

As noted in c-iv) above, most of the Lockeford area is not within a Special Flood Hazard Area, other than a limited area along the Bear Creek corridor. It is also not within a SB 5

200-year flood hazard area. The only portion of the wastewater system that could release pollutants if inundated would be the LCSD WWTP. Chlorine stored for wastewater treatment and raw sewage would be among the pollutants that could be released due to flooding. However, the WWTP is not within a designated floodplain, so such a release to flood waters would be unlikely.

The project area is not near a large body of water nor on the coast, so it would not be subject to any seiche or tsunami hazards. Flooding may occur because of levee failure along the Mokelumne River. However, flood flows would have to overtop SR 88 to result in flooding in the project area; therefore, SR 88 would act as a barrier to flood flows in the project area (Lockeford CSD 2011).

California Government Code Section 65302(g) requires local governments to assess the potential impacts a dam failure might have on their jurisdiction. As part of preparation of the County General Plan, potential dam inundation areas were identified and delineated. The one dam that poses a direct threat to the Master Plan area if it fails is Camanche Dam (San Joaquin County 2016). However, the potential for dam failure at any given time is considered low, and implementation of the Master Plan would not exacerbate existing risk.

In summary, the release of any pollutants in the project area due to flooding is unlikely. Project impacts related to this issue would be less than significant.

e) Conflict with Water Quality or Sustainable Groundwater Plans.

LCSD wastewater operations are required to comply with WDR Order No. R5-2007-0179, which seeks to minimize wastewater system impacts on water quality in the area. Project discharges to the WWTP would not conflict with known water quality objectives of the WDR.

As noted, the Eastern San Joaquin Subbasin was identified as critically overdrafted; therefore, a Groundwater Sustainability Plan for the Subbasin has been submitted as required under the Sustainable Groundwater Management Act. To implement this plan, the Eastern San Joaquin Groundwater Sustainability Agency proposes various projects and management actions. None of these projects or actions apply at an individual development project level; the project would not result in adverse groundwater effects, as discussed in Section 3.10 Hydrology and Water Quality.

Moreover, the LCSD Wastewater Master Plan provides that treated wastewater be discharged into established Reclamation Areas, where it would be allowed to percolate into the ground. This is consistent with the Master Plan objective of recharging local aquifers, which also would be consistent with the objectives of the Groundwater Sustainability Plan for the Subbasin. The project would have no impact related to conflict with water quality or groundwater sustainability plans.

3.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?				✓
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			✓	

NARRATIVE DISCUSSION

Environmental Setting

Lockeford is an unincorporated community located 17 miles northeast of Stockton and eight miles east of Lodi on SR 12/88. The community center encompasses about 100 acres along both sides of SR 12/88, extending five blocks from east to west and typically one to three blocks away from the highway. This area contains older single-family homes on small lots and historic commercial and public buildings (San Joaquin County 2016).

Development was contained within the town's original boundaries for many years, but it extended well beyond the central area in the 1980s. Residential growth has occurred to the south and southeast, while industrial growth has occurred to the southwest, primarily between Brandt Road and the railroad tracks. Commercial growth, historically focused on the community center, has shifted south along the SR 12/88 alignment. A community shopping center has been constructed a half-mile south at Jack Tone Road, and the grocery and pharmacy originally in downtown Lockeford have been relocated there (San Joaquin County 2016b).

The majority of the developed land in Lockeford is devoted to residential land use. Single-family homes are the predominant housing type, with some multifamily units. There are several mobile home parks in the community, including two large facilities in its southern area. Several residential subdivisions have given the town a more extended character (San Joaquin County 2016).

Lockeford's commercial land serves the immediate needs of residents and surrounding agricultural areas and of motorists using SR 12/88. Commercial uses include antique stores and other establishments that have capitalized on the town center's historical architecture. Industrial uses comprise more than a quarter of the developed land. Most of the community's industries are related to agriculture. However, one of the main industries is a steel building manufacturer that produces structures for agricultural, industrial, commercial, and institutional uses (San Joaquin County 2016).

The San Joaquin County General Plan, the current version of which was adopted in 2016, provides guidance for development in the unincorporated areas of the County, including the project area. Along with general land development goals and policies, the County General Plan provides more specific goals and policies for designated "urban communities" that include Lockeford. The Community Development Element of the General Plan contains a section with policies and implementing actions specific to Lockeford. These include a policy that LCSD community water and sewer services be provided to "infill" land inside the CSD before service is extended to property outside its current boundaries (San Joaquin County 2016b).

Environmental Impacts and Mitigation Measures

a) Division of Established Communities.

The proposed project site is designated for the proposed residential use in the San Joaquin County General Plan. The proposed project would add to and not physically divide the existing Lockeford community or the community as it is anticipated to develop in the future. The project would have no adverse impact related to the division of an established community.

b) Conflict with Applicable Plans, Policies and Regulations Avoiding or Mitigating Environmental Effects.

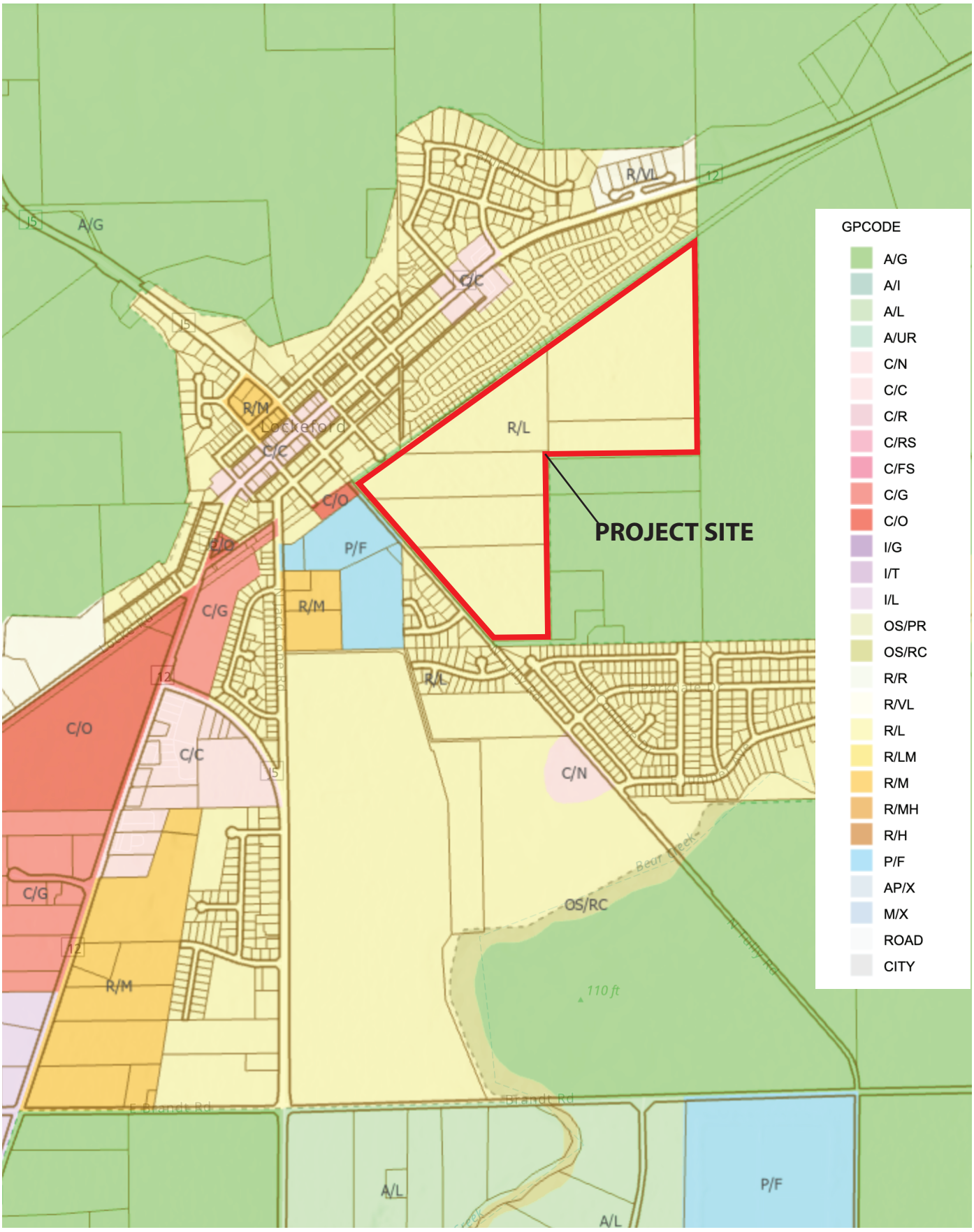
The project and related improvements, including the proposed wastewater force main connection to the LCSD WWTP are consistent with the existing County General Plan designations in the Lockeford area and the provisions of the LCSD Wastewater Master Plan. The project proposes no changes to the County General Plan or zoning, except the site zoning would be modified to reflect the site's General Plan designation, consistent with recent land use decisions related to the project.

The County General Plan anticipates future growth in the Lockeford area and the need for infrastructure in the following General Plan policies specifically for the Lockeford planning area:

- The County shall coordinate with the Lockeford Community Services District on all new development in the Lockeford area.
- The County shall encourage the Lockeford Community Services District to continue to operate and maintain community services in Lockeford.
- The County shall require that community water and sewer services be provided to "infill" land inside the Lockeford Community Services District before service is extended to property outside its current boundaries.

The proposed project is consistent with these and other related County General Plan policies. This IS/MND considers the range of potential environmental impacts of the project as described throughout this Section 3.0. For all environmental issues considered, the IS/MND has determined that the project would have no environmental impact, or an impact that would be less than significant, or an impact can be mitigated to a level that

would be less than significant. Project impacts related to conflicts with applicable plans, policies, and regulations avoiding or mitigating environmental effects would be less than significant.


PROJECT SITE
GPCODE
A/G
A/I
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A/UR
C/N
C/C
C/R
C/RS
C/FS
C/G
C/O
I/G
I/T
I/L
OS/PR
OS/RC
R/R
R/VL
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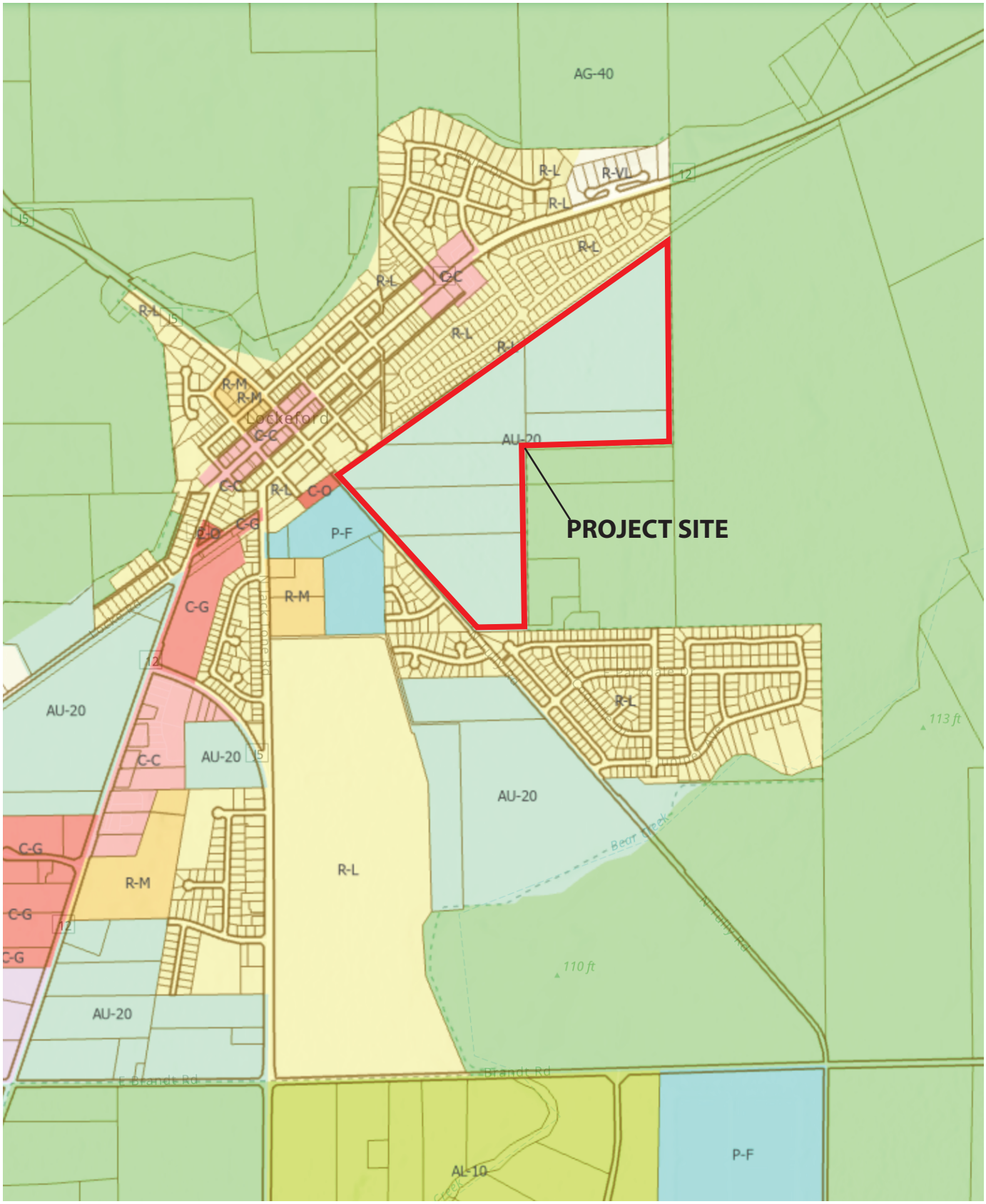

SOURCE: San Joaquin County District Viewer 2025

Figure 3-2
EXISTING ZONING

3.12 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				✓

NARRATIVE DISCUSSION

Environmental Setting

As mandated by the Surface Mining and Reclamation Act, the California Geological Survey has classified mineral resource development potential of lands in counties into an appropriate Mineral Resource Zone (MRZ), in accordance with the California Mineral

Land Classification System. The MRZ classifications include:

MRZ-1 - Areas of No Mineral Resource Significance

MRZ-2 - Areas of Identified Mineral Resource Significance

MRZ-3 - Areas of Undetermined Mineral Resource Significance

MRZ-4 - Areas of Unknown Mineral Resource Significance

There are two areas near Lockeford that are classified as MRZ-3. One is north of Lockeford along the Mokelumne River. The other appears to be south of Bear Creek (San Joaquin County 2016). No other MRZs have been explicitly identified in the area.

San Joaquin County has active natural gas wells. Information from the Division of Oil, Gas, and Geothermal Resources indicates only three wells within or near the Lockeford area. All three recorded wells are listed as having been plugged (DOGGR 2022).

a, b) Loss of Mineral Resource Availability.

No active mineral resource operations have been identified within the project area. The project includes a wastewater force main that would be constructed within the existing Tully Road right-of-way. This element of the project would not obstruct access to potential mineral resource areas located outside the existing road right-of-way. No other improvements associated with the project would affect existing MRZs in the area. The project would have no impact on availability of mineral resources.

3.13 NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	
b) Generation of excessive groundborne vibration or groundborne noise levels?			✓	
c) For a project located within the vicinity of a private airstrip or 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?				✓

Bollard Acoustical Consultants, Inc. (BAC) was retained by the project applicant to prepare noise impact assessment A copy of the Assessment is shown in Appendix D. The purposes of this assessment were to quantify noise generated by traffic on existing N Tully Road and Main Street, and to compare those noise levels against the applicable San Joaquin County exterior and interior noise level standards for new residential development.

NARRATIVE DISCUSSION

Environmental Setting

Noise Fundamentals and Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard, and thus are called sound. Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness. Appendix A contains definitions of Acoustical Terminology. Figure 3 shows common noise levels associated with various sources.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in decibels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq) over a given time period (usually one hour). The Leq is the foundation of the Day-Night Average Level noise descriptor, Ldn or DNL, and shows very good correlation with community response to noise. The median noise level descriptor, denoted L50, represents the noise level which is exceeded 50% of the hour. In other words, half of the hour ambient conditions are higher than the L50 and the other half are lower than the L50.

Existing Ambient Noise Level Environment at the Project Site

The existing ambient noise environment at the Kautz Lockeford Subdivision site is defined primarily by traffic on N Tully Road and Main Street. To quantify the existing ambient noise level environment at the project site, BAC conducted a long-term (48-hour) noise level survey on the project site July 16-17, 2024 at the locations shown on Figure 3-5.

Larson-Davis Laboratories (LDL) precision (Type 1) integrating sound level meters were used to complete the ambient noise level survey at the project site. The meters were calibrated immediately before with an LDL Model CAL200 acoustical calibrator to ensure the accuracy off the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

Figure 3-3
NOISE MEASUREMENT LOCATIONS

PROJECT BOUNDARY

AMBIENT NOISE LEVEL SURVEY LOCATIONS

Figure 3-4
AMBIENT NOISE LEVEL SURVEY LOCATIONS

Noise measurement site LT-1 was specifically selected to document the ambient traffic noise environment from Main Street at the closest (northernmost) proposed residential lots of the development. Site LT-1 was located approximately 500 feet from the centerline of Main Street. Noise measurement site LT-2 was located at the southern portion of the development, and was specifically selected to be document the existing ambient traffic noise environment from N Tully Road at the residences proposed nearest this roadway. Site LT-2 was located approximately 40 feet from the centerline of N Tully Road. Photographs of the noise level measurement locations are provided in Appendix D.

The long-term ambient noise level survey results are summarized in Table 3-8. The detailed results of the ambient noise level survey are contained in IS/MND Appendix D.

REGULATORY SETTING

San Joaquin County General Plan

The Public Health and Safety chapter of the San Joaquin County General Plan establishes acceptable noise level limits for residential developments affected by transportation noise sources. Specifically, The General Plan applies exterior and interior noise level standards of 65 dB DNL and 45 dB DNL (respectively) for residential developments. The General Plan exterior noise level limit of 65 dB DNL is to be applied at the outdoor activity area (i.e., backyard) of single-family residences, such as those proposed by the project.

TABLE 3-8

SUMMARY OF LONG-TERM NOISE SURVEY MEASUREMENT

			Average Measured Hourly Noise Levels (dB)			
			Daytime[3]		Nighttime[4]	
Site Description[2]	Date	DNL (dB)	L_{eq}	L_{max}	L_{eq}	L_{max}
LT-1	Tuesday, July 16, 2024	54	48	61	48	61
	Wednesday, July 17, 2024	57	47	61	51	65
LT-2	Tuesday, July 16, 2024	63	60	80	56	79
	Wednesday, July 17, 2024	63	60	79	55	76

[1] Detailed summaries of the noise monitoring results are provided in Appendices C and D.
[2] Long-term noise survey locations are identified in Figure 1.
[3] Daytime hours: 7:00 a.m. to 10:00 p.m.
[4] Nighttime hours: 10:00 p.m. to 7:00 a.m.

Source: Bollard Acoustical Consultants, Inc. (2024)

The Table 3-8 data indicates that the measured day-night average noise levels (DNLs) at the project site are presently in compliance with the San Joaquin County General Plan 65 dB DNL exterior noise level standard for residential uses. A detailed analysis of future traffic noise level exposure with the project site was conducted and is reported in the following section.

Predicted Future Exterior Traffic Noise Levels

To predict future Main Street and N Tully Road traffic noise level exposure at the project site, BAC utilized the results from the BAC long-term ambient noise level survey conducted July 16-17, 2024. Specifically, future traffic volumes on the segments of N Tully Road and Main Street adjacent to the project site were conservatively assumed to increase by 50% in the future, resulting in a 2 dB increase in traffic noise levels relative to the measured existing conditions. The predicted future traffic noise levels were projected to the individual outdoor activity areas (i.e., backyards) and exterior building facades of the single-family residences proposed nearest the roadways based on a 4.5 dB decrease per doubling of distance from the noise source. The results of those projections are summarized in Table 3-9.

a) Increase in Ambient Noise Levels.

Exterior Noise Compliance Evaluation

As indicated in Table 3-9, future traffic noise levels at the outdoor activity areas (backyards) of the residential lots located nearest to Main Street and N Tully Road are predicted to comply with the San Joaquin County General Plan 65 dB DNL exterior noise level standard. As a result, traffic noise mitigation would not be required for this project relative to the County's exterior noise level criterion.

Interior Noise Compliance Evaluation

Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Therefore, provided that future traffic noise levels do not exceed 70 dB DNL at proposed exterior building facades, standard construction would normally be adequate to ensure compliance with the San Joaquin County General Plan 45 dB DNL interior noise level standard.

As indicated in Table 3-9, future traffic noise levels are predicted to be approximately 62 dB DNL or less at the first-floor building facades proposed nearest to the roadways. Due to reduced ground absorption at elevated positions, future traffic noise levels at a portion of the closest upper-floor facades are predicted to approach 64 dB DNL. Based on the above-identified exterior to interior noise reduction typically achieved with standard residential construction, construction upgrades would not be warranted for satisfaction of the General Plan 45 dB DNL interior noise level standard at the project site. Nonetheless, mechanical ventilation (air conditioning) should be provided for all residences of the development to allow the occupants to close doors and windows as desired for additional acoustical isolation.

TABLE 3-9
PREDICTED FUTURE EXTERIOR TRAFFIC NOISE LEVELS

Roadways	Lot(s)	Location Description	Predicted DNL (dB)[1,2]
Main Street	3-4	Backyards	55
		First-floor building facades	55
		Upper-floor building facades	57
	5-16	Backyards	55
		First-floor building facades	54
		Upper-floor building facades	56
	30, 49	Backyards	54
		First-floor building facades	54
		Upper-floor building facades	56
	50	Backyard	54
		First-floor building facade	54
		Upper-floor building facade	56
	70	Backyard	58
		First-floor building facade	57
		Upper-floor building facade	58
N Tully Road	171	Backyard	56
		First-floor building facade	57
		Upper-floor building facade	59
	172	Backyard	60
		First-floor building facade	60
		Upper-floor building facade	62
	173-181	Backyards	64
		First-floor building facades	62
		Upper-floor building facades	64
	205-215	Backyards	53
		First-floor building facades	52
		Upper-floor building facades	54

[1] Predicted future traffic noise levels based on reference noise levels of 58 dB DNL at 500' from roadway centerline (Main Street) and 65 dB DNL at 40' from roadway centerline (N Tully Road), which include a +2 dB increase to account for a 50% increase in traffic volumes over the next 20 years.

[2] A +2 dB offset was applied at all upper-floor building facades to account for reduced ground absorption of sound at elevated positions.

Source: Bollard Acoustical Consultants, Inc. (2024)

The proposed Kautz Lockeford Subdivision is expected to be exposed to future Main Street and N Tully Road traffic noise level exposure in compliance with the applicable San Joaquin County General Plan 65 dB DNL exterior noise level standard for single-family residential uses.

This analysis also concludes that standard residential construction (i.e., stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof) would be adequate to reduce future traffic noise levels within all floors of all residences in this subdivision to 45 dB DNL or less, which would satisfy the applicable San Joaquin County General Plan 45 dB DNL interior noise level standard for residential uses. Nonetheless, mechanical ventilation (air conditioning) is required for all residences within this development to allow the occupants to close doors and windows as desired for additional acoustical isolation.

The proposed wastewater pump station improvements may lead to additional noise being generated. The new pump station along North Tully Road would replace the existing Bear Creek station. Operation of pumps at all three stations has the potential to generate noise that may disturb nearby residential land uses. However, this pump station would be mostly underground, and the more efficient and modern pumping equipment would be encased in a concrete structure. Therefore, nearby residences are unlikely to be exposed to noise from pump station operations at levels that would exceed County standards.

Construction activities associated with proposed subdivision improvements and residential construction may generate a temporary increase in noise levels in the immediate vicinity of the construction site. Noise would be generated mainly by excavation and construction equipment. Use of any heavy construction equipment would be short-term and intermittent, restricted by County ordinance to be confined to during the construction day. Project construction noise may occasionally exceed standards, but existing County restrictions would reduce impacts to a level that would be less than significant.

b) Groundborne Vibration.

Groundborne vibration is not a common environmental problem. Some common sources are trains, buses on rough roads, and construction activities such as blasting, pile driving, and operating heavy earth-moving equipment. Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. The project would likely use common excavation and trenching equipment during construction; the project would involve no known blasting, pile-driving, or other significant noise-generating equipment. Given the short-term duration of construction work, project impacts related to groundborne vibration are considered less than significant.

c) Exposure to Airport/Airstrip Noise.

There are no public airports within two miles of the project site. No private airstrips have been identified in the vicinity. Therefore, future project residents would rarely, if ever, be exposed to noise from airport or airstrip operations. The project would have a less than significant impact related to airport or airstrip noise.

3.14 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial unplanned 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,c) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				✓

NARRATIVE DISCUSSION

Environmental Setting

As of January 1, 2021, the population of unincorporated San Joaquin County was estimated at 155,691 – an increase from the 2010 U.S. Census population of 141,995. As noted in Chapter 1.0, Introduction, the estimated 2020 population of the community of Lockeford was 3,016. Total housing units in unincorporated San Joaquin County were 52,405, approximately 82.7% of which were single-family detached units (California Department of Finance 2021). The number of housing units in the Lockeford Census Designated Place, which includes the Master Plan area and other areas, was 1,237 (U.S. Census Bureau 2022).

Environmental Impacts and Mitigation Measures

a) Population Growth Inducement.

The San Joaquin County General Plan and LCSD master plans have been prepared to provide for potential new community development, including the proposed project. Planned development includes the Kautz property annexed in 2016, along with the previously approved Lockeford Vista and the historically considered Lockeford Oaks.

Community services plans are based on potential infill development within the existing CSD SOI. The infill of the remaining CSD service area is projected based on current zoning. Because of this, planned development of the project, and anticipated other development under the LCSD master plans are not expected to induce any population growth not otherwise planned for. Project impacts related to unplanned population growth are considered less than significant.

b) Displacement of Housing and People.

The project would not involve any removal of existing housing or displacement of existing residents; the project would have no impact related to displacement.

3.15 PUBLIC SERVICES

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:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i) Fire protection?				✓
ii) Police protection?				✓
iii) Schools?				✓
iv) Parks?				✓
v) Other public facilities?				✓

NARRATIVE DISCUSSION

Environmental Setting

The project site is within the Mokelumne Rural Fire District. The Fire District covers an area of approximately 34 square miles east of the City of Lodi and includes the community of Lockeford. It operates out of a station on 13157 East Brandt Road. As of 2016, the Fire District had nine paid personnel, 15 emergency medical technicians, and one administrative staff member. Average response time to a call is five minutes (San Joaquin County 2016). The Fire District is part of the North County Fire automatic aid agreement, along with the Linden-Peters and Waterloo-Morada Fire Districts. In the event a more complex incident should occur, the nearest bordering agency to the incident would be automatically dispatched to provide additional support.

Police protection services in unincorporated San Joaquin County are provided by the San Joaquin County Sheriff's Department, with its base station in the community of French Camp. The Sheriff's Department has more than 800 sworn and support personnel working in eight divisions, including the Field Forces Division that provides patrols. Lockeford is within Beat 2 of the Sheriff's Department patrol service area (San Joaquin County 2016).

The project site is within the Lodi Unified School District. The one public school in the area is Lockeford Elementary School, which is adjacent to and west of the site. Lockeford Elementary provides instruction to students from kindergarten to 8th grade. High school students attend Lodi High School in Lodi. Parks in the Lockeford area are managed by the LCSD. Section 3.16, Recreation, provides more information on parks and recreational facilities. There are no other public service facilities in the Master Plan area.

Environmental Impacts and Mitigation Measures

a-i) Fire Protection.

The project would obtain water service from the existing LCSD potable water system and would involve the construction of 296 new residential structures. New homes would attract new residents and lead to a direct demand for fire protection; these new demands could however be met with existing services and facilities; new or expanded facilities would not be required. The project would have a less than significant impact on fire protection services.

a-ii) Police Protection.

The project would provide new housing, which would attract new residents and associated law enforcement demands; these new demands could however be met with existing services and facilities and new or expanded facilities would not be required. The project would have a less than significant effect on police protection services.

a-iii) Schools.

The proposed project would involve the construction and permanent occupation of 296 new single-family residential units that can be expected to attract new residents of the Lockeford area and the associated direct demand for schools. BaseCamp contacted the LUSD during the preparation of this document to obtain student generation multipliers for K-6 (0.259 students/unit) and 7-8 (0.077 students/unit) students. The LUSD indicates that it has planned for student generation that would result from the project. The project would be responsible for payment of school impact fees that would contribute to the meeting costs of accommodating new students in the LUSD system. The project would therefore have a less than significant impact on schools.

a-iv) Parks.

The project proposes the development of 296 new residences that would lead to additional demands for public recreation and facilities. the project includes development of an approximately eight-acre park and drainage facility adjacent to Tully Road, which would help meet project-associated new demands for parks

a-v) Other Public Facilities.

Beside the Lockeford Community Center, there are no other known public service facilities in the Lockeford area that would be impacted by the project. The project would have no impact on other public services.

3.16 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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?				✓
b) 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?				✓

NARRATIVE DISCUSSION

Environmental Setting

Parks in the Lockeford area are managed by the LCSD. The LCSD, working with San Joaquin County, is developing Lockeford Memorial Park, a four-acre site on Jack Tone Road next to Lockeford Elementary School. Current facilities at Lockeford Memorial Park include picnic tables, benches, a play structure, and a disc golf course. Adjacent to the park is the Lockeford Community Center at 19258 North Jack Tone Road. Also managed by the CSD, the Lockeford Community Center provides rental space for events of up to 150 people, along with tables, chairs, and a kitchen.

Environmental Impacts and Mitigation Measures

a, b) Recreational Facilities.

The project would provide housing for new Lockeford and associated demand for park or recreational services. The project includes a 5-acre park and 3-acre drainage facility that would contribute to meeting project-related recreational demands; potential environmental effects associated with new park development are addressed in this IS/MND. Improvements under the Master Plan would serve potential future development, which would be subject to CEQA environmental review by the County, at which time its impact on park and recreation services would be analyzed and mitigated by the development if necessary. The project would have a less than significant effect on parks and recreational services.

3.17 TRANSPORTATION

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			✓	
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?				✓
c) Substantially increase hazards to a geometric design feature (e g., sharp curves or dangerous intersections) or incompatible uses (e g, farm equipment)?		✓		
d) Result in inadequate emergency access?				✓

The potential transportation effects of the project were evaluated in a technical study by GHD. The technical report, including a description of methodology, results and data, is shown in Appendix E of this IS/MND.

NARRATIVE DISCUSSION

Environmental Setting

Transportation Facilities

SR 12/88 is the primary highway in the Lockeford community and project area. SR 12 and SR 88 merge northeast of Lockeford and remain merged until they separate east of the unincorporated community of Clements. Along with carrying local traffic, SR 12/88 is Lockeford's primary link to Stockton and Lodi, and it is a major regional access route to the Sierra Nevada foothills and mountains. Because it provides this regional access, the two-lane highway is relatively congested on weekends (San Joaquin County 2016).

Other major roads in the Lockeford area include Elliott Road, Tully Road, which adjoins the site on the southwest and Jack Tone Road. These three roads serve as collector streets, converging towards the Lockeford town center, which is approximately 700 feet northwest of the site along N. Tully Road, at the intersection of N. Tully, SR 12/88 and Elliott Road. A network of local streets feed into these collector roads or directly to SR 12/88 (San Joaquin County 2016). Tully Road and Jack Tone Road cross substantial portions of the Lockeford town area; Elliott Road is mainly in the unincorporated area, with just a few blocks in downtown Lockeford.

No buses or other public transit currently serve the Lockeford area. Calaveras Transit previously provided bus service from Calaveras County to Lodi that passed through Lockeford (San Joaquin County 2016), but that route has been discontinued. There are no designated bikeways in the Master Plan area. Sidewalks are confined to the more densely developed areas of Lockeford.

Section 15064.3 was included in the CEQA Guidelines pursuant to SB 743. Section 15064.3 states that VMT is the preferred metric for evaluating transportation impacts, rather than the Level of Service (LOS) metric more commonly used in the past. VMT is understood to measure the total miles traveled by vehicle trips generated by a project. While LOS focuses on motor vehicle traffic operations at specific locations, VMT is understood to account for the total environmental impact of transportation associated with a project, including use of travel modes such as buses or bicycles. Section 15064.3(b) sets forth the criteria for analyzing transportation impacts using the preferred VMT metric. These guidelines, as applied by GHD in its study of the project's transportation impacts, is discussed below.

Vehicle Miles Travelled (VMT)

Senate Bill (SB) 743 was signed into law in 2013, with the intent to better align CEQA practices with statewide sustainability goals related to efficient land use, greater multimodal choices, and greenhouse gas reductions. The provisions of SB 743 became effective Statewide on July 1, 2020. Under SB 743, automobile delay, traditionally measured as the LOS, is no longer considered an environmental impact under CEQA. Instead, impacts under CEQA are determined by changes to VMT. VMT is a useful indicator of overall land use and transportation efficiency, where the most efficient system is one that minimizes VMT by encouraging shorter vehicle trip lengths, more walking and biking, or increased carpooling and transit. In recognition that the character of communities, availability of travel modes options and geographic areas all differ throughout the State, each jurisdiction, from regional agency, to County, to City, has the option to establish their own VMT thresholds consistent with the State's guidelines and regulatory framework.

San Joaquin County is in the process of developing their CEQA Transportation Analysis Guidelines and the VMT Thresholds Study which are used to issue guidance on the assessment of VMT impacts for new developments within the County. GHD utilized the methodologies and screening criteria being considered for the County in their Draft guidelines.

The VMT analysis consists of two components. The first component is the baseline VMT metric, which is the average VMT per capita in the unincorporated countywide area, for estimating the average baseline VMT per capita. A modified version of the SJCOG model was utilized to develop baseline VMT metrics for the study baseline area. The project's percent reduction from the baseline is the target threshold for evaluating impacts on transportation; the County has selected a draft threshold of 16% below the current baseline, based on the current regional reduction target for greenhouse gas emission reductions for San Joaquin County Council of Governments (SJCOG) adopted by the California Air

Resources Board (CARB)7. Table 3-10 presents the County's baseline VMT per capita and threshold value, which is used in determining transportation impacts.

TABLE 3-10
San Joaquin County VMT Metrics

VMT Parameter	VMT Value
Baseline (average unincorporated countywide) VMT per capita	29.6
Threshold (16% below baseline)	24.9

Level of Service Analysis

In addition to VMT, the project's effects on traffic operations were also quantified through the determination of Levels of Service (LOS). LOS is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection, or roadway segment, representing progressively worsening traffic conditions. LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. A detailed discussion of the LOS, Synchro and other LOS-related analysis methods is provided in the GHD study, Appendix E.

For the GHD LOS study, seven existing intersections and two future intersections were identified for study under AM and PM peak hour conditions and three roadway segments have been identified for daily counts. These intersections were evaluated for average weekday AM and PM peak hour operations under the analysis scenarios. Existing geometry including lane usage and storage capacity at the study locations were determined at each location based on field observations. Data results as to each of these analyses are presented in detail in Appendix E.

Study Area Roadways

The roadways considered in the GHD study, including the LOS analysis, are listed below. Additional detail as to the location and function of each of these roadways is provided in Appendix E.

State Route 12/SR 88
North Tully Road
Elliott Road
Hammond Street
Jack Tone Road (North)
Sharon Drive
Brandt Road
North Sierra Drive

Multi-Model Pedestrian/Bicycle/Transit Facilities

The San Joaquin County Master Bicycle Plan defines bicycle facilities consistent with Caltrans classifications associated with Class 1 (Multimodal Off-Street Path), Class II (Bike Lane), Class III (Bike Route) facilities.

Bicycle facilities in the project study area are few due to the primarily rural nature of roadways, agriculture uses, and lack of roadway frontage improvements. Where more recent development has occurred, frontage improvements along N Tully Road-Elliot Road, Jack Tone Road, Hammond Street, Sierra Drive, and SR 12 88 (in the downtown area) have provided sidewalks and limited striped shoulder lanes. However, these striped lanes are not designated as Class II bike facilities. In addition, commercial and residential development along SR 12 88 and N. Tully Road is discontinuous and not linked. The County's General Plan indicates that gaps in the pedestrian/bicycle network should be eliminated in the rural network.

As noted, where newer developments have occurred, limited improvements have been installed (curb, gutter, and sidewalks). Currently, pedestrian crosswalks are found at the N. Tully Road-Elliot Road/SR 12 88 intersection and the Lambert Way/N. Jack Tone Road intersection (south of Hammond Street).

Transit options for the Lockeford area are very limited. A review of the South County Transit and San Joaquin Regional Transit District websites and system maps indicate no bus service/routes currently serving the Lockeford area.

A collision analysis of the most recent five years of collision data was conducted for the study area to determine any trends or patterns that may indicate a safety issue at intersections and roadways in the GHD study area. The locations with the highest number of collisions are the intersection of N. Tully Road/Elliott Road and SR 12 88 and the intersection of Jack Tone Road and Brandt Road. Around two thirds of the collisions at study intersections resulted in property damage only; however, collisions associated with the Jack Tone Road/Brandt Road intersection, several involved "broadside" collisions. "Broadside" collisions can be typical of minor-street, stop-sign controlled intersections with the major street free-flow.

A previous traffic analysis and conditions of approval for the adjacent Lockeford Vistas project were assumed by GHD. For the purpose of the GHD analysis, the following improvements were assumed at the SR 12-88 & Sierra Drive access intersection: Install left-turn lanes (and separate phasing) at the eastbound and westbound SR 12-88 approaches Assumed 100' turn pocket with 75' taper. Also, install a deceleration right-turn lane on the SR 12/88 eastbound approach. This improvement could be made within the existing right of way. When SR 12/88 is ultimately widened to four lanes, a separate right turn lane will no longer be needed. Assumed 100' turn pocket with 75' taper.

An additional commercial project adjacent to SR 88 southwest of the town center includes the construction of a new 2,695-square-foot convenience store with off-premises liquor sales, a tunnel car wash with four vacuum stations, and a fuel canopy with six multiple fuel dispensers in Phase 1. Phase 2 includes the construction of a new 1,991-square-foot quick serve restaurant; the commercial project site is on the eastside of State Route 88, 1,250 feet south of Jack Tone Bypass Road, Lockeford.

Environmental Impacts and Mitigation Measures

a) Conflict with Transportation Plans, Ordinances, and Policies.

The Master Plan proposes improvements to an existing wastewater system. Some of these improvements would occur along local roads and may cross SR 12/88. However, these improvements would not alter the existing facilities; as such, their installation would not lead to conflicts with transportation plans and ordinances related to these roads.

The Master Plan improvements would not directly affect bus routes or stops, since no bus service is provided to the Master Plan area. Since these improvements would be buried underground or built in already-developed areas, they would not interfere with existing services or the establishment of bus services in the future, should that occur. The same conditions would apply to bicycle facilities; improvements would not interfere with future development of bikeways. The proposed improvements are not expected to significantly affect sidewalks, as most improvements would occur in areas that lack them. Any sidewalks that would need to be removed due to construction work would be replaced in accordance with County standards.

Improvements under the Master Plan would serve potential future development, which could have a significant impact on local roads and other transportation facilities. Future development would be subject to CEQA environmental review by the County, at which time its impact on transportation would be analyzed and mitigated if necessary. In summary, implementation of the Master Plan is not expected to conflict with policies and plans related to transportation. Project impacts would be less than significant.

b) Conflict with CEQA Guidelines Section 15064.3(b).

The GHD study indicates the project would result in 28.5 VMT per capita, which exceeds the County's VMT threshold of 24.9. Therefore, the project would result in a significant impact on transportation without mitigation; the VMT per capita would need to decrease by 14% to mitigate the project's potential VMT impact to a less than significant level.

As part of the overall VMT analysis, the proposed project's connections to and effects, on pedestrian, bicycle, and public transit modes in the project vicinity were assessed for quantifiable benefits to improving these modes, consistent with the County's Draft VMT Guidance and Caltrans guidance (TSIG). GHD also performed a qualitative analysis of potential mitigation measures identified in the California Air Pollution Control Officers Association's (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions. Assessing Climate Vulnerabilities, and Advancing Health and Equity* (December 2021) and Caltrans' *SB743 Mitigation Playbook* (Draft, July 2022).

GHD's review of the CAPCOA Handbook and the Caltrans Mitigation Playbook indicated that specific mitigation strategies for reducing low-density residential housing project VMT reduction are limited. Contributing factors at the Kautz project include the rural location of the project site, lack of transit providers, discontinuous pedestrian and bicycle facilities and limited regional access routes. The following mitigation strategies were recommended to reduce overall VMT and improve access for active transportation modes.

Local VMT-ATP Mitigation

Provide Continuous Pedestrian Sidewalk Connection Along North Tully Road: The planned pedestrian sidewalk along the project frontage on N Tully Road should be extended northwest to connect to Hammond Street and/or the planned sidewalk improvements associated with the Caltrans State Route 88 Pavement Anchor Project. Due to existing physical impediments just northwest of Malbec Drive on N. Tully Road, it is recommended that the pedestrian sidewalk be extended on the west side of the roadway opposite Malbec Drive.

Caltrans indicates that, "Most transportation-related use of AT (active transportation) facilities is for short trips – less than 20 minutes, or about a mile walking or 3 miles cycling." Providing improved pedestrian connection to the Lockeford downtown commercial areas can help to reduce the need for short vehicle trips. Residents from the proposed project could walk or bike safely to the downtown areas without the need for vehicle travel. Based on the CAPCOA Handbook, active transportation planning (ATP) (including pedestrian network improvements) would typically reduce the overall proposed project VMT by 6.4%.

Limit the Malbec Drive/N. Tully Road Intersection to Right-Turns-Only Inbound/Outbound Vehicles: The Malbec Drive/N. Tully Road intersection should be limited to right-turns-only for inbound/outbound vehicles due to the proximity of the Lockeford Elementary School and its associated parking lot driveways on the southwest side of the street. A raised median can be installed on N. Tully Road that would prevent left-turn movement at the intersection while still allowing adequate access to school driveways. The preclusion of left-turn movements at this intersection will improve pedestrian/bicycle safety and comfort, while reducing potential conflicts with vehicular activity to/from the Lockeford Elementary School driveways. While ostensibly a pedestrian safety improvement in reducing pedestrian/vehicle conflicts, limiting vehicle access at Malbec Drive and N. Tully Road could encourage more walking by providing a safer environment between the proposed project site and Lockeford Elementary School consistent with ATP traffic calming improvements.

Install East-West Pedestrian Crosswalk on N. Tully Road at the Malbec Drive/N. Tully Road Intersection: In conjunction with the recommended raised median on N. Tully Road, install a raised east-west pedestrian crosswalk on N. Tully Road to provide access between the proposed project site and Lockeford Elementary School. The closest east-west pedestrian crosswalk on N. Tully Road is currently located at Hammond Street 375-feet northwest of Malbec Drive. A raised east-west pedestrian crosswalk at the south side of the Malbec Drive/N. Tully Road intersection in conjunction with a Rectangular Rapid Flashing Beacon (RRFB) will provide a safer crossing at N. Tully Road. As with the recommended pedestrian sidewalk improvements, installation of a raised crosswalk would encourage more walking and reduce overall proposed project VMT by 6.4% based on the CAPCOA Handbook. The effectiveness of the recommended sidewalk and crosswalk improvements would be considered in combined action and would contribute to the estimated VMT reduction.

Install Class I Shared Use Path: Install a Class I shared use path along the southwest frontage of the project site (east side of N. Tully Road) extending from the project site's southeast border to Malbec Drive. This would be in place of a pedestrian only sidewalk. The separated shared use path would provide a buffer from vehicle travel for both walking and biking along N. Tully Road. Based on the CAPCOA Handbook, the estimated reduction in project-related VMT would be estimated at 0.8%.

Total VMT Reduction: Local Mode Shift for Short Walking Trips Within Lockeford: The recommended VMT-ATP project-related measures listed above would complement the proposed project's school-related trips and help reduce overall VMT. No reduction in overall proposed project trip generation related to local school trips was assumed as part of this analysis. However, based on research using Replica (Big Data), school-related vehicle trips in Lockeford account for approximately 8% of residential vehicle trips. Additionally, Replica shows that shopping-related and errand vehicle trips in Lockeford account for approximately 20% of residential vehicle trips. With the proposed project site being located on N. Tully Road directly across from the Lockeford Elementary School and within walking or biking distance to nearby stores, restaurants, and other activity centers, a significant reduction in vehicle trips could be gained through incorporation of recommended ATP measures through a mode shift to walking, bicycling, and/or carpooling as indicated for each measure. For trips less than two miles in Lockeford (short trips), 50% of those trips are shopping, errand, recreation, or other trips (non-work, and non-school trips). Based on the Replica data, of these local non-work and non-school trips, 41% currently walk or bike. Therefore, one could expect a maximum 20% reduction in vehicular trips with the recommended sidewalk and shared-use path which would substantially improve access to downtown Lockeford destinations.

Regional VMT Recommendations

Park and Ride Lot: The project applicant should investigate the potential for a park and ride (PNR) lot to serve new and existing residents of Lockeford. This improvement could be done in collaboration with the approved Lockeford Vistas project and/or other property along the SR 12 88 corridor in Lockeford. The park and ride lot would reduce overall VMT by removing commute trips from the highway.

It is noted that San Joaquin County has conducted previous VMT analyses for park and ride mitigation potential. Typically, park and ride facilities located near transit hubs and/or dense urban areas do not reduce overall VMT. Conversely, it was found that park and ride facilities located 8-10 miles outside of a heavy dense transit/downtown area could potentially reduce VMT. However, the County noted that VMT reduction for PNR projects are not yet fully justified based on a lack of applicable case studies and examples for developing quantifiable VMT assumptions.

Provide Express Bus/Transit: The project applicant should consider subsidizing an express bus through San Joaquin County Transit between Lockeford and destinations to the west (Lodi, Stockton, Tracy). Again, this would have the effect of reducing commute trips on SR 12 88. Based on the same study for PNR facilities, examples for developing quantifiable VMT assumptions for bus route extensions and additions is based on CAPCOA methods.

Provide Electrical Charging Station(s): The project applicant could provide electrical charging stations to encourage cleaner use vehicles (EV) in coordination with the park and ride lot. Provide incentives for electrical charging stations within residential dwelling units.

c) Traffic Hazards.

The proposed project would involve the construction of new streets and related improvements as a part of providing public road access to the proposed residential project site. These improvements must be designed and constructed in accordance with County design standards. The GHD transportation study of the project did not identify any specific design or safety concerns.

Construction of improvements would involve movement of construction equipment and vehicles onto and from the site, which would use existing roadways. Construction traffic would be intermittent and temporary, and it would cease when construction work is completed. Mitigation Measure HAZ-2, described in Section 3.9, Hazards and Hazardous Materials, would require preparation and implementation of a Traffic Control Plan that would minimize construction impacts on traffic flow. Project impacts related to traffic safety would be less than significant with mitigation.

d) Emergency Access.

See previous analysis and effectiveness of a Traffic Control Plan in avoiding hazards. The project would have a less than significant impact on emergency access.

3.18 TRIBAL CULTURAL RESOURCES

a) 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:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				✓

NARRATIVE DISCUSSION

Information for this section was drawn primarily from a technical memorandum prepared by Natural Investigations. Analysis of the potential tribal cultural resource impacts of the project are described in the Natural Investigations report; these efforts involved a records search conducted by the Central California Information Center at California State University Stanislaus and a search of the Sacred Lands File by the Native American Heritage Commission.

Environmental Setting

As noted in Section 3.5, Cultural Resources, the project is in the ethnographic territory of the Northern Valley Yokuts. The Northern Valley Yokuts occupied the project area and vicinity within a larger traditional territory including lands on either side of the San Joaquin River from the Sacramento-San Joaquin Delta to south of Mendota. The Diablo Range probably marked their western boundary, while the eastern extent would have lain along the Sierra Nevada foothills. Additional detail on the Yokuts is provided in Section 3.6 Cultural Resources.

In 2015, the California Legislature enacted AB 52, which focuses on consultation with Native American tribes to avoid or mitigate potential impacts on tribal cultural resources, which are defined as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe." When a tribe requests consultation with a CEQA lead agency on projects within its traditionally and culturally affiliated geographical area, the lead agency must provide the tribe with notice of a proposed project. The tribe has up to 30 days to respond to the notice and request consultation; if consultation is requested, then the local agency has up to 30 days to initiate consultation.

Natural Investigations provided notice of the proposed project to the tribes recommended by the Native American Heritage Commission. To date, three responses was received; two of these responses, listed in Section 3.5 Cultural Resources, indicated the tribes did not have interest in consultation; the third response recommended contacting the Yokuts tribe but indicated no specific concerns with respect to the project; the Yokuts tribe was provided notice based on their NAHC listing but did not request consultation.

Environmental Impacts and Mitigation Measures

a-i, ii) Tribal Cultural Resources.

The Natural Investigations study did not identify any prehistoric resources, including tribal resources, within the project site. A search by the Native American Heritage Commission of its Sacred Lands yielded a negative result for the project area; all tribes recommended by the NAHC were notified with limited response as discussed above.

As discussed in Section 3.5, Cultural Resources, it is unlikely that any archaeological resources would be found intact within the Master Plan area. However, it is conceivable that ground disturbance activities associated with the construction of improvements could unearth archaeological materials of tribal cultural significance that are currently unknown. Procedures to address tribal cultural resource discoveries, if they should occur, are set forth in Mitigation Measure CULT-1. In addition, Mitigation Measure CULT-2 sets forth procedures to be followed upon encountering human remains, including Native American burials. Implementation of these mitigation measures would reduce potential impacts on tribal cultural resources to a level that would be less than significant.

3.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment facilities or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?		✓		
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?				✓
c) Result in a determination by the wastewater treatment provider which serves or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			✓	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			✓	
e) Comply with federal, state and local management and reduction statutes and regulations related to solid waste?			✓	

NARRATIVE DISCUSSION

Environmental Setting

The Lockeford CSD provides wastewater collection and treatment services within its service area including the project site. The CSD's wastewater system currently consists of gravity flow collector lines, pump stations, force mains, and the WWTP west of Tully Road at Brandt Road where the collected wastewater is treated, and a remote storage pond and Reclamation Area 1 where the treated wastewater is currently discharged for evaporation and percolation.

The CSD also provides potable water supply service to its service area, including the project site. LCSD potable water mains are located adjacent to the project site within the Tully Road right-of-way.

Storm drainage capture and transport in Lockeford includes County-maintained underground pipes to storage ponds that feed to the Mokelumne River and Bear Creek. Terminal drainage systems exist for the Bear Creek Terrace and Locke Haven subdivisions.

Storm drainage from proposed residential lots and streets would surface flow in streetside curb and gutter improvements to the proposed onsite retention basin / park. Project site runoff will be temporarily detained in the CSD-maintained onsite detention basin designed to meet San Joaquin County standards and owned and maintained by the LCSD. Runoff detained in the basin will be periodically pumped via a new force main along Tully to a new outfall to Bear Creek just downstream of the existing Tully Road bridge.

Solid waste collection services in Lockeford residential are provided by Central Valley Waste Services. Solid waste collected within the County is transported and disposed of primarily at three landfills: the North County Landfill on East Harney Lane, with available capacity to the year 2048, and the Foothill Sanitary Landfill on North Waverly Road, with available capacity to 2082 (CalRecycle 2019). The Forward Landfill on Austin Road near Stockton was recently approved for expansion to meet projected needs through 2036 (Crunden 2020).

Electricity and natural gas services are provided by the Pacific Gas and Electric Company (PG&E). Telecommunication services are provided by various franchise companies. Existing electrical and natural gas lines and telecommunication facilities are available in the project area.

Environmental Impacts and Mitigation Measures

a) Construction or Relocation of Infrastructure.

Proposed residential development would generate new wastewater flows and treatment demands, which would be provided by connecting to the LCSD WWTP. Wastewater service would include the installation of new on-site sewer lines and connection to existing LCSD WWTP via a new pump station and force main to be installed in conjunction with the project.

Installation of this disposal system not expected to have a significant environmental impact. The project includes a pump station adjacent to Tully Road and approximately 6,100 feet of six-inch force main to be installed parallel to Tully Road in an existing cleared portion of the alignment. The pipeline will be installed conventionally in a trench, which will be backfilled and restored to its pre-project condition following construction. The pipeline crossing of Bear Creek would be accomplished by being attached to the existing concrete Tully Road bridge, or by a trenchless method in the area west of the bridge.

The proposed force main will extend to the LCSD WWTP and discharge to the existing intake works. The LCSD (Colwell pers. comm.) indicates that the WWTP is adequately sized to process wastewater flows from the proposed project. The potential impacts of

extending wastewater service to the project have been previously considered in the programmatic CEQA document for the recently-adopted LCSD Wastewater Master Plan. Project impacts on the LCSD's wastewater treatment system would be less than significant.

It is expected that the proposed wastewater improvements would avoid other existing infrastructure along the proposed alignment, such as water lines. However, it is possible that project implementation of individual improvements could involve potential conflicts with, and potentially require the relocation, of other infrastructure. Mitigation described below would require identification of other infrastructure that could be affected by a planned improvement, the potential environmental impacts related to effects on the infrastructure, and mitigation of any required relocation or new construction if necessary. Implementation of this mitigation measure would reduce impacts related to construction or relocation affecting other infrastructure to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

UTIL-1: Construction plans for the project, including the proposed wastewater disposal system, shall identify existing infrastructure within the project area and provide for avoidance or relocation of the infrastructure as required. To the extent feasible, avoidance of relocation is preferred.

Significance After Mitigation: Less than significant

b) Water Supply.

As discussed in Section 3.10, Hydrology and Water Quality, project would result in an increased demand for potable water. Existing groundwater supply would be adequate to meet project-related needs, and new project-related demands on the groundwater system would be offset by on-site reductions in existing agricultural use of groundwater. The project would include construction, connection and dedication of a new community water well to the LCSD. The project would have no net adverse effect on water supply.

c) Wastewater Systems and Storm Drainage.

The project would involve new demands on the existing CSD wastewater treatment system, which is planned to accommodate project demands as well as increased volumes of wastewater generated by future population growth and development. Adequate treatment capacity is available to serve the project, and as a result project impacts would be less than significant.

The proposed project will generate new storm drainage during precipitation. Storm drainage will be collected onsite in the curb and gutter system along proposed subdivision streets and conducted to a proposed drainage detention basin located on the project site. Storm drainage would be periodically discharged from the detention basin to Bear Creek via a new pump station, force main and outfall structure. The project would therefore have no adverse effect related to storm drainage.

d, e) Solid Waste Services.

The project would lead to increases in solid waste generation. Construction and demolition waste would be subject to the provisions of San Joaquin County Code Title 5, Division 2, Chapter 14. There is adequate capacity at the County landfills to accommodate any solid waste associated with the project. Project impacts related to solid waste would be less than significant.

3.20 WILDFIRE

If located in or near state responsibility areas or lands classified as Very High Fire Hazard Severity Zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			✓	
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				✓
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				✓
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				✓

NARRATIVE DISCUSSION

Environmental Setting

Wildland fires are an annual hazard in San Joaquin County. Wildland fires burn natural vegetation on undeveloped lands and include rangeland, brush, and grass fires. Long, hot, and dry summers with temperatures often exceeding 100°F add to the county's fire hazard. Human activities are the major causes of wildland fires, while lightning causes the remaining wildland fires. High hazard areas for wildland fires are the grass-covered areas in the east and the southwest foothills of the county (San Joaquin County 2016).

As noted in Section 3.9, Hazards and Hazardous Materials, the project area has mixed urban and agricultural development, where intensive management minimizes fuel buildup, and the likelihood of wildland fire is low. The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program identifies fire threat based on a combination of two factors: 1) fire frequency, or the likelihood of a given area burning, and 2) potential fire behavior (hazard). These two factors are combined in determining the following Fire Hazard Severity Zones: Moderate, High, Very High, Extreme. These zones are mapped for two separate areas: State Responsibility Areas are where the State of California is financially responsible for the prevention and suppression of wildfires, while Local Responsibility Areas are where fire protection is typically provided by city fire departments, fire protection districts, counties, or by Cal Fire under contract to local government. The Lockeford area is within a Local Responsibility Area, and most of the area outside Lockeford has been placed in a Moderate Fire Hazard Severity Zone (Cal Fire 2007).

Environmental Impacts and Mitigation Measures

a) Emergency Response and Emergency Evacuation Plans.

The proposed development would involve limited access improvements within existing adjacent road rights-of-way, which would also provide for emergency vehicle access and for emergency evacuations when necessary. The project would not construct obstructions or other alterations that could hinder emergency vehicle access. Mitigation Measure HAZ-2, described in Section 3.9, would minimize temporary impacts caused by construction, Project impact on emergency response and evacuations would be less than significant with mitigation.

b) Exposure of Project Occupants to Pollutants.

The project site is not part of a State Responsibility Area. The project includes new residential construction as well as extension of the LCSD potable water system and fire hydrants into the project area. The project would not place residents in the Fire Hazard Severity Zone and would have no impact related to exposure of project occupants to wildfire hazards.

c) Installation and Maintenance of Infrastructure.

The project proposes improvements to the existing potable water and fire control system. The project would not increase fire risk above existing conditions and would have no impact in this area of concern.

d) Risks from Runoff, Post-Fire Slope Instability, or Drainage Changes.

The project area is topographically flat. Only Bear Creek crosses the project vicinity, which is an intermittent stream arising in the lower Sierra Nevada foothills. Drainage from the project would be retained on the project site, and the project would not result in any substantial changes to Bear Creek. No housing or residents would be placed in a potential fire hazard area, and it is not expected that people or structures would be exposed to any significant risks from off-site wildfires or post-fire land management concerns.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially 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 considerable 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 which would cause substantial adverse effects on human beings, either directly or indirectly?			✓	

NARRATIVE DISCUSSION

a) Findings on Biological and Cultural Resources.

The project's potential impacts on biological resources and cultural resources were described in Sections 3.4 and 3.5, respectively. Potentially significant environmental effects on biological and cultural resources were identified, but implementation of mitigation measures that would be applied to the project would reduce these effects to a level that would be less than significant. The mitigation measures are described in Sections 3.4 and 3.5 and are listed in Table 1-1.

b) Findings on Cumulatively Considerable Impacts.

A cumulative impact is an environmental impact that may result from the combination of two or more environmental impacts associated with the proposed project with each other,

or the combination of one or more project impacts with related environmental impacts caused by other projects.

Many of the potential environmental effects of the project would either be less than significant or would have no impact at all, when compared to baseline conditions. Where the project involves potentially significant environmental effects, these effects would be reduced to a less-than-significant level with proposed mitigation measures and compliance with required permits and applicable regulations. The project by itself would not contribute significantly to any known cumulative impacts.

The potential cumulative impacts of the project, together with other planned development in the Lockeford area, including the Kautz property, Lockeford Vista, and Lockeford Oaks were evaluated in the programmatic CEQA review of LCSD's Wastewater Master Plan. Development in these areas, plus anticipated infill development, would have environmental impacts that could be cumulatively considerable. The EIR for the San Joaquin County General Plan, under which future development within the Master Plan area would be subject, identified significant cumulative impacts on agricultural resources, population and housing, transportation and circulation, noise, air quality, aesthetics, public services, and utilities. Of these, impacts on agricultural resources, transportation, historical resources, air quality, and water supply were determined to be significant and unavoidable (San Joaquin County 2014).

The CEQA review of LCSD's Wastewater Master Plan future development projects in Lockeford would be subject to CEQA review by the County as is the subject of this IS/MND. As described in the remainder of this document, the project would not involve any unique or new potential environmental effects, and that would be more severe than those accounted for in the County General Plan EIR; feasible mitigation measures for the potentially significant effects of the project are described in other portions of this Section and Table 1-1.

The GHD study included consideration of the project's cumulative VMT impacts based on potential project changes to the baseline average VMT per capita as discussed in Section 3.16 Transportation for project-level analysis. The percent reduction from the baseline of a 16% below the baseline is identified as the threshold of significance: 24.9 VMT per capita.

As discussed in Section 3.16 Transportation GHD analyzed project's connections to pedestrian, bicycle, and public transit modes, and a number of recommendations were made that would result in a reduction in per capita VMT to below the level of significance. These improvements have been reviewed by the project applicant and incorporated into the project.

c) Findings on Adverse Effects on Human Beings.

Potential adverse effects of Master Plan implementation on human beings were discussed in Section 3.3, Air Quality (TACs); Section 3.7, Geology and Soils (seismic hazards); Section 3.9, Hazards and Hazardous Materials; Section 3.10, Hydrology and Water Quality (flooding); Section 3.17, Transportation/Traffic (traffic hazards); and Section 3.20,

Wildfire. No significant and unavoidable adverse effects were identified in these sections; potential adverse impacts were either less than significant or could be mitigated to that level. Impacts related to potential adverse effects on human beings would be less than significant.

4.0 REFERENCES

4.1 DOCUMENT PREPARERS

This IS/MND was prepared by BaseCamp Environmental, Inc. under the direction of, and for use by, the Lockeford Community Services District. The following persons were involved in preparation of the IS/MND:

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4.2 SOURCES CITED

Bay Area Air Quality Management District (BAAQMD). 2017. California Environmental Quality Act Air Quality Guidelines. May 2017.

Bollard Acoustical Consultants. 2024. Environmental Noise Assessment: Kautz Lockeford Subdivision. July 25, 2024.

California Air Resources Board (ARB). 2017. California's 2017 Climate Change Scoping Plan. November 2017.

_____. 2021. California Greenhouse Gas Emissions for 2000 to 2019: Trends of Emissions and Other Indicators. July 28, 2021.

California Department of Conservation, Division of Land Resources Protection, Farmland Mapping and Monitoring Program (FMMP). 2016. San Joaquin County Williamson Act FY 2015/2016 (map).

_____. 2018. San Joaquin County Important Farmland 2018 (map).

California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR). 2022. Well Finder – CalGEM GIS. Available online at https://maps.conservation.ca.gov/doggr/wellfinder/. Accessed February 28, 2022.

California Department of Finance. 2021. Report E-5, Population and Housing Estimates for Cities, Counties, and the State, January 1, 2011-2021, with 2010 Benchmark. Released May 1, 2021.

California Department of Forestry and Fire Protection (CalFire). 2007. Draft Fire Hazard Severity Zones in LRA, San Joaquin County (map). October 2, 2007.

California Department of Resources Recovery and Recycling (CalRecycle). 2019. SWIS Facility Detail. Available online at https://www2.calrecycle.ca.gov/swfacilities/Directory/39-AA-0022/. Accessed August 7, 2019.

California Department of Toxic Substances Control (DTSC). 2022. EnviroStor database, www.envirostor.dtsc.ca.gov. Accessed February 4 and 17, 2022.

California Department of Transportation (Caltrans). 2019. List of Officially Designated State Scenic Highways. Available online at http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/scenic_hwy.htm. August 2019.

California Department of Water Resources (DWR). 2014. Geology of the Northern Sacramento Valley. June 2014, updated September 22, 2014.

California Energy Commission (CEC). 2020. 2020 California Renewables Portfolio Standard Annual Report. November 2020.

_____. 2022a. Electricity Consumption by County. Available online at ecdms.energy.ca.gov/elecbycounty.aspx. Accessed March 31, 2022.

_____. 2022b. Gas Consumption by County. Available online at ecdms.energy.ca.gov/gasbycounty.aspx. Accessed March 31, 2022.

California Environmental Protection Agency (CalEPA). 2021a. Sites Identified with Waste Constituents Above Hazardous Waste Levels Outside the Waste Management Unit. Available online at https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/SiteCleanup-CorteseList-CurrentList.pdf. Accessed March 5, 2021.

_____. 2021b. List of "Active" CDO and CAO from Water Board. Available online at http://www.calepa.ca.gov/SiteCleanup/CorteseList/default.htm. Accessed January 14, 2021.

California Geological Survey (CGS). 2022. CGS Information Warehouse: Regulatory Maps. Available online at maps.conservation.ca.gov/cgs/informationwarehouse/regulatorymaps/. Accessed April 7, 2022.

Congressional Research Service. 2021. Vehicle Fuel Economy and Greenhouse Gas Standards: Frequently Asked Questions. Updated June 1, 2021.

Crunden, E.A. 2020. Republic landfill expansion moves ahead in California after failed appeal. Waste Dive, January 10, 2020.

Eastern San Joaquin Groundwater Authority (ESJGA). 2019. Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan. November 2019.

Federal Emergency Management Agency (FEMA). 2009. Flood Insurance Rate Map No. 06077C0195F, San Joaquin County, California. Effective date October 16, 2009.

GHD. 2025. Transportation Impact and Vehicle Miles Traveled Report, Kautz Lockeford Subdivision. April 29, 2025.

Governor's Office of Planning and Research (OPR). 2018. Technical Advisory on Evaluating Traffic Impacts in CEQA. December 2018.

Lockeford Community Services District (CSD). 2011. Initial Study and Proposed Negative Declaration for District Sphere of Influence Expansion and Service Area Annexation of Kautz Property. Prepared by Atkins. December 2011.

_____. 2017. Sustainable Groundwater Management Act Fact Sheet. August 18, 2017.

_____. 2021. Draft Wastewater Facilities Master Plan. Prepared by Kjeldsen, Sinnock and Neudeck, Inc. December 22, 2021.

Moore Biological Consultants. 2022. Lockeford WasteWater Treatment Master Plan, San Joaquin County, California: Biological Assessment. December 23, 2022.

_____. 2025. Kautz Lockeford Subdivision: Biological Assessment. June 4, 2025.

Natural Investigations Company. 2025.Cultural and Paleontological Investigations for the Kautz Subdivision, Lockeford, San Joaquin County, California. March 2025.

Regional Water Quality Control Board (RWQCB), Central Valley Region. 2018a. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region: The Sacramento River Basin and the San Joaquin River Basin. Fifth Edition, Revised May 2018 (with Approved Amendments).

_____. 2018b. Final Staff Report: Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and Tulare Lake Basin to Incorporate a Central Valley-wide Salt and Nitrate Control Program. May 2018.

Sacramento Metropolitan Air Quality Management District (SMAQMD). 2021. Guide to Air Quality Assessment in Sacramento County: Chapter 6 – Greenhouse Gas Emissions. Adopted February 26, 2021.

San Joaquin Council of Governments (SJCOG). 2000. San Joaquin County Multi-Species Open Space and Habitat Conservation Plan (SJMSCP). November 14, 2000.

_____. 2018. 2018 Regional Transportation Plan/Sustainable Communities Strategy Draft Programmatic Environmental Impact Report. March 2018.

San Joaquin County. 2014. Draft San Joaquin County General Plan 2035 Environmental Impact Report. Prepared by ESA. October 2014.

_____. 2016a. San Joaquin County General Plan Background Report. Prepared by Mintier Harnish. December 2016.

_____. 2016b. San Joaquin County General Plan Policy Document. Prepared by Mintier Harnish. December 2016.

San Joaquin County Agricultural Commissioner's Office. 2021. 2020 San Joaquin County Crop Report.

San Joaquin County Flood Control and Water Conservation District. 2019. Groundwater Report, Spring 2019.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI). March 19, 2015.

_____. 2022. Ambient Air Quality Standards and Valley Attainment Status. Available online at http://www.valleyair.org/aqinfo/attainment.htm. Accessed January 24, 2022.

Solano Archaeological Services. 2022. Lockeford Wastewater Collection Improvements and Recycled Water Disposal Project, San Joaquin County, California. June 14, 2022.

State Water Resources Control Board (SWRCB). 2022. GeoTracker website, www.geotracker.swrcb.ca.gov. Accessed February 4, 2022.

University of California Museum of Paleontology (UCMP). 2020. UC Museum of Paleontology Localities database. Available online at https://ucmpdb.berkeley.edu/cgi/ucmp_query2. Accessed December 30, 2020.

U.S. Census Bureau. 2022. Geographic Profile - Lockeford CDP, California. Available online at https://data.census.gov/cedsci/profile?g=1600000US0642104. Accessed February 21, 2022.

U.S. Department of Agriculture. 2019. 2017 Census of Agriculture. California, State and County Data, Volume 1 – Geographic Area Series, Part 5. Issued April 2019.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2022. Custom Soil Resource Report for San Joaquin County, California. February 16, 2022.

U.S. Department of Agriculture, Soil Conservation Service (SCS). 1992. Soil Survey of San Joaquin County, California.

U.S. Environmental Protection Agency (EPA). 2009. Endangerment and Cause of Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act. Federal Register Vol. 74, No. 239, pp. 66496-66546. December 15, 2009.

Wagner, D. L., C.W. Jennings, T.L. Bedrosian and E. J. Bortugno. 1981. Geologic Map of the Sacramento Quadrangle, California, 1:250,000. California Division of Mines and Geology, Regional Geologic Map Series.

Westerling, Leroy, Josue Medellin-Azuara, Joshua Viers. 2018. San Joaquin Valley Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-003.

4.3 PERSONS CONSULTED

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5.0 NOTES ON 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 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 [CEQA Guidelines Section 15063(c)(3)(D)]. In this case, a brief discussion should identify the following:

    a) Earlier Analyses 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 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) The checklist in CEQA Guidelines Appendix G 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.

APPENDIX A
AIR QUALITY MODELING RESULTS

Kautz Subdivision, one-year construction Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Kautz Subdivision, one-year construction
Construction Start Date	1/1/2026
Operational Year	2027
Lead Agency	County of San Joaquin
Land Use Scale	Plan/community
Analysis Level for Defaults	County
Windspeed (m/s)	3.40
Precipitation (days)	36.0
Location	38.16431552676235, -121.14364691234996
County	San Joaquin
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2119
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	296	Dwelling Unit	105	577,200	3,467,006	—	956	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Transportation	T-17	Improve Street Connectivity
Transportation	T-18	Provide Pedestrian Network Improvement
Transportation	T-19-A	Construct or Improve Bike Facility
Transportation	T-19-B	Construct or Improve Bike Boulevard
Transportation	T-20	Expand Bikeway Network
Energy	E-1	Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards
Energy	E-2	Require Energy Efficient Appliances
Energy	E-15	Require All-Electric Development

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.78	1.52	11.2	18.5	0.03	0.39	1.14	1.53	0.36	0.28	0.64	4,307
Mit.	1.78	1.52	11.2	18.5	0.03	0.39	1.14	1.53	0.36	0.28	0.64	4,307
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	182	182	29.2	29.5	0.06	1.24	5.26	6.50	1.14	2.66	3.80	6,787
Mit.	182	182	29.2	29.5	0.06	1.24	5.26	6.50	1.14	2.66	3.80	6,787

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	11.1	10.9	7.97	11.6	0.02	0.29	0.84	1.13	0.27	0.25	0.52	2,718
Mit.	11.1	10.9	7.97	11.6	0.02	0.29	0.84	1.13	0.27	0.25	0.52	2,718
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.03	1.99	1.45	2.11	< 0.005	0.05	0.15	0.21	0.05	0.05	0.09	450
Mit.	2.03	1.99	1.45	2.11	< 0.005	0.05	0.15	0.21	0.05	0.05	0.09	450
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.78	1.52	11.2	18.5	0.03	0.39	1.14	1.53	0.36	0.28	0.64	4,307
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
2026	182	182	29.2	29.5	0.06	1.24	5.26	6.50	1.14	2.66	3.80	6,787
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
2026	11.1	10.9	7.97	11.6	0.02	0.29	0.84	1.13	0.27	0.25	0.52	2,718
Annual	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.03	1.99	1.45	2.11	< 0.005	0.05	0.15	0.21	0.05	0.05	0.09	450

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.78	1.52	11.2	18.5	0.03	0.39	1.14	1.53	0.36	0.28	0.64	4,307
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
2026	182	182	29.2	29.5	0.06	1.24	5.26	6.50	1.14	2.66	3.80	6,787
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
2026	11.1	10.9	7.97	11.6	0.02	0.29	0.84	1.13	0.27	0.25	0.52	2,718
Annual	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.03	1.99	1.45	2.11	< 0.005	0.05	0.15	0.21	0.05	0.05	0.09	450

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	29.7	28.0	18.8	180	0.43	0.51	36.2	36.7	0.49	9.21	9.70	48,410
Mit.	29.4	27.9	16.6	179	0.42	0.34	36.2	36.5	0.31	9.20	9.52	45,556
% Reduced	1%	< 0.5%	12%	1%	3%	34%	< 0.5%	1%	36%	< 0.5%	2%	6%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	27.3	25.7	21.2	133	0.40	0.50	36.2	36.7	0.48	9.21	9.69	45,135
Mit.	27.1	25.6	19.0	132	0.39	0.33	36.2	36.5	0.31	9.20	9.51	42,283
% Reduced	1%	1%	10%	1%	3%	35%	< 0.5%	1%	36%	< 0.5%	2%	6%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	27.8	26.1	19.8	142	0.40	0.50	34.6	35.1	0.48	8.80	9.28	45,017

Mit.	27.5	26.0	17.6	141	0.39	0.32	34.6	34.9	0.30	8.80	9.10	42,165
% Reduced	1%	1%	11%	1%	3%	35%	< 0.5%	1%	37%	< 0.5%	2%	6%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.07	4.77	3.62	25.9	0.07	0.09	6.31	6.40	0.09	1.61	1.69	7,453
Mit.	5.02	4.75	3.22	25.7	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,981
% Reduced	1%	1%	11%	1%	3%	35%	< 0.5%	1%	37%	< 0.5%	2%	6%

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	14.6	13.0	16.5	162	0.42	0.33	36.2	36.5	0.31	9.21	9.52	43,496
Area	14.9	14.8	0.16	16.8	< 0.005	0.01	—	0.01	0.01	—	0.01	45.1
Energy	0.25	0.13	2.17	0.93	0.01	0.18	—	0.18	0.18	—	0.18	4,192
Water	—	—	—	—	—	—	—	—	—	—	—	180
Waste	—	—	—	—	—	—	—	—	—	—	—	493
Refrig.	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	29.7	28.0	18.8	180	0.43	0.51	36.2	36.7	0.49	9.21	9.70	48,410
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	13.7	12.2	19.0	132	0.39	0.33	36.2	36.5	0.31	9.21	9.52	40,266
Area	13.3	13.3	—	—	—	—	—	—	—	—	—	—
Energy	0.25	0.13	2.17	0.93	0.01	0.18	—	0.18	0.18	—	0.18	4,192
Water	—	—	—	—	—	—	—	—	—	—	—	180
Waste	—	—	—	—	—	—	—	—	—	—	—	493
Refrig.	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	27.3	25.7	21.2	133	0.40	0.50	36.2	36.7	0.48	9.21	9.69	45,135

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	13.4	11.9	17.6	133	0.39	0.32	34.6	34.9	0.30	8.80	9.10	40,126
Area	14.1	14.1	0.08	8.29	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	22.2
Energy	0.25	0.13	2.17	0.93	0.01	0.18	—	0.18	0.18	—	0.18	4,192
Water	—	—	—	—	—	—	—	—	—	—	—	180
Waste	—	—	—	—	—	—	—	—	—	—	—	493
Refrig.	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	27.8	26.1	19.8	142	0.40	0.50	34.6	35.1	0.48	8.80	9.28	45,017
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.45	2.18	3.20	24.2	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,643
Area	2.57	2.57	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	3.68
Energy	0.05	0.02	0.40	0.17	< 0.005	0.03	—	0.03	0.03	—	0.03	694
Water	—	—	—	—	—	—	—	—	—	—	—	29.7
Waste	—	—	—	—	—	—	—	—	—	—	—	81.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	0.68
Total	5.07	4.77	3.62	25.9	0.07	0.09	6.31	6.40	0.09	1.61	1.69	7,453

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	14.5	13.0	16.4	162	0.42	0.33	36.2	36.5	0.31	9.20	9.51	43,479
Area	14.9	14.8	0.16	16.8	< 0.005	0.01	—	0.01	0.01	—	0.01	45.1
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	1,355
Water	—	—	—	—	—	—	—	—	—	—	—	180
Waste	—	—	—	—	—	—	—	—	—	—	—	493

Refrig.	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	29.4	27.9	16.6	179	0.42	0.34	36.2	36.5	0.31	9.20	9.52	45,556
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	13.7	12.2	19.0	132	0.39	0.33	36.2	36.5	0.31	9.20	9.51	40,250
Area	13.3	13.3	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	1,355
Water	—	—	—	—	—	—	—	—	—	—	—	180
Waste	—	—	—	—	—	—	—	—	—	—	—	493
Refrig.	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	27.1	25.6	19.0	132	0.39	0.33	36.2	36.5	0.31	9.20	9.51	42,283
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	13.4	11.9	17.6	133	0.39	0.32	34.6	34.9	0.30	8.80	9.10	40,110
Area	14.1	14.1	0.08	8.29	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	22.2
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	1,355
Water	—	—	—	—	—	—	—	—	—	—	—	180
Waste	—	—	—	—	—	—	—	—	—	—	—	493
Refrig.	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	27.5	26.0	17.6	141	0.39	0.32	34.6	34.9	0.30	8.80	9.10	42,165
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.45	2.18	3.20	24.2	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,641
Area	2.57	2.57	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	3.68
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	224
Water	—	—	—	—	—	—	—	—	—	—	—	29.7
Waste	—	—	—	—	—	—	—	—	—	—	—	81.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	0.68
Total	5.02	4.75	3.22	25.7	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,981

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	5,316
Dust From Material Movement	—	—	—	—	—	—	5.11	5.11	—	2.63	2.63	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.80	0.79	< 0.005	0.03	—	0.03	0.03	—	0.03	146
Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	24.1
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.67	0.00	0.00	0.15	0.15	0.00	0.03	0.03	145
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	4.08
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.68
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2. Site Preparation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	5,316
Dust From Material Movement	—	—	—	—	—	—	5.11	5.11	—	2.63	2.63	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.80	0.79	< 0.005	0.03	—	0.03	0.03	—	0.03	146
Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	24.1
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.67	0.00	0.00	0.15	0.15	0.00	0.03	0.03	145
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	4.08
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.68

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	6,621
Dust From Material Movement	—	—	—	—	—	—	2.39	2.39	—	0.95	0.95	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.75	0.76	< 0.005	0.03	—	0.03	0.03	—	0.03	181
Dust From Material Movement	—	—	—	—	—	—	0.07	0.07	—	0.03	0.03	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.14	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	30.0
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.06	0.76	0.00	0.00	0.17	0.17	0.00	0.04	0.04	166
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	4.66
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	6,621

Dust From Material Movement	—	—	—	—	—	—	2.39	2.39	—	0.95	0.95	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.75	0.76	< 0.005	0.03	—	0.03	0.03	—	0.03	181
Dust From Material Movement	—	—	—	—	—	—	0.07	0.07	—	0.03	0.03	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.14	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	30.0
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.06	0.76	0.00	0.00	0.17	0.17	0.00	0.04	0.04	166
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	4.66
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.70	0.59	5.40	7.10	0.01	0.21	—	0.21	0.19	—	0.19	1,318
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.99	1.30	< 0.005	0.04	—	0.04	0.03	—	0.03	218
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.45	0.42	0.27	5.13	0.00	0.00	0.90	0.90	0.00	0.21	0.21	979
Vendor	0.05	0.03	1.07	0.36	0.01	0.01	0.24	0.25	0.01	0.07	0.08	922
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.43	0.39	0.34	4.06	0.00	0.00	0.90	0.90	0.00	0.21	0.21	884
Vendor	0.04	0.03	1.13	0.37	0.01	0.01	0.24	0.25	0.01	0.07	0.08	920
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.21	0.17	2.28	0.00	0.00	0.48	0.48	0.00	0.11	0.11	497
Vendor	0.02	0.02	0.61	0.20	< 0.005	0.01	0.13	0.14	0.01	0.04	0.04	505
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.42	0.00	0.00	0.09	0.09	0.00	0.02	0.02	82.3
Vendor	< 0.005	< 0.005	0.11	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	83.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.70	0.59	5.40	7.10	0.01	0.21	—	0.21	0.19	—	0.19	1,318
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.99	1.30	< 0.005	0.04	—	0.04	0.03	—	0.03	218
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.45	0.42	0.27	5.13	0.00	0.00	0.90	0.90	0.00	0.21	0.21	979
Vendor	0.05	0.03	1.07	0.36	0.01	0.01	0.24	0.25	0.01	0.07	0.08	922
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.43	0.39	0.34	4.06	0.00	0.00	0.90	0.90	0.00	0.21	0.21	884
Vendor	0.04	0.03	1.13	0.37	0.01	0.01	0.24	0.25	0.01	0.07	0.08	920
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.21	0.17	2.28	0.00	0.00	0.48	0.48	0.00	0.11	0.11	497
Vendor	0.02	0.02	0.61	0.20	< 0.005	0.01	0.13	0.14	0.01	0.04	0.04	505
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.04	0.04	0.03	0.42	0.00	0.00	0.09	0.09	0.00	0.02	0.02	82.3
Vendor	< 0.005	< 0.005	0.11	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	83.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	1,516
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	41.5
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.88
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.57	0.00	0.00	0.13	0.13	0.00	0.03	0.03	124
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	3.50
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	1,516
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	41.5
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.88
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.57	0.00	0.00	0.13	0.13	0.00	0.03	0.03	124
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	3.50
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	134
Architectural Coatings	181	181	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.34
Architectural Coatings	9.90	9.90	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.22
Architectural Coatings	1.81	1.81	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.09	0.08	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	177
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	9.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	134
Architectural Coatings	181	181	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	7.34

Architectural Coatings	9.90	9.90	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	1.22
Architectural Coatings	1.81	1.81	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	177
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	9.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	14.6	13.0	16.5	162	0.42	0.33	36.2	36.5	0.31	9.21	9.52	43,496
Total	14.6	13.0	16.5	162	0.42	0.33	36.2	36.5	0.31	9.21	9.52	43,496
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	13.7	12.2	19.0	132	0.39	0.33	36.2	36.5	0.31	9.21	9.52	40,266
Total	13.7	12.2	19.0	132	0.39	0.33	36.2	36.5	0.31	9.21	9.52	40,266
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	2.45	2.18	3.20	24.2	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,643
Total	2.45	2.18	3.20	24.2	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,643

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	14.5	13.0	16.4	162	0.42	0.33	36.2	36.5	0.31	9.20	9.51	43,479
Total	14.5	13.0	16.4	162	0.42	0.33	36.2	36.5	0.31	9.20	9.51	43,479
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	13.7	12.2	19.0	132	0.39	0.33	36.2	36.5	0.31	9.20	9.51	40,250
Total	13.7	12.2	19.0	132	0.39	0.33	36.2	36.5	0.31	9.20	9.51	40,250
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	2.45	2.18	3.20	24.2	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,641
Total	2.45	2.18	3.20	24.2	0.07	0.06	6.31	6.37	0.06	1.61	1.66	6,641

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1,424
Total	—	—	—	—	—	—	—	—	—	—	—	1,424
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1,424
Total	—	—	—	—	—	—	—	—	—	—	—	1,424
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	236
Total	—	—	—	—	—	—	—	—	—	—	—	236

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1,355
Total	—	—	—	—	—	—	—	—	—	—	—	1,355
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1,355
Total	—	—	—	—	—	—	—	—	—	—	—	1,355
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	224
Total	—	—	—	—	—	—	—	—	—	—	—	224

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.25	0.13	2.17	0.93	0.01	0.18	—	0.18	0.18	—	0.18	2,767
Total	0.25	0.13	2.17	0.93	0.01	0.18	—	0.18	0.18	—	0.18	2,767
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.25	0.13	2.17	0.93	0.01	0.18	—	0.18	0.18	—	0.18	2,767
Total	0.25	0.13	2.17	0.93	0.01	0.18	—	0.18	0.18	—	0.18	2,767
Annual	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.05	0.02	0.40	0.17	< 0.005	0.03	—	0.03	0.03	—	0.03	458
Total	0.05	0.02	0.40	0.17	< 0.005	0.03	—	0.03	0.03	—	0.03	458

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	12.4	12.4	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.99	0.99	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.56	1.47	0.16	16.8	< 0.005	0.01	—	0.01	0.01	—	0.01	45.1
Total	14.9	14.8	0.16	16.8	< 0.005	0.01	—	0.01	0.01	—	0.01	45.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	12.4	12.4	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.99	0.99	—	—	—	—	—	—	—	—	—	—
Total	13.3	13.3	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.25	2.25	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.18	0.18	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.14	0.13	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	3.68
Total	2.57	2.57	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	3.68

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	12.4	12.4	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.99	0.99	—	—	—	—	—	—	—	—	—	—

Landscape Equipment	1.56	1.47	0.16	16.8	< 0.005	0.01	—	0.01	0.01	—	0.01	45.1
Total	14.9	14.8	0.16	16.8	< 0.005	0.01	—	0.01	0.01	—	0.01	45.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	12.4	12.4	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.99	0.99	—	—	—	—	—	—	—	—	—	—
Total	13.3	13.3	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.25	2.25	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.18	0.18	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.14	0.13	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	3.68
Total	2.57	2.57	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	3.68

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	180
Total	—	—	—	—	—	—	—	—	—	—	—	180
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	180
Total	—	—	—	—	—	—	—	—	—	—	—	180
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	29.7
Total	—	—	—	—	—	—	—	—	—	—	—	29.7

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	180
Total	—	—	—	—	—	—	—	—	—	—	—	180
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	180
Total	—	—	—	—	—	—	—	—	—	—	—	180
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	29.7
Total	—	—	—	—	—	—	—	—	—	—	—	29.7

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	493
Total	—	—	—	—	—	—	—	—	—	—	—	493
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	493
Total	—	—	—	—	—	—	—	—	—	—	—	493
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	81.7
Total	—	—	—	—	—	—	—	—	—	—	—	81.7

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	493
Total	—	—	—	—	—	—	—	—	—	—	—	493
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	493
Total	—	—	—	—	—	—	—	—	—	—	—	493
Annual	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	81.7
Total	—	—	—	—	—	—	—	—	—	—	—	81.7

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	—	—	—	—	—	—	—	—	—	—	—	4.13
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	—	—	—	—	—	—	—	—	—	—	—	4.13
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	—	0.68

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	—	—	—	—	—	—	—	—	—	—	—	4.13
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	4.13
Total	—	—	—	—	—	—	—	—	—	—	—	4.13
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	—	0.68

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	01/01/2026	1/14/2026	5.00	10.0	—
Grading	Grading	1/15/2026	1/28/2026	5.00	10.0	—
Building Construction	Building Construction	2/12/2026	11/18/2026	5.00	200	—
Paving	Paving	11/19/2026	12/2/2026	5.00	10.0	—
Architectural Coating	Architectural Coating	11/25/2026	12/22/2026	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40

Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.9	LDA,LDT1,LDT2
Site Preparation	Vendor	—	9.10	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	11.9	LDA,LDT1,LDT2
Grading	Vendor	—	9.10	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	107	11.9	LDA,LDT1,LDT2
Building Construction	Vendor	31.6	9.10	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.9	LDA,LDT1,LDT2
Paving	Vendor	—	9.10	HHDT,MHDT

Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	21.3	11.9	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	9.10	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.9	LDA,LDT1,LDT2
Site Preparation	Vendor	—	9.10	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	11.9	LDA,LDT1,LDT2
Grading	Vendor	—	9.10	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	107	11.9	LDA,LDT1,LDT2
Building Construction	Vendor	31.6	9.10	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.9	LDA,LDT1,LDT2
Paving	Vendor	—	9.10	HHDT,MHDT

Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	21.3	11.9	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	9.10	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	1,168,830	389,610	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15.0	0.00	—
Grading	—	—	30.0	0.00	—
Paving	0.00	0.00	0.00	0.00	3.26

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	3.26	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	2,794	2,824	2,531	1,007,704	50,302	50,835	45,560	18,140,752

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	2,793	2,823	2,530	1,007,305	50,282	50,815	45,542	18,133,565

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
1168830	389,610	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	2,523,610	204	0.0330	0.0040	8,610,648

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	2,401,291	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	12,039,437	59,477,108

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	12,039,437	59,477,108

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	262	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	262	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0

Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	24.6	annual days of extreme heat
Extreme Precipitation	3.00	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	1	0	0	N/A
Drought	1	0	0	N/A

Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	53.7
AQ-PM	48.8
AQ-DPM	27.7
Drinking Water	53.2
Lead Risk Housing	33.2
Pesticides	88.0
Toxic Releases	18.0
Traffic	18.9
Effect Indicators	—
CleanUp Sites	58.2
Groundwater	0.00
Haz Waste Facilities/Generators	50.1
Impaired Water Bodies	66.7
Solid Waste	0.00
Sensitive Population	—
Asthma	44.6
Cardio-vascular	85.8
Low Birth Weights	98.8
Socioeconomic Factor Indicators	—
Education	62.2
Housing	44.5
Linguistic	48.7
Poverty	62.7
Unemployment	74.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	27.81983832
Employed	26.76761196
Median HI	29.44950597
Education	—
Bachelor's or higher	22.22507378
High school enrollment	100
Preschool enrollment	11.77980239
Transportation	—
Auto Access	63.41588605
Active commuting	39.53548056
Social	—
2-parent households	65.57166688
Voting	79.45592198
Neighborhood	—
Alcohol availability	57.43616066
Park access	2.194276915
Retail density	11.4718337
Supermarket access	64.89156936
Tree canopy	75.72180162
Housing	—
Homeownership	68.57436161
Housing habitability	59.96407032
Low-inc homeowner severe housing cost burden	96.45836007
Low-inc renter severe housing cost burden	14.9108174
Uncrowded housing	35.14692673
Health Outcomes	—

Insured adults	27.96099063
Arthritis	0.0
Asthma ER Admissions	88.5
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	11.6
Cognitively Disabled	56.3
Physically Disabled	49.3
Heart Attack ER Admissions	44.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	62.5
Elderly	45.9

English Speaking	24.2
Foreign-born	37.2
Outdoor Workers	4.1
Climate Change Adaptive Capacity	—
Impervious Surface Cover	83.9
Traffic Density	2.2
Traffic Access	0.0
Other Indices	—
Hardship	70.4
Other Decision Support	—
2016 Voting	62.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	66.0
Healthy Places Index Score for Project Location (b)	35.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Larger Acreage
Construction: Construction Phases	No demolition
Operations: Hearths	No Hearths
Characteristics: Project Details	Urban Density, Adjacent to other developments of comparable density

APPENDIX B
BIOLOGICAL RESOURCES REPORT

MOORE BIOLOGICAL CONSULTANTS

September 17, 2025

Mr. John F. Kautz
5252 Bear Creek Road
Lodi, CA 95240

Subject: "KAUTZ LOCKEFORD SUBDIVISION", SAN JOAQUIN COUNTY, CALIFORNIA: BIOLOGICAL ASSESSMENT

Dear Jack:

Thank you for asking Moore Biological Consultants to prepare a Biological Assessment (BA) for this project in Lockeford, in San Joaquin County, California (Figures 1 and 2). The purposes of this assessment are to describe existing biological resources in the site, identify potentially significant impacts to biological resources from the project, and provide recommendations for how to reduce those impacts to a less-than-significant level. The work involved reviewing databases, aerial photographs, and documents, and conducting field surveys to document vegetation communities, potentially jurisdictional Waters of the U.S. and/or wetlands, and potentially suitable habitat for or presence of special-status species. This report details the methodology and results of our investigation.

Project Overview

The 104.9+/- acre site is proposed for residential development (see Tentative Map in Attachment A). Access to the new subdivision will be from two locations along N. Tully Road. Additionally, roads in the north and east parts of the site will extend north and east in to the adjacent parcels when they are developed. Stormwater will be collected, detained, and treated on site prior to discharge in to Bear Creek. The project will connect to existing Lockeford and PG&E infrastructure for water, electricity, and gas.

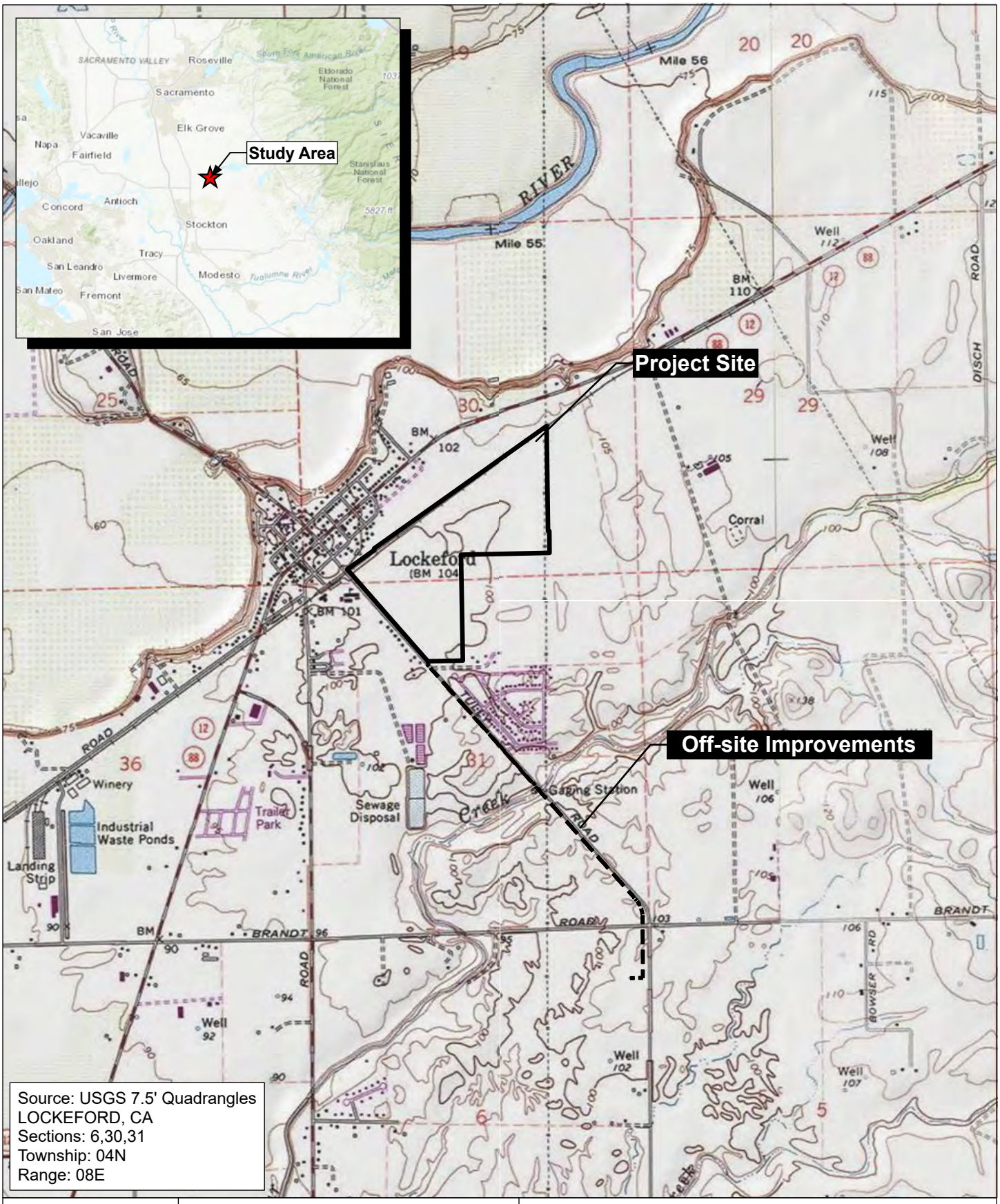

Figure 1

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Feet

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Map Date: 05/06/2025

Moore Biological Consultants

USGS

Kautz Lockeford Subdivision

San Joaquin County, CA

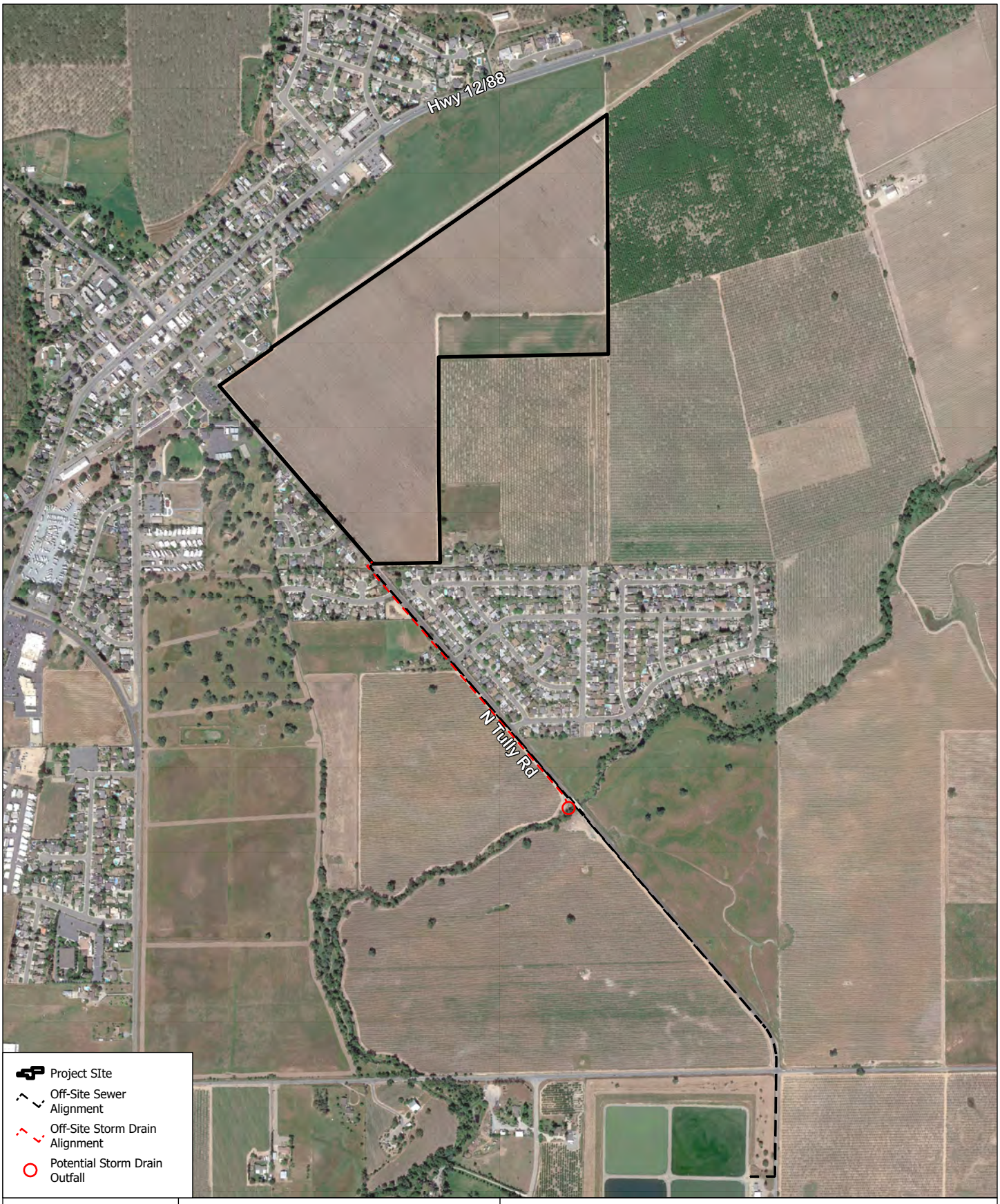

Figure 2

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Feet

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Map Date: 09/05/2025
Imagery Source: Google Earth (04/2022)

Moore Biological Consultants

AERIAL

Kautz Lockeford Subdivision

San Joaquin County, CA

The project will involve installation of a sewer force main from the southwest corner of the site southeast along the southwest side of N. Tully Road approximately 1.15 miles to the Lockeford Community Services District's sewer plant. This sewer line will either be attached to the side of the Bear Creek bridge or installed under the creek using bore and jack technology.

The project will also involve installation of a storm drain line from the southwest corner of the site along the southwest side of N. Tully Road approximately 0.5 miles to Bear Creek. A storm drain outfall will be constructed on the north bank of the creek, approximately 50 feet downstream of the N. Tully Road Bridge.

Methods

Prior to the field surveys, we conducted a search of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB, 2024); an updated search was conducted in June 2025. The CNDDB search extended 5 miles beyond the site boundary, which includes portions of the Lockeford, Clements, Waterloo, and Linden USGS 7.5-minute topographic quadrangles (Attachment B). The United States Fish and Wildlife Service (USFWS*)* IPaC Trust Resource Report of Federally Threatened and Endangered species that may occur in or be affected by projects in the project vicinity was also reviewed. This information was used to identify wildlife and plant species that have been documented in the project vicinity or that may have the potential to occur if suitable habitat is present.

We reviewed the National Marine Fisheries Service (NMFS) on-line-maps of designated critical habitat (NOAA, 2025). The USFWS on-line-maps of designated critical habitat and the National Wetland Inventory (NWI) were also reviewed (USFWS, 2025b; 2025c). We also reviewed the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (HCP) maps (SJCOG, 2000).

Biologists Diane Moore, M.S. and Colleen A. Laskowski, M.S. conducted field surveys on June 7 and 25, 2024, and September 3, 2025. The surveys consisted of walking and driving throughout the site observing habitat conditions and noting surrounding land uses, general habitat types, and plant and wildlife species. The surveys included an assessment of the site for potentially jurisdictional Waters of the U.S. (a term that includes wetlands) as defined by the ACOE, 1987; 2008) and/or Waters of the State, including wetlands.

The site was for searched for special-status species and potentially suitable habitat for special-status species (e.g., areas with unusual soils, blue elderberry shrubs). Additionally, trees in and near the site were assessed for the potential use by nesting raptors, especially Swainson's hawk (*Buteo swainsoni*). The grassland areas in the site were searched for burrowing owls (*Athene cunicularia*) or ground squirrel burrows with evidence of past occupancy.

A table of "Special-Status Species" pursuant to CEQA was compiled from the results of the database searches. Special-status species include those listed as threatened or endangered, or species that are candidates for listing at the state or federal level, rare plants, and animals considered sensitive by CDFW. The Special-Status Species table includes species documented in the CNDDB within 5 miles of the site and species listed in the IPAC; common species identified in the CNDDB were excluded.

Results

GENERAL SETTING: The project site is in Lockeford, San Joaquin County, California. The site is within Sections 30 and 31, in Township 4 North, Range 8 East of the USGS 7.5-minute Lockeford topographic quadrangle (Figure 1). The site is essentially level and is at an elevation of approximately 100 feet above mean sea level.

The body of the site, which is envisioned for residential development, is currently a vineyard and a small hay field, both of which have been intensively farmed for decades (Figure 3 and photographs in Attachment C). Land uses in this portion of San Joaquin County are primarily agricultural and residential. N. Tully Road borders the southwest edge of the site and a majority of the northwest edge of the site is adjacent to a hay field. The remaining edges of the site are either bounded by orchards, residential subdivisions, or fallow grassland. Parcels adjacent to the sewer and storm drain alignment consist of vineyards, developed areas, or disturbed ruderal grassland along the N. Tully Road shoulder.

VEGETATION: Habitats in the site are highly disturbed from intensive farming and development of parcels adjacent to the site (see photographs in Attachment C). There is highly disturbed grassland vegetation between the rows of vines, edges of the hay field, and along the N. Tully Road shoulder. Foxtail barley (*Hordeum murinum*), soft chess (*Bromus hordeaceus*), and oats (*Avena fatua*) are the dominant grasses in the site. Other grassland species found in the site include bull thistle (*Cirsium vulgare*), field bindweed (*Convolvulus arvensis*), long-beak filaree (*Erodium botrys*), and yellow star-thistle (*Centaurea solstitialis*). Table 1 is a list of plant species observed in the site.

There are a few trees along the edges of the vineyard, adjacent to the farm roads, along N. Tully Road, and along the banks of Bear Creek. Trees in the site include volunteer almonds, blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), and live oak (*Quercus wizlisenii*). There are some relatively large trees in surrounding parcels, most of which are either orchard trees or ornamental species associated with nearby residential subdivisions. No blue elderberry shrubs (*Sambucus nigra ssp. caerulea*) were observed in or adjacent to the site, or in the Bear Creek riparian corridor near the N. Tully Road bridge.

WILDLIFE: A variety of bird species were observed in the site during the field surveys. Turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*),

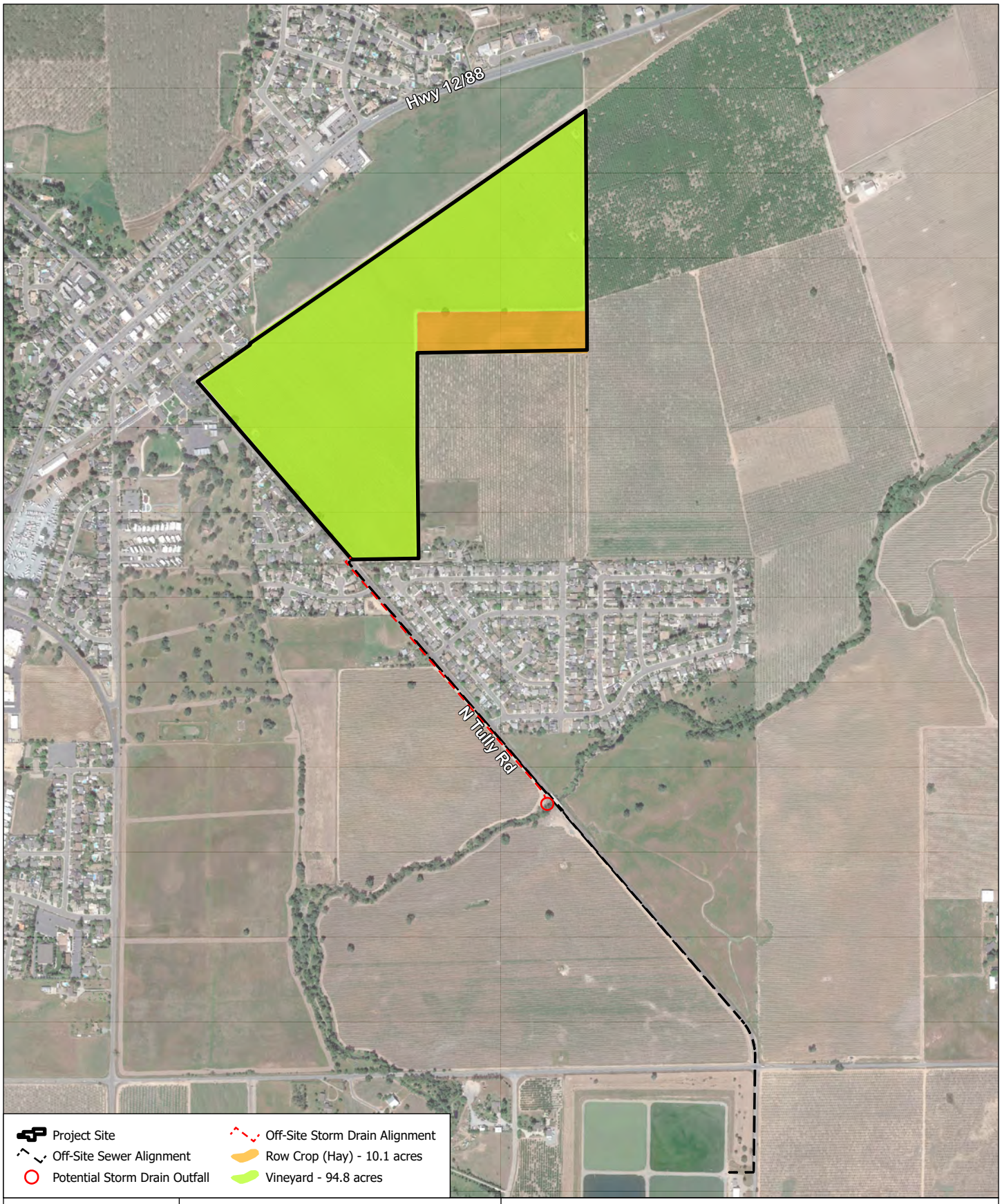

Figure 3

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Map Date: 09/11/2025
Imagery Source: Google Earth (06/2022)

Moore Biological Consultants

LAND USE

Kautz Lockeford Subdivision

San Joaquin County, CA

TABLE 1

PLANT SPECIES OBSERVED IN THE SITE

Acmispon americanus	Spanish clover
Amaranthus albus	tumbleweed
Amsinckia menziesii	Menzies' fiddleneck
Avena sp.	oat
Bromus hordeaceus	soft chess
Centaurea solstitialis	yellow star-thistle
Cirsium vulgare	bull thistle
Conium maculatum	poison hemlock
Convolvulus arvensis	morning glory
Cucurbita sp.	wild melon
Cynodon dactylon	Bermuda grass
Dittrichia graveolens	stinkwort
Epilobium brachycarpum	willowherb
Eremocarpus setigerus	turkey mullein
Erigeron bonariensis	flax-leaved horseweed
Erigeron canadensis	Canadian horseweed
Erodium botrys	long-beak filaree
Hordeum marinum	seaside barley
Hordeum murinum	foxtail barley
Lactuca serriola	prickly lettuce
Leontodon saxatilis	long-beaked hawkbit
Lolium perenne	perennial ryegrass
Malva neglecta	common mallow
Phytolacca americana	American pokeweed
Plantago lanceolata	English plantain
Poa annua	annual blue grass
Quercus douglasii	blue oak
Quercus lobata	valley oak
Quercus wizlisenii	interior live oak
Raphanus sativa	radish
Sinapis arvensis	field mustard
Sonchus asper	spiny-leaf sow-thistle
Sorghum halepense	Johnson grass
Tragopogon porrifolius	purple salsify
Tribulus terrestris	puncture vine

American crow (*Corvus brachyrhynchos*), California scrubjay (*Aphelocoma californica*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), and house finch (*Carpodacus mexicanus*) are representative bird species observed in the site (Table 2).

There are a few trees along the edges of the site and several large trees in nearby parcels that are suitable for nesting raptors, including Swainson's hawk. A Swainson's hawk was observed standing on the ground in a hay field to the northwest of the site during the June 18, 2024 survey. The hawk flew off after several minutes and began soaring over the area, presumably foraging.

Habitats in the site, although heavily managed and farmed, provide suitable nesting habitat for a variety of smaller birds, such as songbirds. Trees along the edges of the site and even grape vines provide suitable nesting habitat for smaller birds, such as mourning dove, northern mockingbird, California scrub jay, and other common birds. Red-winged blackbird (*Agelaius phoeniceus*) may also nest in the hay field and killdeer (*Charadrius vociferus*) may nest in gravel areas or on bare ground.

A variety of mammals common to urban and agricultural areas may occur in the site periodically, but none are expected to occur in the site in an intensive capacity. For example, coyote (*Canis latrans*) may move through and forage in the site, but is not expected to den in the intensively cultivated vineyard or hay field. No mammals were observed in the site during the field surveys; only a few California ground squirrel burrows were observed. Common mammals such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*) and Virginia opossum (*Didelphis virginiana*) may occur in the site. Finally, a number of species of small rodents including mice (*Mus musculus, Reithrodontomys megalotis,* and *Peromyscus maniculatus*) and voles (*Microtus californicus*) also likely occur.

TABLE 2

WILDLIFE SPECIES OBSERVED IN THE SITE

Birds	
Great egret	*Ardea alba*
Turkey vulture	*Cathartes aura*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
Mourning dove	*Zenaida macroura*
Acorn woodpecker	*Melanerpes formicivorus*
Northern mockingbird	*Mimus polyglottos*
California scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Western bluebird	*Sialia mexicana*
Yellow-rumped warbler	*Setophaga coronata*
Brewer's blackbird	*Euphagus cyanocephalus*
European starling	*Sturnus vulgaris*
Tree swallow	*Tachycineta bicolor*
House finch	*Carpodacus mexicanus*
Mammals	
California ground squirrel	*Otospermophilus beecheyi*
Reptiles	
Western fence lizard	*Sceloporus occidentalis*

Based on habitats present, the site provides suitable habitat for only a few species of reptiles and amphibians. Western fence lizard (*Sceloporus occidentalis*) was the only reptile observed in the site; no amphibians were observed. The site provides potentially suitable habitat for common species such as Pacific chorus frog (*Pseudacris regilla*), gopher snake (*Pituophis melanoleucus*), common king snake (*Lampropeltis getulus*), western skink (*Plestidon skiltonianus*), and common garter snake (*Thamnophis sirtalis*).

AQUATIC RESOURCES: Waters of the U.S., including wetlands, are defined under 33 Code of Federal Regulations (CFR) 328 to include navigable waterways, their tributaries, and adjacent wetlands. State and federal agencies regulate these habitats and Section 404 of the Clean Water Act requires that a permit be secured prior to the discharge of dredged or fill materials into any Waters of the U.S. The California Regional Water Quality Control Board (RWQCB) implements Section 401 of the Clean Water Act by issuing 401 Certification in support of 404 permits. Many jurisdictional Waters of the U.S. in California are also Waters of the State, and also fall under the jurisdiction of CDFW.

"Waters of the U.S.", as defined in 33 CFR 328.4, encompasses Territorial Seas, Tidal Waters, and Non-Tidal Waters; Non-Tidal Waters includes interstate and intrastate rivers and streams, their tributaries, and their adjacent wetlands. The limit of federal jurisdiction of Non-Tidal Waters of the U.S. extends to the "ordinary high water mark" (OHWM). The OHWM is established by physical characteristics such as a natural water line impressed on the bank, presence of shelves, destruction of terrestrial vegetation, or the presence of litter and debris.

Wetlands are vegetated areas that meet specific vegetation, soil, and hydrologic criteria defined by the ACOE *Wetlands Delineation Manual* and Regional Supplement (ACOE, 1987; 2008). Wetlands that are adjacent to and hydrologically very closely associated with jurisdictional lakes, rivers, streams, and tributaries can also fall under ACOE jurisdiction as "adjacent wetlands". Geographically and hydrologically isolated wetlands are outside federal jurisdiction, but are regulated by RWQCB as a "Water of the State".

Jurisdictional Waters of the U.S. and wetlands include, but are not limited to, most perennial and intermittent creeks and lakes, as well as adjacent wetlands such as riparian wetlands along the edges of rivers. Waters of the U.S., wetlands, and other aquatic habitats provide critical habitat components, such as nest sites and a reliable source of water, for a wide variety of wildlife species.

Under Section 1600-1616 of the Fish and Game Code of California (FGCC), project proponents are required to notify CDFW prior to initiating activities for any project that would divert water from, or obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement.

There are no potentially jurisdictional Waters of the U.S. or wetlands in the subdivision site. There are also no areas in the site meeting the criteria of Waters of the State or meet the technical criteria of wetlands (i.e., presence of hydrophytic vegetation, hydric soils, and wetland hydrology). The site is vegetated with upland grasses and has soils that appear to be well draining.

Bear Creek, which flows generally northeast to southwest approximately 2,000 feet south of the site, is a jurisdictional Water of the U.S. The limit of federal jurisdiction is the OHWM along the banks of the Creek. As described above, the sewer line will either be attached to the side of the Bear Creek bridge or installed under the creek using bore and jack technology. As neither of these construction methods involve the placement of fill in jurisdictional Waters of the U.S., authorization from ACOE and RWQCB will not be needed for the proposed force main across Bear Creek. In contrast, because either method would involve some excavation in the top of bank and work within a riparian corridor, notification to CDFW pursuant to FGCC Section 1602 is warranted.

Construction of the proposed storm drain outfall will involve approximately 0.01 acres of permanent impact to jurisdictional Waters of the U.S. Permits from ACOE and RWQCB will be needed prior to the placement of any fill material (e.g., fill dirt, concrete, rock) in Bear Creek. The ACOE is expected to authorize the work under Nationwide Permit 58. As the outfall will involve the modification of the bed and bank of Bear Creek, notification to CDFW pursuant to FGCC

Section 1602 for the outfall is also warranted; CDFW is expected to issue a Streambank Alteration Agreement to authorize the work.

SPECIAL-STATUS SPECIES: Special-status species are plants and animals that are legally protected under the state and/or federal Endangered Species Act or other regulations. The Federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California species.

Special-status plants are those, which are designated rare, threatened, or endangered and candidate species for listing by the USFWS. Special-status plants also include species considered rare or endangered under the conditions of Section 15380 of the California Environmental Quality Act Guidelines, such as those plant species identified on Lists 1A, 1B and 2 in the Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2025). Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on CNPS List 3.

The likelihood of occurrence of listed, candidate, and other special-status species in the site is generally low. Table 3 provides a summary of the listing status and habitat requirements of special-status species that have been documented within 5 miles from the site and those listed in the IPac Trust Report. This table also includes an assessment of the likelihood of occurrence of each of these species in the site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations.

SPECIAL-STATUS PLANTS: Sanford's arrowhead (*Sagittaria sanfordii*) is the only special-status plant identified in the CNDDB (2025) within 5 miles from the site. The IPaC Trust Resource Report also includes fleshy owl's clover (*Castilleja campestris var. succulenta*) and does not include any other special-status plants.

Special-status plants generally occur in relatively undisturbed areas in vegetation communities such as vernal pools, marshes and swamps, and areas with unusual soils. Habitats in the subdivision site and along Tully Road are highly disturbed and do not provide suitable habitat for any of the plants in Table 3 or other special-status plants. There are no vernal pools in the site to support fleshy owl's clover and no aquatic habitat in the site for Sanford's arrowhead. Due to lack of suitable habitat, no special-status plants are expected to occur in the site.

SPECIAL-STATUS WILDLIFE: The potential for intensive use of habitats in the project site by special-status wildlife species is generally low. Special-status wildlife identified in the CNDDB (2025) within 5 miles from the site include Swainson's hawk, tricolored blackbird (*Agelaius tricolor*), yellow warbler (*Setophaga petechia*), California tiger salamander (*Ambystoma californiense*), northwestern pond turtle (*Actinemys marmorata*), western spadefoot (*Spea hammondii*), Central Valley steelhead (*Oncorhynchus mykiss*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and vernal pool tadpole shrimp (*Lepidurus packardi*).

The IPaC Trust Report also contains a few of the same wildlife species identified in the CNDDB (2025) search area and also includes riparian brush rabbit (*Sylvilagus bachmani riparius*), giant garter snake (*Thamnophis gigas*), monarch butterfly (*Danaus plexippus*), and Conservancy fairy shrimp (*Branchinecta conservatio*).

While the project site may have provided habitat for special-status wildlife species at some time in the past, farming and development have substantially

TABLE 3
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Potential for Occurrence in the Project Site
PLANTS						
Fleshy owl's clover	*Castilleja campestris var. succulenta*	T	E	1B	Vernal pools.	None: there are no vernal pools in the site. There are no occurrences of this species in the CNDDB (2025) search area. The site is not in designated critical habitat for fleshy owl's clover (USFWS, 2005a).
Sanford's arrowhead	*Sagittaria sanfordii*	None	None	1B	Marshes and swamps (shallow freshwater).	None: there is no aquatic habitat in the site. The nearest occurrence of this species in the CNDDB (2025) is 2.5 miles southwest of the site.
WILDLIFE						
Birds						
Swainson's hawk	*Buteo swainsoni*	None	T	N/A	Breeds in stands of tall trees in open areas; foraging habitats include grasslands, annual cropland, and alfalfa fields supporting rodents.	Low: the small hay field provides suitable foraging habitat for Swainson's hawk and large trees in and near the site may be used for nesting. A Swainson's hawk was seen foraging near the site during the June 2024 surveys. There are several records of Swainson's hawk in the CNDDB (2025) within a few miles of the site, with one record being just southwest of the site and a second along the sewer and storm drain alignment.
Tricolored blackbird	*Agelaius tricolor*	None	T	N/A	Requires open water and protected nesting substrate, usually cattails and riparian scrub with surrounding foraging habitat	Unlikely: the site provides a minimal amount of foraging habitat for tricolored blackbird, but there is no suitable open water habitat in close proximity to the site to provide nesting habitat for this species. The nearest occurrence of tricolored blackbird in the CNDDB (2025) is approximately 0.5 miles south of the south end of the sewer and storm drain alignment.
Yellow warbler	*Setophaga petechia*	None	SC	N/A	Nests in riparian areas, usually in willows, alders, and cottonwoods.	Unlikely: although there is riparian habitat associated with Bear Creek, this species is known to occur in larger river systems. The only occurrence of yellow warbler in the CNDDB (2025) is approximately 1 mile northeast of the site, along the Mokelumne River.

TABLE 3
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Potential for Occurrence in the Project Site
Mammals						
Riparian brush rabbit	*Sylvilagus bachmani riparius*	E	E	N/A	Riparian thickets in Stanislaus and southern San Joaquin Counties.	Unlikely: Bear Creek does not contain well-developed riparian habitat to support riparian brush rabbit. This species is not known from this part of the county and there are no occurrences of riparian brush rabbit in the CNDDB (2025) search area.
Reptiles & Amphibians						
California tiger salamander – central California DPS	*Ambystoma californiense pop. 1*	T	T	N/A	Seasonal water bodies without fish (i.e., vernal pools and stock ponds) and grassland/ woodland habitats with summer refugia (i.e., burrows).	Unlikely: the vineyard, routinely disked cropland, and disturbed road shoulders do not provide suitable habitat for California tiger salamander. Developed areas and heavily trafficked roads are significant movement barriers between potentially suitable off-site breeding habitat and the site. The nearest record of this species in the CNDDB (2025) is an oak woodland area with vernal pool grasslands just southwest of the site. The site is not in designated critical habitat for California tiger salamander (USFWS, 2005b).
Giant garter snake	*Thamnophis gigas*	T	T	N/A	Freshwater marsh and low gradient streams; drainage canals and irrigation ditches, primarily for dispersal or migration.	Unlikely: due to its intermittent flow regime, Bear Creek does not provide suitable habitat for giant garter snake. This species is not known from this part of the county and there are no occurrences of giant garter snake in the CNDDB (2025) search area.
Northwestern pond turtle	*Actinemys marmorata*	PT	SC	N/A	Ponds, marshes, streams, and ditches with emergent aquatic vegetation and basking areas.	Unlikely: while the site does not provide suitable habitat for northwestern pond turtle, it could potentially occur in Bear Creek. The nearest occurrence of northwestern pond turtle in the CNDDB (2025) is approximately 4 miles north of the site.

TABLE 3
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Potential for Occurrence in the Project Site
Western spadefoot	*Spea hammondii*	PT	SC	N/A	Breeds and lays eggs in seasonal water bodies such as deep vernal pools or stock ponds.	Unlikely: the vineyard, routinely disked cropland, and disturbed road shoulders do not provide suitable habitat for western spadefoot. The nearest occurrence of western spadefoot in the CNDDB (2025) is in an area of vernal pool grasslands approximately 0.25 miles east of the sewer and storm drain alignment.
Fish						
Steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus pop. 11*	T	SC	N/A	Riffle and pool complexes with adequate spawning substrates within Central Valley drainages.	None: Steelhead do not occur in Bear Creek near Lockeford. The nearest occurrence of Central Valley steelhead in the CNDDB (2025) is approximately 0.5 miles north of the site in the Mokelumne River. The site is not in designated critical habitat for steelhead (NOAA, 2005).
Invertebrates						
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	None	N/A	Elderberry shrubs, usually in Central Valley riparian habitats.	None: No blue elderberry shrubs were observed in or adjacent to the subdivision site or along the sewer and storm drain alignment. The nearest occurrence of valley elderberry longhorn beetle in the CNDDB (2025) is mapped along Bear Creek, extending east and west of N. Tully Road. The site is not in designated critical habitat of this species (USFWS, 1980).
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	None	N/A	Vernal pools.	None: there are no vernal pools or seasonal wetlands in the site. There are no occurrences of vernal pool fairy shrimp in the CNDDB (2025) search area. The site is not in designated critical habitat for this species (USFWS, 2005a).
Vernal pool tadpole shrimp	*Lepidurus packardi*	E	None	N/A	Vernal pools.	None: there are no vernal pools in the site. The nearest occurrence of vernal pool tadpole shrimp in the CNDDB (2025) is a large, nonspecific record around the City of Lodi, several miles southwest of the site. The site is not in designated critical habitat for vernal pool tadpole shrimp (USFWS, 2005a).

TABLE 3

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Potential for Occurrence in the Project Site
Conservancy fairy shrimp	*Branchinecta conservatio*	E	None	N/A	Vernal pools.	None: there are no vernal pools or seasonal wetlands in the site. There are no occurrences of this species recorded in the CNDDB (2025) search area. The site is not in designated critical habitat for Conservancy fairy shrimp (USFWS, 2005a).
Monarch butterfly	*Danaus plexippus*	E	None	None	Variety of habitats in California, primarily associated with coastal environments; larvae dependent on milkweed.	Unlikely: there is no suitable habitat in the site to support monarch butterfly. No milkweed, on which the larvae of this species depend on, was observed in the site. Monarch butterfly may fly over the site during its migration. There are no occurrences of this species in the CNDDB (2025) search area.

1 T= Threatened; E = Endangered; PT = Proposed Threatened; SC=State of California Species of Special Concern.

2 CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere.

modified natural habitats in the greater project vicinity. Of the wildlife species identified in the CNDDB and IPaC Trust Report, Swainson's hawk is the only species with potential to occur in the site on more than a transitory or occasional basis and is discussed further below. Giant garter snake is also discussed below because Bear Creek is viewed as "potential giant garter snake habitat" in the HCP. Finally, northwestern pond turtle is discussed below as it has been documented in creeks near Lockeford and Bear Creek is viewed as "potential northwestern pond turtle habitat" in the HCP.

SWAINSON'S HAWK: The Swainson's hawk is a migratory hawk listed by the State of California as a Threatened species. The Migratory Bird Treaty Act (MBTA) and FGCC protect Swainson's hawks year-round, as well as their nests during the nesting season (March 1 through September 15). Swainson's hawk are found in the Central Valley primarily during their breeding season, a population is known to winter in the San Joaquin Valley.

Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds consisting of grasslands, irrigated pasture, hay, and wheat crops. Most Swainson's hawks are migratory, wintering in Mexico and breeding in California and elsewhere in the western United States. This raptor generally arrives in the Central Valley in mid-March, and begins courtship and nest construction immediately upon arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their breeding territories by late August.

The site is within the nesting range of Swainson's hawks and the CNDDB (2025) contains three records of nesting Swainson's hawks within a mile of the site, with the nearest nesting territory being in an oak woodland area just southwest of the site (Attachment B). The larger oak trees in the site and large trees in the project vicinity that could support nesting Swainson's hawks. A Swainson's hawk was observed foraging in the field just northwest of the site during one of the June

2024 field surveys, which is a time of year when most Central Valley Swainson's hawks are tending to young. It is likely there are nesting territories in the general project vicinity.

The project is participating in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan HCP (SJCOG, 2000). The HCP involves payment of fees and compliance with standard Incidental Take Minimization Measures (ITMMs); that are issued on a project-by project basis. Pursuant to the HCP, if construction is scheduled to commence during the nesting season (i.e., between February 15 through August 31), and Swainson's hawks are nesting in or near the site, a construction setback of twice the diameter of the drip-line of the nest tree (as measured from under the nest) would be required until nesting is complete.

GIANT GARTER SNAKE: The giant garter snake is listed as threatened both under FESA and CESA and critical habitat for this species has been designated (USFWS, 2017a). Giant garter snake is endemic to the Sacramento and San Joaquin valleys where it is found in lowland areas (USFWS, 1999; 2017a). Historically, this species was found throughout the Central Valley from Butte County in the north to Kern County in the south. Currently, giant garter snake is only known to occur in 9 discrete populations in the Sacramento and San Joaquin valleys (USFWS, 2017a).

The giant garter snake is one of the most aquatic of garter snakes and is usually found in streams, marshes, and sloughs with mud bottoms. This species prefers slow moving waters with emergent herbaceous wetland vegetation for cover and foraging, and grassy banks and openings for basking (Hansen, 1988). Giant garter snakes feed primarily on small fishes, tadpoles, and frogs. Since they are aquatic hunters, they must have access to permanent, though not necessarily extensive, water.

Giant garter snake is apparently absent from large rivers, other water bodies that support introduced populations of large predatory fish, and from wetlands with sand, gravel or rock substrates. Historically, oxbows, overflow areas, and backwater sloughs or channels could have provided suitable habitat. Riparian woodlands do not typically provide suitable habitat because of excessive shade, lack of basking sites, and the absence of prey populations.

Essential habitat components of giant garter snake consist of: (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter; giant garter snakes inhabit small mammal burrows and other soil crevices for aestivation.

Due to its intermittent nature, paucity of escape cover and foraging habitat, and lack of connection with tidal delta waters, Bear Creek provides poor quality aquatic habitat for giant garter snake. Additionally, the grasslands in the site and near Bear Creek do not provide suitable aestivation habitat for giant garter snake. There are no occurrence of giant garter snake in the CNDDB (2025) search area.

Pursuant to the HCP, Bear Creek is considered “potential habitat” for giant garter snake, triggering an automatic “no construction” buffer extending 200 feet from the centerline of the creek. A buffer reduction to reduce the standard buffer to 0 feet was granted by San Joaquin Council of Governments (SJCOG) in March 2025, effectively allowing construction to occur near and in Bear Creek (Attachment D). Standard ITMMs for giant garter snake include a suite of avoidance and minimization measures including conducting pre-construction surveys, dewatering the work area, if needed, implementing a worker

environmental awareness program (WEAP), and restricting initial ground disturbance within 200 feet of potential habitat (i.e., Bear Creek) to between May 1 and October 1.

NORTHWESTERN POND TURTLE: Northwestern pond turtle has recently been proposed as Threatened at the Federal level and is a state Species of Special Concern. Northwestern pond turtles are associated with permanent or nearly permanent bodies of water with adequate basking sites such as logs, rocks or open mud banks. Pond turtles construct nests in sandy banks along slow-moving streams and ponds in the spring and the young usually hatch in 2 to 3 months. The nearest occurrence of northwestern pond turtle in the CNDDB (2025) is approximately 4 miles north of the site.

Although Bear Creek is dry much of the year, northwestern pond turtle could potentially occur in Bear Creek, swimming in the creek and basking on woody debris along the bank. The ruderal grassland in close proximity to the creek, including the sewer and storm drain alignment, does not provide high quality nesting habitat for this species. No northwestern pond turtles were observed in the site during the field surveys.

Pursuant to the HCP, Bear Creek is considered “potential habitat” for northwestern pond turtle, triggering an automatic “no construction” buffer extending 300 feet from the centerline of the creek. A buffer reduction to reduce the standard buffer to 0 feet was granted by SJCOG in March 2025, effectively allowing construction to occur near and in Bear Creek (Attachment D). Standard ITMMs for northwestern pond turtle include conducting pre-construction surveys for northwestern pond turtle and their nests and implementing temporary construction setbacks around any active nests.

OTHER SPECIAL-STATUS SPECIES: The site does not provide highly suitable habitat for other special-status wildlife species. Tricolored blackbird may fly over or

forage near the site on occasion, but the site and adjacent areas lack dense stands of emergent wetland habitat and open water, in which this species is highly associated during its nesting period. Yellow warbler is associated with well-developed riparian forest habitats adjacent to larger river systems. The only record of this species in the CNDDB (2025) is along the Mokelumne River further north of the site.

Due to being intermittent and lacking well-developed riparian vegetation, Bear Creek is not suitable for riparian-associated species such as riparian brush rabbit. Bear Creek does not contain a hydrologic regime for special-status fish, such as delta smelt (*Hypomesus transpacificus*) or Central Valley steelhead.

There are no vernal pools or seasonal wetlands in or adjacent to the site for California tiger salamanders to breed and it is unlikely this species aestivates (i.e., live underground) in the vineyard or hay field in the site or in the disturbed road shoulders along the sewer and storm drain alignment. There is a record of California tiger salamander from 2002 (CNDDB, 2025) just southwest of the site in an oak woodland area that contains a few seasonal wetlands and vernal pools scattered in the grasslands. There are significant barriers to movement between this oak woodland/grassland area where the species has been found and the site, such as residential subdivisions, a school, and heavily trafficked roads. Similarly, western spadefoot is unlikely to occur on-site due to barriers to movement and a lack of suitable habitat in and adjacent to the site.

The lack of vernal pool and seasonal wetland habitat in the site also precludes the presence of vernal pool tadpole shrimp or Conservancy fairy shrimp. There are no blue elderberry shrubs in the site or along the sewer and storm drain alignment to support valley elderberry longhorn beetle. Monarch butterfly could fly over the site during its migration, but would not be expected to occur in the site in a meaningful capacity due to a lack of suitable habitat; this species is also more common in southern California and coastal environments.

SAN JOAQUIN COUNTY MULTI-SPECIES HABITAT CONSERVATION AND OPEN SPACE PLAN: The project will participate in the HCP (SJCOG, 2000), which involves the payment of fees and implementation of ITMMs to avoid impacts on nesting birds and other special-status species. ITMMs are usually prescribed a few months prior to the start of construction by a SJCOG contract biologist based on habitats present in and near a project site.

The project is situated in a part of San Joaquin County that was not envisioned for near-term development when the HCP was being developed two to three decades ago. In conjunction with USFWS and CDFW, SJCOG brings such "un-mapped" areas in to the HCP through a request to the Habitat Technical Committee (HTAC). The project was approved for participation in the HCP in March 2025, at which time SJCOG also corrected the habitat classification of the vineyard and approved buffer reductions for giant garter snake and northwestern pond turtle in support of off-site improvements near and in Bear Creek.

CRITICAL HABITAT: The site is not within designated critical habitat of federally listed vernal pool branchiopods, fleshy owl's clover, or other listed vernal pool plant species (USFWS, 2005a), California tiger salamander (USFWS, 2005b), valley elderberry longhorn beetle (USFWS, 1980), Central Valley steelhead (NOAA, 2005), delta smelt (USFWS, 1994), or other federally listed species (Attachment E).

WILDLIFE MOVEMENT CORRIDORS: Well-developed riparian corridors are often utilized for movement by wildlife species such as deer, coyote, red fox (*Vulpes vulpes*), and bobcat (*Felis rufus*), as well as a variety of amphibians, reptiles, and fish. Bear Creek contains riparian vegetation and common wildlife species likely occur in and around the creek. The placement of a sewer line along Bear Creek, either strapped to the Bear Creek bridge or bored and jacked under Bear Creek will not impede wildlife movement within and along the riparian corridor.

GROUNDWATER DEPENDENT ECOSYSTEMS: No potential Groundwater Dependent Ecosystems ("GDEs") are identified in or near the project site in the Eastern San Joaquin Basin Groundwater Sustainability Plan (ESGJA, 2022). The majority of the GDEs mapped in the subbasin are further west along the San Joaquin River and its tributaries. The site has a history of pumping groundwater to support agricultural production. While the proposed project will also rely on ground water, it will be less water intensive than under current conditions. The project is expected to result in in-lieu groundwater recharge and will have either no effect or a beneficial effect on groundwater levels and associated GDEs in the greater project vicinity.

Conclusions and Recommendations

- The site consists of a vineyard, hay field, farm roads, a few trees, and areas of ruderal grassland. The sewer and storm drain alignment is along a disturbed road shoulder. The site and sewer alignment are biologically unremarkable.

- There are no Waters of the U.S. or wetlands in the subdivision site. Bear Creek is a jurisdictional Water of the U.S. The project will involve construction of a new storm drain outfall in Bear Creek approximately 50 feet downstream of the N. Tully Road bridge. Additionally, the proposed sewer force main along N. Tully Road will cross over or under Bear Creek.

- Construction of the storm drain outfall will involve approximately 0.01 acres of permanent impact to jurisdictional Waters of the U.S. Permits from ACOE and RWQCB will be needed prior to the placement of any fill material (e.g., fill dirt, concrete, rock) in Bear Creek. The ACOE is expected to authorize the work under Nationwide Permit 58. As the

outfall will involve the modification of the bed and bank of Bear Creek, notification to CDFW pursuant to FGCC Section 1602 for the outfall is also warranted; CDFW is expected to issue a Streambank Alteration Agreement to authorize the work.

- The sewer line will either be attached to the side of the Bear Creek bridge or installed under the creek using bore and jack technology. As both methods would involve some excavation in the top of bank and work within a riparian corridor, notification to CDFW pursuant to FGCC Section 1602 is warranted. In contrast, authorization from ACOE and RWQCB will not be needed as construction will not involve placement of fill material in jurisdictional Waters of the U.S.

- With the exception of Swainson's hawk, no special-status wildlife species are expected to occur in the site on more than a very occasional or transitory basis. Swainson's hawk could potentially nest in trees in and near the site and forage in nearby fields. Standard Take Avoidance measures outlined in the HCP for nesting Swainson's hawks include pre-construction surveys for nesting Swainson's hawks in and adjacent to the site for construction activities between February 15 and August 31. If active nests are found, temporal restrictions on construction may be required.

- Prior to construction, the HCP pays fees will need to be paid, based on the current fee schedule in place at that time. The project will also need to comply with the ITMMs issued for the project to avoid impacts on nesting birds and other special-status species.

- Trees and grasslands in the site could be used by birds protected by the MBTA and/or FGCC. If vegetation removal or construction commences during the general avian nesting season (March 1 through

July 31), a pre-construction survey for all species of nesting birds is recommended. If active nests are found, work in the vicinity of the nests should be delayed until the young fledge.

- The project will not result in adverse impact to wildlife movement corridors. The sewer line across Bear Creek and storm drain outfall on the bank of the creek will not impede wildlife movement. Bear Creek is expected to continue to be used for wildlife movement.

- The project is expected to result in in-lieu groundwater recharge and will have either no effect or a beneficial effect on groundwater levels and associated GDEs in the greater project vicinity

- The site is not within designated critical habitat for any federally listed species.

Please call me at (209) 745-1159 with any questions.

Sincerely,

Diane S. Moore, M.S.
Principal Biologist

References and Literature Consulted

ACOE (U.S. Army Corps of Engineers). 1987. Technical Report Y87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MI.

ACOE. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. U.S. Army Engineer Research and Development Center, Vicksburg, MS. September.

CDFG (California Department of Fish and Game). 1994. Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo Swainsoni*) in the Central Valley of California. November.

CNDDB (California Natural Diversity Database). 2024. California Department of Fish and Wildlife's Natural Heritage Program, Sacramento, California.

CNDDB. 2025. California Department of Fish and Wildlife's Natural Heritage Program, Sacramento, California.

California Native Plant Society, Rare Plant Program. 2025. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org

ESJGA (Eastern San Joaquin Groundwater Authority). 2022. Eastern San Joaquin Basin Groundwater Sustainability Plan. Published November 2019; revised June 2022.

Hansen, G. E. 1988. Review of the status of the giant garter snake (*Thamnophis couchi gigas*) and its supporting habitat during 1986-1987. Final report for California Department of Fish and Game Contract C-2060. Unpublished. 31 p.

National Oceanic and Atmospheric Administration (NOAA). 2005. Endangered and Threatened Species; Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California; Final Rule. Federal Register 70 (170): 52488-52585. September 2, 2005.

NOAA. 2009. Endangered and Threatened Wildlife and Plants: Final Rulemaking to Designate Critical Habitat for the Threatened Southern Distinct Population Segment of North American Green Sturgeon; Final Rule. Federal Register 74 (196): 52299-52351. November 9.

Sawyer & Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento. California.

SJCOG (San Joaquin Council of Governments). 2000. San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP). Stockton, California. November 15.

USFWS (United States Fish and Wildlife Service). 1980. Part II, Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17. Listing the Valley Elderberry Longhorn Beetle as a Threatened Species with Critical Habitat. Federal Register 45 No. 155, pp. 52803-52807, August 8.

USFWS. 1994. Final Critical Habitat for the Delta Smelt (*Hypomesus transpacificus*). Federal Register Vol. 59, No. 242, December 19, 1994, pp. 65256 – 65279.

USFWS. 1999. Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, Oregon. Ix+ 192pp.

USFWS. 2005a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Tiger Salamander, Central Population; Final Rule. Federal Register Vol. 70, No. 162, August 23, 2005, pp. 49390 – 49458.

USFWS. 2005a. Part II, Department of the Interior, Fish and Wildlife Service, 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Tiger Salamander, Central Population; Final Rule. Federal Register Vol. 70, No. 162, pp. 49390 – 49458. August 23.

USFWS. 2005b. Part II, Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven

Vernal Pool Plants in California and Southern Oregon; Evaluation and Economic Exclusions from August 2003 Final Designation, Final Rule. Federal Register Vol. 70, No. 154, August 11.

USFWS. 2017a. Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. vii + 71 pp. September.

USFWS. 2017b. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service; Sacramento, California. 28pp.

USFWS. 2025a. Information for Planning and Consultation (IPaC) - Online Trust Resource Report of Federally Threatened and Endangered Species. https://ipac.ecosphere.fws.gov/location/index.

USFWS. 2025b. Environmental Conservation Online System - Threatened & Endangered Species Active Critical Habitat Report. https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77.

USFWS. 2025c. National Wetland Inventory - On-line Maps. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

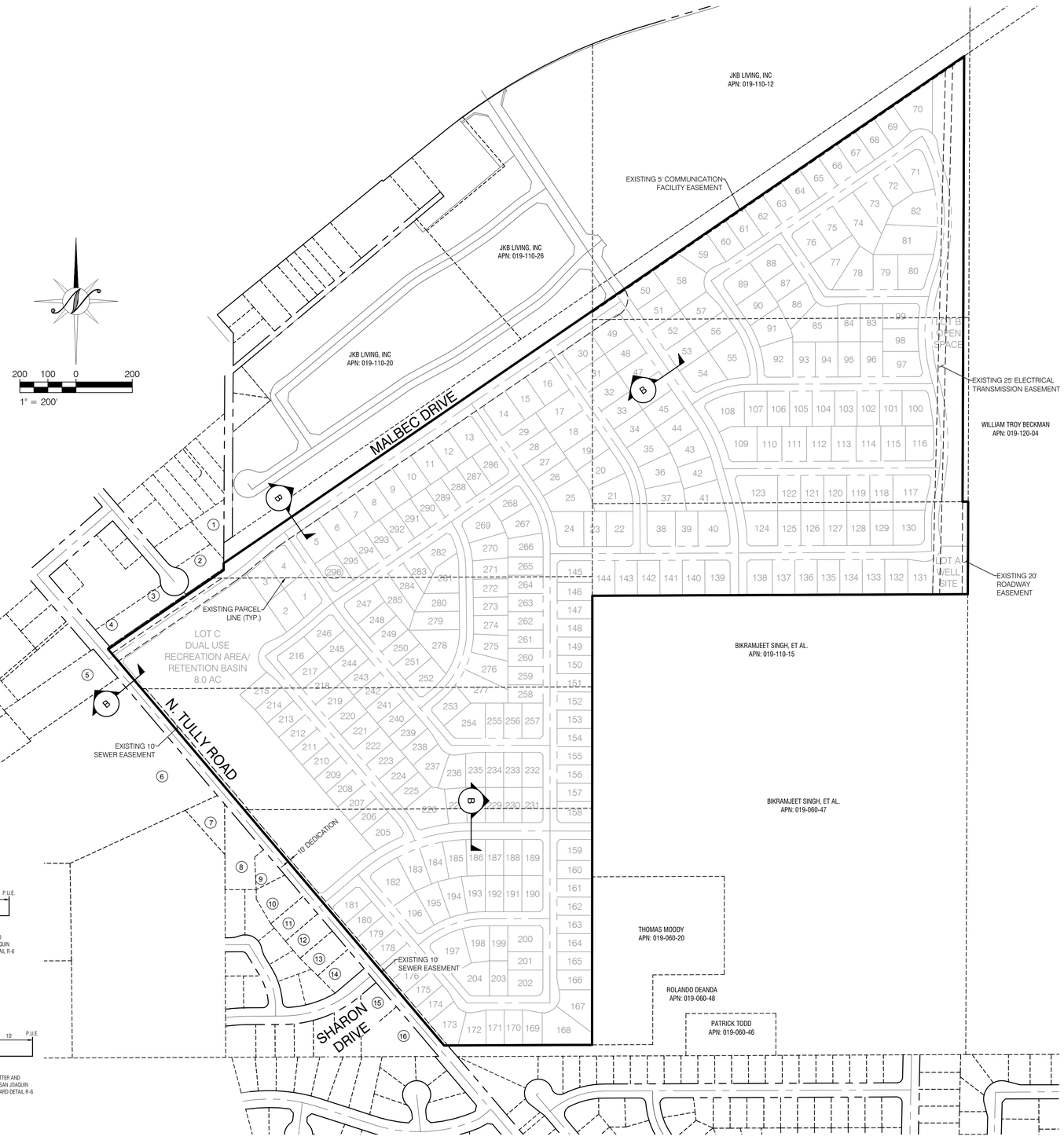
Attachment A

Tentative Map & Off-Site Utilities Alignment Exhibit

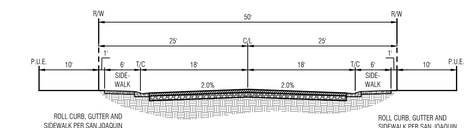
VESTING TENTATIVE SUBDIVISION MAP

KAUTZ LOCKEFORD SUBDIVISION

SAN JOAQUIN COUNTY, CALIFORNIA



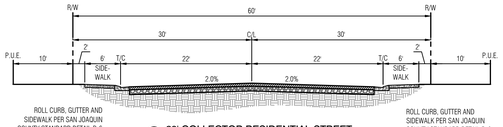
OWNERS LIST		
#	NAME	APN
1	SAN JOAQUIN COUNTY	019-050-56
2	MICHAEL SHULL, ET AL.	019-050-53
3	ELAINE P. STAVELEY	019-050-54
4	TAYLOR HOSMER, ET AL.	019-050-55
5	LODI UNIFIED SCHOOL DISTRICT	019-020-36
6	LODI UNIFIED SCHOOL DISTRICT	019-060-41
7	LOCKEFORD COMMUNITY SERVICES DISTRICT	019-060-06
8	RONALD CURTIS MONNIE, ET AL.	019-060-49
9	RUDY MARTINEZ	019-060-11
10	BARTON GOODING, ET AL.	019-060-12
11	GARY NIXON, ET AL.	019-060-13
12	TODD L. SCHMIERER, ET AL.	019-060-15
13	MARIA CARRANZA	019-060-14
14	SHARON D. WISE, ET AL.	019-060-16
15	MANUEL & ANNA GARZA FAMILY TRUST	019-060-18
16	CASEY WADE MATLOCK, ET AL.	019-060-19



ROLL CURB, GUTTER AND SIDEWALK PER SAN JOAQUIN COUNTY STANDARD DETAIL R-6

ROLL CURB, GUTTER AND SIDEWALK PER SAN JOAQUIN COUNTY STANDARD DETAIL R-6

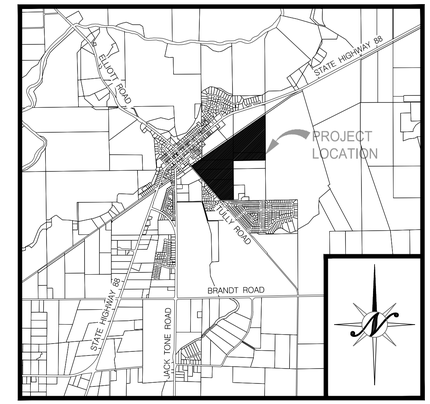
A 50' TYPICAL RESIDENTIAL STREET
STANDARD CROSS SECTION UNLESS OTHERWISE NOTED
N.T.S.



ROLL CURB, GUTTER AND SIDEWALK PER SAN JOAQUIN COUNTY STANDARD DETAIL R-6

ROLL CURB, GUTTER AND SIDEWALK PER SAN JOAQUIN COUNTY STANDARD DETAIL R-6

B 60' COLLECTOR RESIDENTIAL STREET
N.T.S.



VICINITY MAP
N.T.S.

SHEET INDEX

1. TM1.1 COVER AND CROSS SECTIONS SHEET
2. TM2.1 DIMENSION AND TOPOGRAPHIC PLAN
3. TM2.2 DIMENSION AND TOPOGRAPHIC PLAN
4. TM3.1 UTILITY PLAN
5. TM3.2 UTILITY PLAN

GENERAL NOTES

1. ALL IMPROVEMENTS SHALL BE CONSTRUCTED AS PER SAN JOAQUIN COUNTY STANDARD PLANS AND SPECIFICATIONS EXCEPT AS NOTED.
2. STORM DRAINAGE TO BE CONVEYED TO AN ON-SITE STORM DRAIN RETENTION BASIN AND DESIGNED PER SAN JOAQUIN COUNTY STANDARD SPECIFICATIONS.
3. ALL FUTURE STORM DRAINAGE IMPROVEMENTS AND STUDIES SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT 2013-0001-DWQ.
4. SANITARY SEWER TO BE CONVEYED TO THE EXISTING TREATMENT PLAN LOCATED APPROXIMATELY 6,000 FEET SOUTH ON TULLY ROAD. A LIFT OR PUMP STATION WILL BE REQUIRED ALONG WITH A FORCE MAIN AT THE BRIDGE CROSSING OF BEAR CREEK. SANITARY SEWER TO BE CONSTRUCTED TO THE SAN JOAQUIN COUNTY STANDARDS AND SPECIFICATIONS.
5. WATER SYSTEM TO BE CONSTRUCTED TO THE SAN JOAQUIN COUNTY STANDARDS AND SPECIFICATIONS.
6. STREET LIGHTING SHALL BE INSTALLED PER SAN JOAQUIN COUNTY STANDARD SPECIFICATIONS.
7. PUBLIC UTILITIES ARE TO BE INSTALLED UNDER GROUND IN EASEMENTS.
8. THE SUBDIVIDER HEREBY RESERVES THE RIGHT TO FILE "MULTIPLE SUBDIVISION MAPS" AS SET FORTH BY THE SUBDIVISION MAP ACT, ARTICLE 4, SECTION 66456.1,. AND FILE PARCEL MAPS FOR REASON OF SALE. ALL PARCEL LINES SHALL CONFORM TO THIS TENTATIVE MAP.
9. PUBLIC UTILITY EASEMENTS WILL BE PROVIDED ALONG ALL STREET IN-TRACT FRONTAGES.
10. ALL EXISTING STRUCTURES AND TREES ARE TO BE REMOVED UNLESS OTHERWISE NOTED. SEPTIC TANKS, LEACH FIELDS, AND WELLS ON SITE WILL BE REMOVED OR ABANDONED AS PER CITY OF SAN JOAQUIN COUNTY REQUIREMENTS.
11. APPLICANT SHALL PROVIDE ACCESS AGREEMENT IN PERPETUITY FOR CITY TO INSPECT ALL POST-CONSTRUCTION BMP'S.
12. BUILDER TO WORK WITH SCHOOL DISTRICT TO DETERMINE CROSSWALK STRIPING.

PROJECT INFORMATION

A. REGULATORY AGENCY:	SAN JOAQUIN COUNTY, COMMUNITY DEVELOPMENT DEPARTMENT 1810 E HAZELTON AVENUE STOCKTON, CA 95205 T: (209) 468-3124 CONTACT:
B. APPLICANT:	KAUTZ ROW CROPS 5490 BEAR CREEK ROAD LODI, CA 95240 T: (209) 483-5395 CONTACT: JACK KAUTZ
C. ENGINEER:	NORTHSTAR ENGINEERING GROUP, INC 620 12th STREET MODESTO CA, 95354 T: (209) 524-3525 CONTACT: JOSH BRIDEGROOM & PAMELA HURBAN
D. ASSESSOR'S PARCEL NUMBERS:	019-110-13, 14, 16, 17, 019-060-09 & 10.
E. EXISTING LAND USE:	ROW CROPS
F. PROPOSED LAND USE:	RESIDENTIAL
G. EXISTING ZONING / GP:	AU-20 / R/L
H. PROPOSED ZONING / GP:	R-L / R/L
I. TOTAL PROJECT SIZE:	104.9± ACRES
K. TOTAL NUMBER OF LOTS:	296
L. MAXIMUM FOOTPRINT COVERAGE:	50% PER SAN JOAQUIN COUNTY MUNICIPAL CODE
M. PARKING:	MINIMUM TWO CAR GARAGE, AND TWO DRIVEWAY SPACES PER LOT
N. SETBACKS:	PER TABLE 9-310.3, SAN JOAQUIN COUNTY MUNICIPAL CODE
O. CONTOURS:	SPOT ELEVATIONS
P. RETURNS:	PER SAN JOAQUIN COUNTY STANDARDS
Q. UTILITIES:	WATER SYSTEM - LOCKEFORD COMMUNITY SERVICES DISTRICT (LCSD) SANITARY SEWER - LCSD STORM DRAINAGE - LCSD GAS - PG&E ELECTRIC - PG&E TELEPHONE - AT&T SCHOOL DISTRICT - LODI UNIFIED

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CALL BEFORE YOU DIG USA 800-227-2600

REGISTERED PROFESSIONAL ENGINEER ANTHONY C. VIDINHA No. 43131 CIVIL STATE OF CALIFORNIA

PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS NO.	DESCRIPTIONS	DATE	APPROVED

COVER AND CROSS SECTION SHEET

KAUTZ SUBDIVISION
LOCKEFORD, CALIFORNIA

NorthStar Engineering Group, Inc.
• CIVIL ENGINEERING • SURVEYING • PLANNING •
620 12th Street Modesto, CA 95354
(209) 524-3525 Phone (209) 524-3526 Fax

JOB #:	22-2996
DATE:	04/02/2024
SCALE:	AS SHOWN
DRAWN:	PMH
DESIGN:	TG/ CV
CHK'D:	AC

SHEET NUMBER

TM1.1

PLOTTED: 04/02/2024 09:19 PLOTTED BY: Pbutler
DWGNAME: I:\22-2996 Kautz Lockeford Subdivision\Planning\TM\TM1.1.dwg

PRELIMINARY SEWER FORCE MAIN EXHIBIT

KAUTZ SUBDIVISION

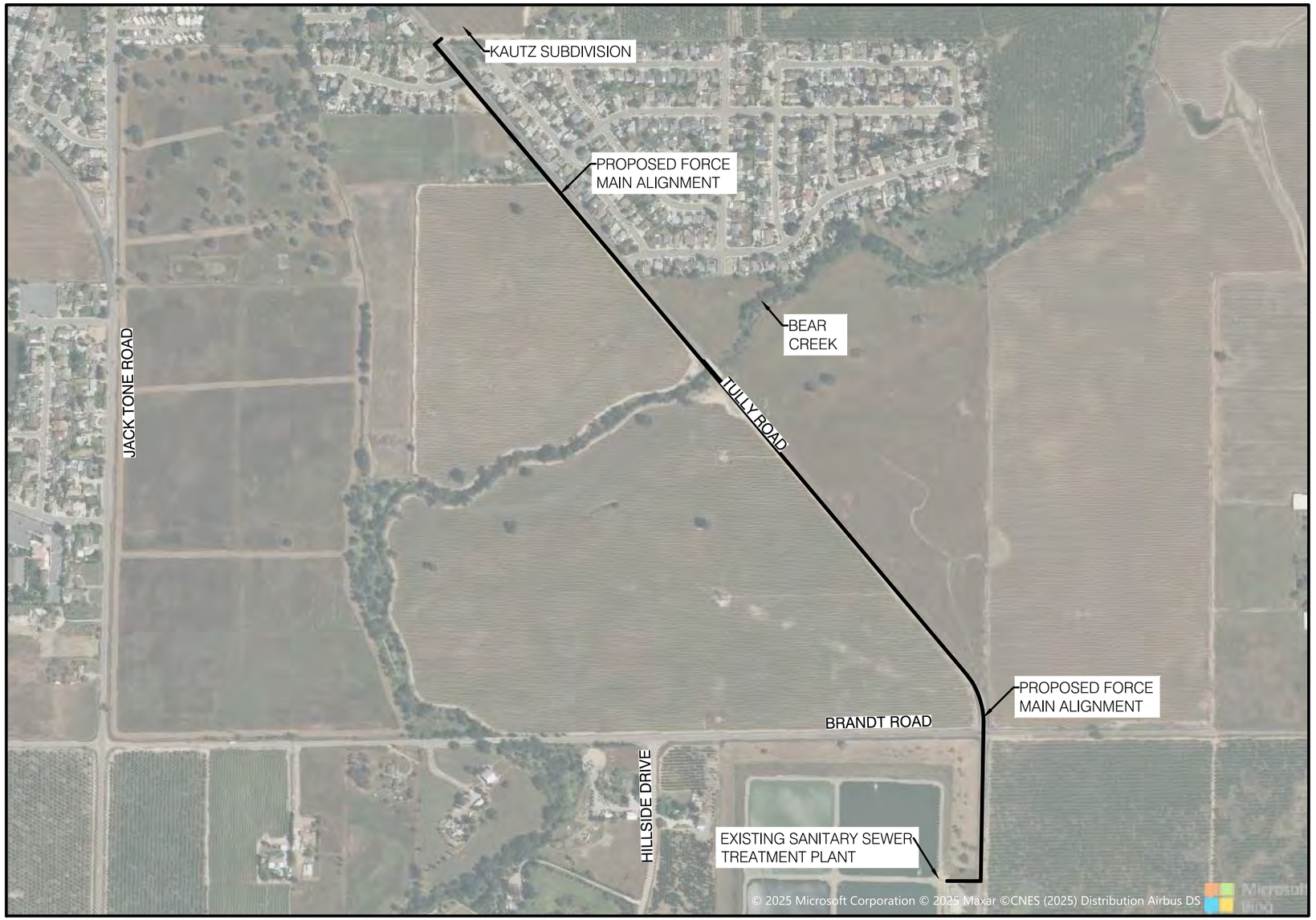
LOCKEFORD, CALIFORNIA

700 350 0 700

1" = 700'

REGISTERED PROFESSIONAL ENGINEER
CASEY M. KAUTZ
No. 89920
CIVIL
STATE OF CALIFORNIA
PRELIMINARY
NOT FOR CONSTRUCTION

NorthStar
Engineering Group, Inc.
• CIVIL ENGINEERING • SURVEYING • PLANNING •
620 12th Street Modesto, CA 95354
(209) 524-3525 Phone (209) 524-3526 Fax



NOTES

1. THE EXHIBIT IS FOR DISCUSSION PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.

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PLOTTED: 3/4/2025 4:40 PM PLOTTED BY: Jwheeler
DWGNAME: F:\22-2996 Kautz Lockeford Subdivision\Planning\Exhibits\2025_03-04 Force main exhibit_2996-SSFM Exhibit.dwg

Attachment B

CNDDB Summary Report and Exhibits

& USFWS IPaC Trust Report

Selected Elements by Scientific Name

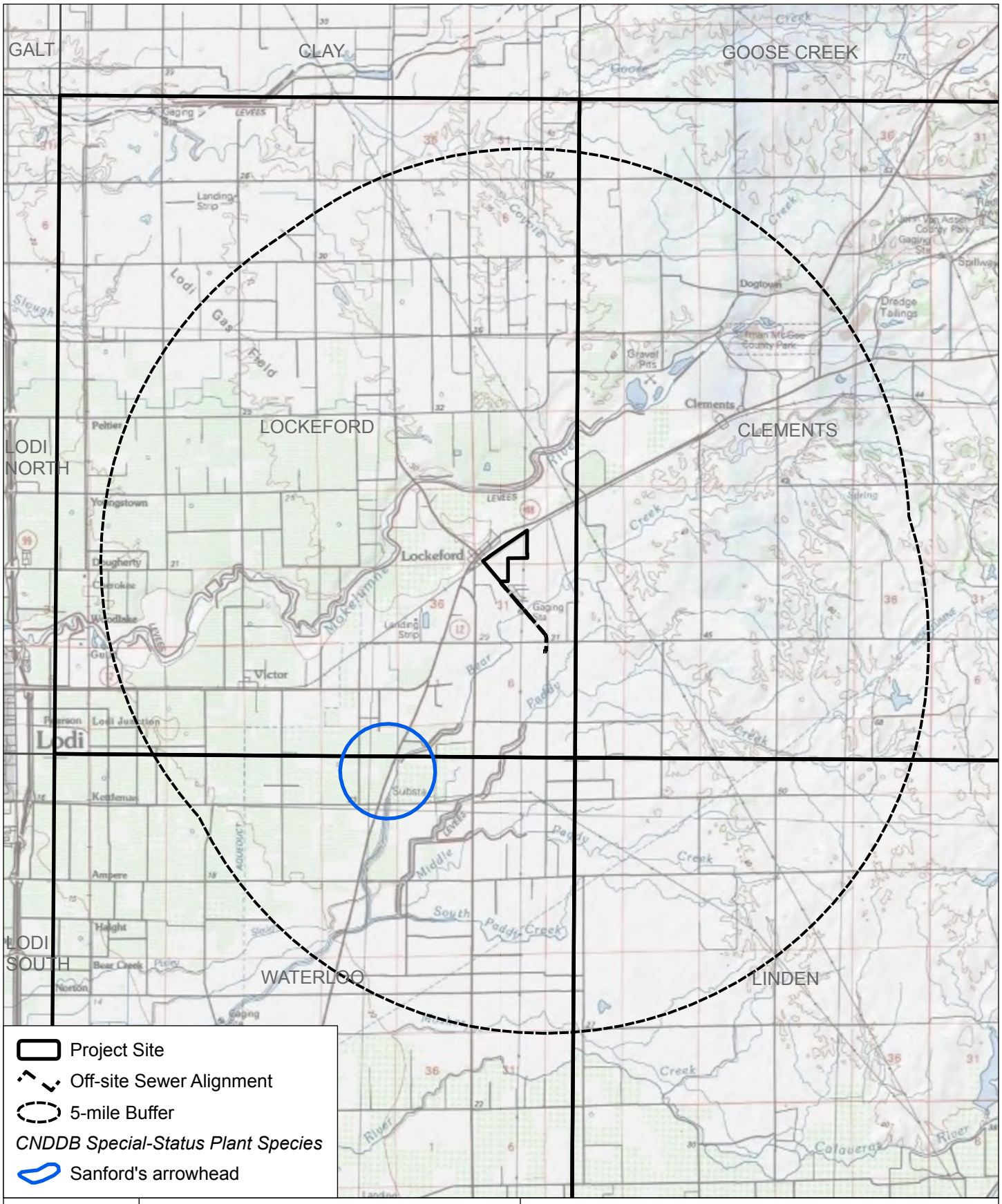
California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Waterloo (3812112) OR Linden (3812111) OR Lockeford (3812122) OR Clements (3812121))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Actinemys marmorata northwestern pond turtle	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Andrena subapasta An andrenid bee	IIHYM35210	None	None	G1G2	S1S2	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Castilleja campestris var. succulenta succulent owl's-clover	PDSCR0D3Z1	Threatened	Endangered	G4?T2T3	S2S3	1B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T3	S3	
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S4	SSC
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S3	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S3	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3	SSC
Spea hammondii western spadefoot	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC

Record Count: 21



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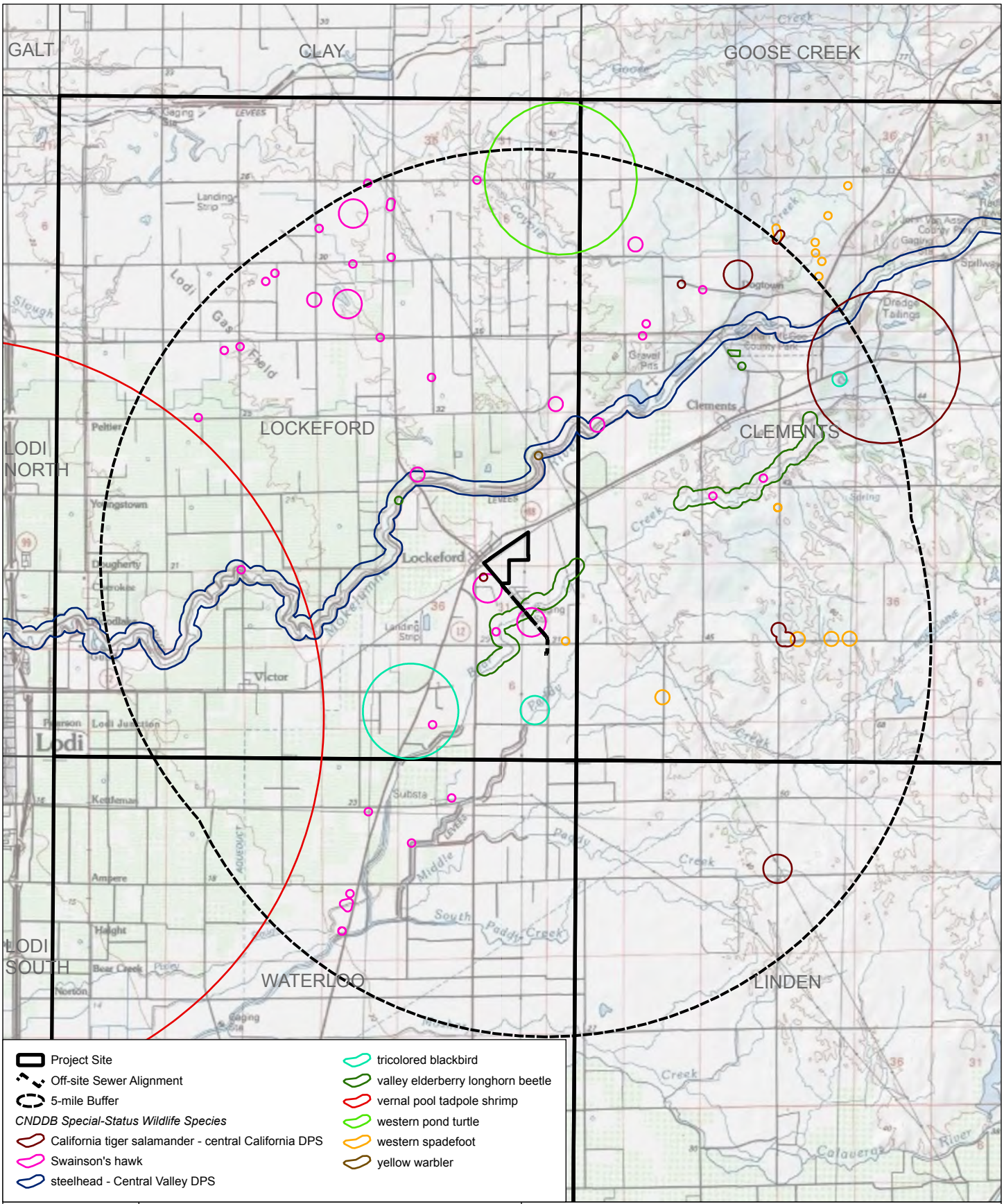
CNDDB - PLANT

Kautz Lockeford Subdivision

San Joaquin County, CA

Moore Biological Consultants

Map Date: 05/06/2025
Source: CDFW, USA Topo Maps (2025)



CNDDB - WILDLIFE

Kautz Lockeford Subdivision

San Joaquin County, CA

Moore Biological Consultants

Map Date: 05/06/2025
Source: CDFW, USA Topo Maps (2025)

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

San Joaquin County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NOT FOR CONSULTATION

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Riparian Brush Rabbit *Sylvilagus bachmani riparius* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6189	Endangered

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened
Northwestern Pond Turtle *Actinemys marmorata* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

NOT FOR CONSULTATION

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Fleshy Owl's-clover Castilleja campestris ssp. succulenta Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8095	Threatened

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Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

NOT FOR CONSULTATION

Attachment C

Photographs

Vineyard, looking southwest from the north part of the site; 06/07/24.

Row of vines in the north part of the site, looking northwest from the east edge of the site; 06/07/24.

Mowed field, looking west from the east edge of the field; 06/07/24.

Row of power lines, looking north from the south edge of the mowed field; 06/07/24.

North edge of the mowed field, looking west from the northeast corner of the mowed field; 06/07/24.

South edge of the mowed field, looking west from the southeast corner of the site; 06/07/24.

Large oak along the east edge of the site, looking north; 06/07/24.

Large oaks along the north edge of the mowed field, looking west; 06/07/24.

East edge of the site, looking north from the south part of the site; 06/07/24.

South edge of the site, looking west from the south part of the site; 06/07/24.

Southwest edge of the site, looking northwest along N. Tully Road; 06/07/24.

Northwest edge of the site, looking southwest; 06/07/24.

Ground squirrel burrows along the east fence line, looking north; 06/07/24.

Southwest corner of the site, looking northwest along N. Tully Road; 06/25/24. A new sewer force main and storm drain line will connect to this corner of the subdivision.

West N. Tully Road shoulder, looking southeast from just across the street from the southwest corner of the site; 06/25/24.

West N. Tully Road shoulder, looking southeast from approximately 1,300 feet from the southwest corner of the site; 06/25/24. The force main and storm drain line will be installed along the west side of N. Tully Road.

West edge of the Bear Creek bridge, looking southeast; 06/25/24. The force main will either be attached to the side of the bridge or will be installed under the creek using bore & jack methods.

Bear Creek, looking southwest from on top of the bridge; 06/25/24.

South end of the proposed storm drain line, looking southwest at Bear Creek; 09/03/25.

Storm drain outfall site (noted) on the north bank of Bear Creek, looking north; 09/03/25.

South end of the new force main alignment, looking north from the entrance to the Lockeford Community Services District Sewer Plant; 06/25/24.

Attachment D

San Joaquin County Multi-Species Habitat

Conservation and Open Space Plan:

March 2025 “Buffer Reduction” Staff Report

March 2025
Habitat Technical Advisory Committee

STAFF REPORT

SUBJECT: Approve the Kautz Subdivision Project, Plan Participation, Buffer Reduction, and Habitat Classification Change

RECOMMENDED ACTION: Motion to Approve Recommendation to SJCOG, Inc. to 1) Allow the Kautz Subdivision Project to Participate in the SJMSCP; 2) Allow a Revision to the Incidental Take Minimization Measures (ITMM) for Western Pond Turtle (WPT) and Giant Garter Snake (GGS) Buffers; and 3) Allow an Alteration to the Habitat Type Coverage from Natural (G) Habitat Land to Multi-Purpose Open Space (C2), Urban (U), and Natural (G) Habitat Land

DISCUSSION:

SUMMARY:

The project applicant, Kautz Row Crops, is requesting coverage under the San Joaquin Multi-Species Habitat Conservation and Open Space Plan (SJMSCP or Plan) through the San Joaquin County Community Development Department because portions of the site are in an unmapped area of the Plan. Concurrently, the project applicant is requesting the need for a buffer reduction to construct near a protected waterway and for habitat type be reclassified as Multi-Purpose Open Space and Natural Habitat Land, which is its predominant use. Most of the site was not classified correctly at the inception of the Plan when mapping the habitat classifications for the entirety of San Joaquin County. SJCOG, Inc. staff used

Geographic Information Systems (GIS) from the inception of the Plan (2001-2002) to reclassify or correct the project's habitat classification. The project site is located east of Tully Road and north of Moody Lane, Lockeford, northeast of the City of Lodi, in the Central Zone (attachments 1 & 2).

RECOMMENDATION:

SJCOG, Inc. staff recommends the Habitat Technical Advisory Committee (HTAC) recommend to the SJCOG, Inc. Board to:

1) Allow the project to participate under the SJMSCP to provide biological coverage for the project impacts to the habitat types under the federal and state permits; and

2) Allow a revision of the Incidental Take Minimization Measures (ITMM) for Western Pond Turtle (WPT) and Giant Garter Snake (GGS) buffers; and

3) Allow an alteration to the habitat type coverage from Natural (G) habitat land to Multi-Purpose Open Space (C2), Urban (U), and Natural (G).

FISCAL IMPACT:

If the project is approved, including the habitat type coverage alteration, SJCOG, Inc. will be provided mitigation for the project impacts as required under the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) for approximately 110.0 acres. The impacts for this project would consist of 5.1 acres of Urban (U2), 94.90 acres of Multi-Purpose Open Space (C2), 10.0 acres of Natural (G) habitat impacts. Should the project mitigate for project impacts by paying the 2025 fee, the project would be responsible for mitigating the following fee calculation:

Original Habitat Classification:

Habitat Type	**Total Acres**	**2025 Fee/Acre**	**2025 Total Fee**
Natural (G)	110.0	$16,492	$1,814,120.00
Total:	**110.0**		**$1,814,120.00**

Recommended Habitat Classification Change:

Habitat Type	**Total Acres**	**2025 Fee/Acre**	**2025 Total Fee**
Natural (G)	10.0	$16,492	$164,920.00
Multi-Purpose Open Space (C2)	94.90	$8,246	$782,545.40
Urban (U2)	5.10	$0.00	$0.00
Total:	**110.0**		**$947,465.40**

Should the project impacts occur in a later calendar year, the fee in place at the time of the impact would apply.

BACKGROUND:

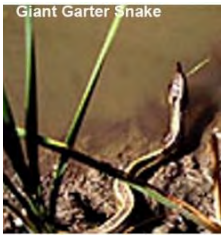
This project applicant is processing a 296-lot tentative map application with San Joaquin County Community Development Department for a residential development project in Lockeford, CA.

Additionally, the project will be required to install a sewer force main along the west/southwest side of Tully Road, south approximately 6,200 feet to the Lockeford Community Services District (CSD) Wastewater Treatment Plant. The sewer line will be installed in the road shoulder for minimal impacts to habitat. The project has two options to achieve the construction of the sewer line:

1. Attach the pipeline on the downstream side of the existing Bear Creek Bridge, which will not require additional permitting from the state and federal agencies; or

2. Attach the force main to the bridge by trenching across Bear Creek. This option would trigger the need for outside permitting from the following agencies:
    - United States Army Corps of Engineers (USACOE) – Section 404 Permit; and
    - United States Fish and Wildlife Services (USFWS) – Section 7 Consultation; and
    - California Department Fish and Wildlife (CDFW) – 1600 Streambed Alteration Agreement (attachment 3).

Buffer Reduction



To construct the sewer line either along the existing Bear Creek Bridge or trenching across Bear Creek, the project will potentially impact Giant Garter Snake (GGS) habitat within the suggested 200-foot buffer and Western Pond Turtle (WPT) within the 300-foot buffer. As identified in Section 5.5.9 of the Plan, HTAC, on a case-by-case review, can establish a setback and buffer zone to be used by the project in place of the 200 and 300 feet suggested.

Because construction of the sewer pipeline will be within the suggested 200-foot and 300-foot buffer areas, the project proponent has requested a reduction in the buffer to a 0-foot setback for the potential impacts to Bear Creek. The reduction of these buffers is necessary for the construction of this project, but the buffer reduction will only be permitted during the active period for GGS. *All other ITMMs for GGS (e.g. construction window between May 1 and October 1 and required survey work) and WPT will remain standard.*

Giant Garter Snake (GGS) burrow within the banks of waterways within San Joaquin County from October 2 – April 30 which is called the GGS inactive period. Additionally, the same habitat for GGS is also suitable habitat for Western Pond Turtle (WPT) nesting sites. These waterways have buffer zones of 200-feet

and 300-feet for GGS and WPT respectively. Projects are not permitted to construct within the established buffers in the inactive season (October 2 – April 30). Heavy machinery used to construct these projects can potentially crush these burrowing species resulting in 'take'. This staff report is recommending approval from the Habitat Technical Advisory Committee (HTAC) and the SJCOG, Inc. Board to allow the Kautz Subdivision Project to construct their project within the 200-foot and 300-foot buffer area of Bear Creek to during the active seasons (May 1 to October 1) when these protected species are not actively burrowing or nesting within the banks of Bear Creek or any other protected waterway within San Joaquin County. This request cannot be made administratively but by the recommending bodies of the Habitat Plan.

Habitat Classification Change

In accordance with the SJMSCP Planned Land Use Map, portions of the project site are in the "unmapped" land use area of the plan. Because it is not located on a SJMSCP compensation map, the project can request an alteration to the SJMSCP vegetation map habitat classification on a case-by-case review.

The project is seeking an alteration to the habitat classification on the SJMSCP vegetation map. Per the SJMSCP's Section 8.8.2.1, a project can seek an alteration to the habitat classification by providing aerial photography imagery dated prior to SJMSCP permit issuance in 2001. Each project will be reviewed by the HTAC for recommendation to the SJCOG, Inc. Board for approval on a case-by-case basis.

The original SJMSCP GIS vegetation map classification and the recommended GIS vegetation map reclassification based on the 2001 aerial imagery (attachment 4) are noted in the table below:

Original Classification	Original Acres	Reclassified Acres
Natural (G)	110.0	10.0
Multi-Purpose Open Space (C2)	0.00	94.90
Urban (U2)	0.00	5.1

NEXT STEPS:

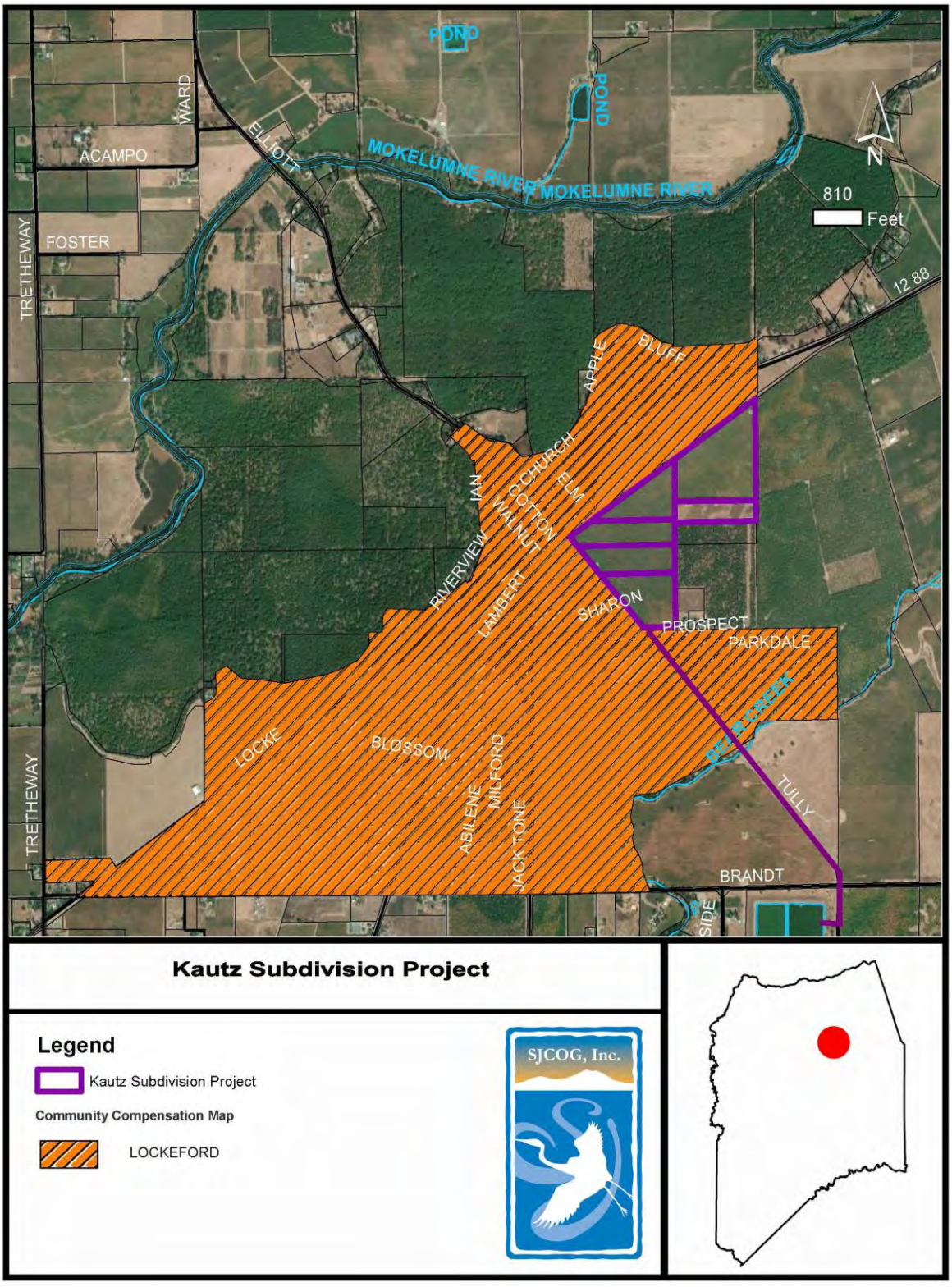
Should the staff recommendation be approved by the SJCOG, Inc. Board at the March 27th Board meeting, the project will proceed forward under the plan.

ATTACHMENTS:

1. General Location Map
2. Project Location Map
3. Project Site Map
4. 2001 Aerial Map

Prepared by: Laurel Boyd, Associate Habitat Planner

ATTACHMENT 1



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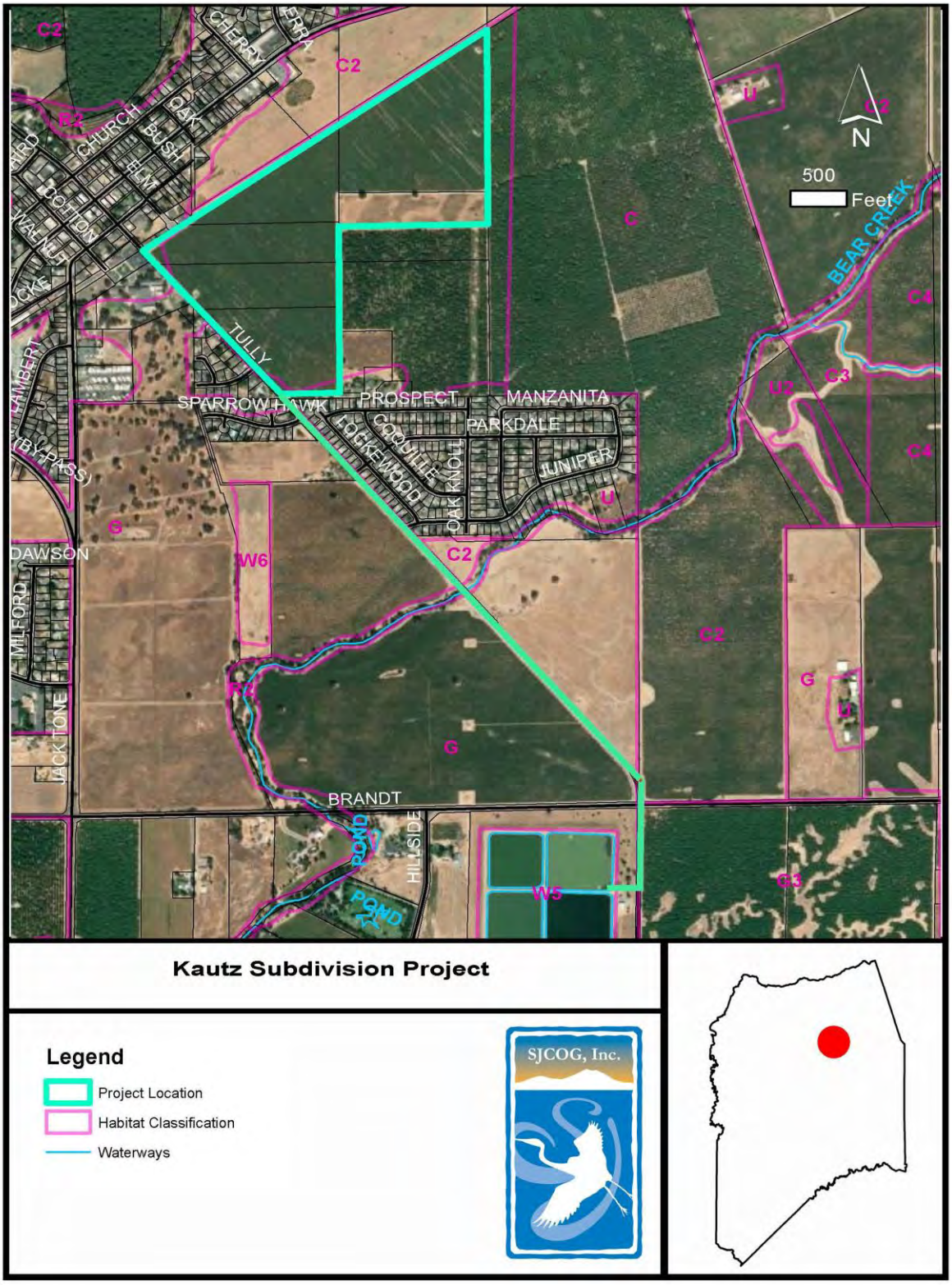

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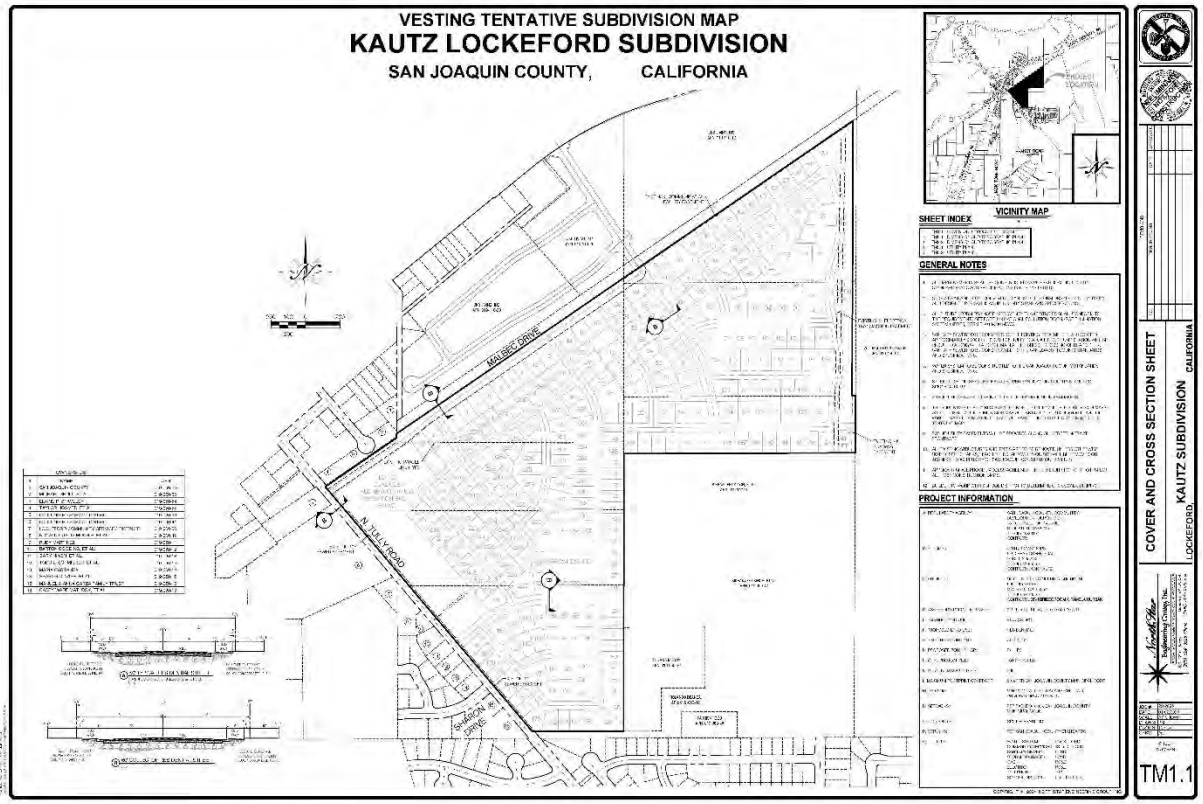


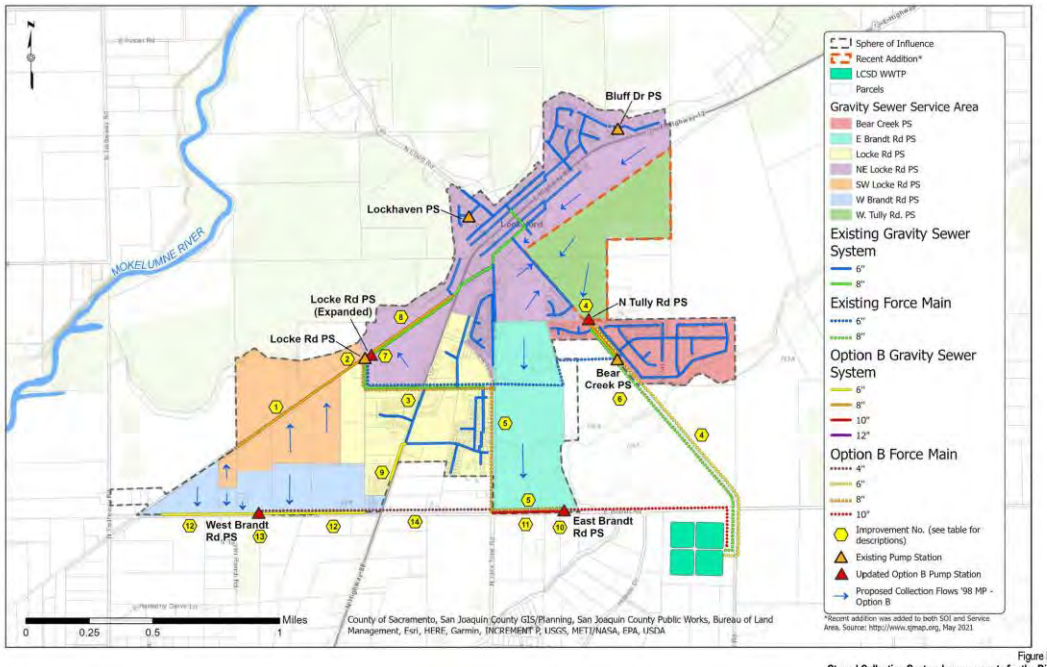
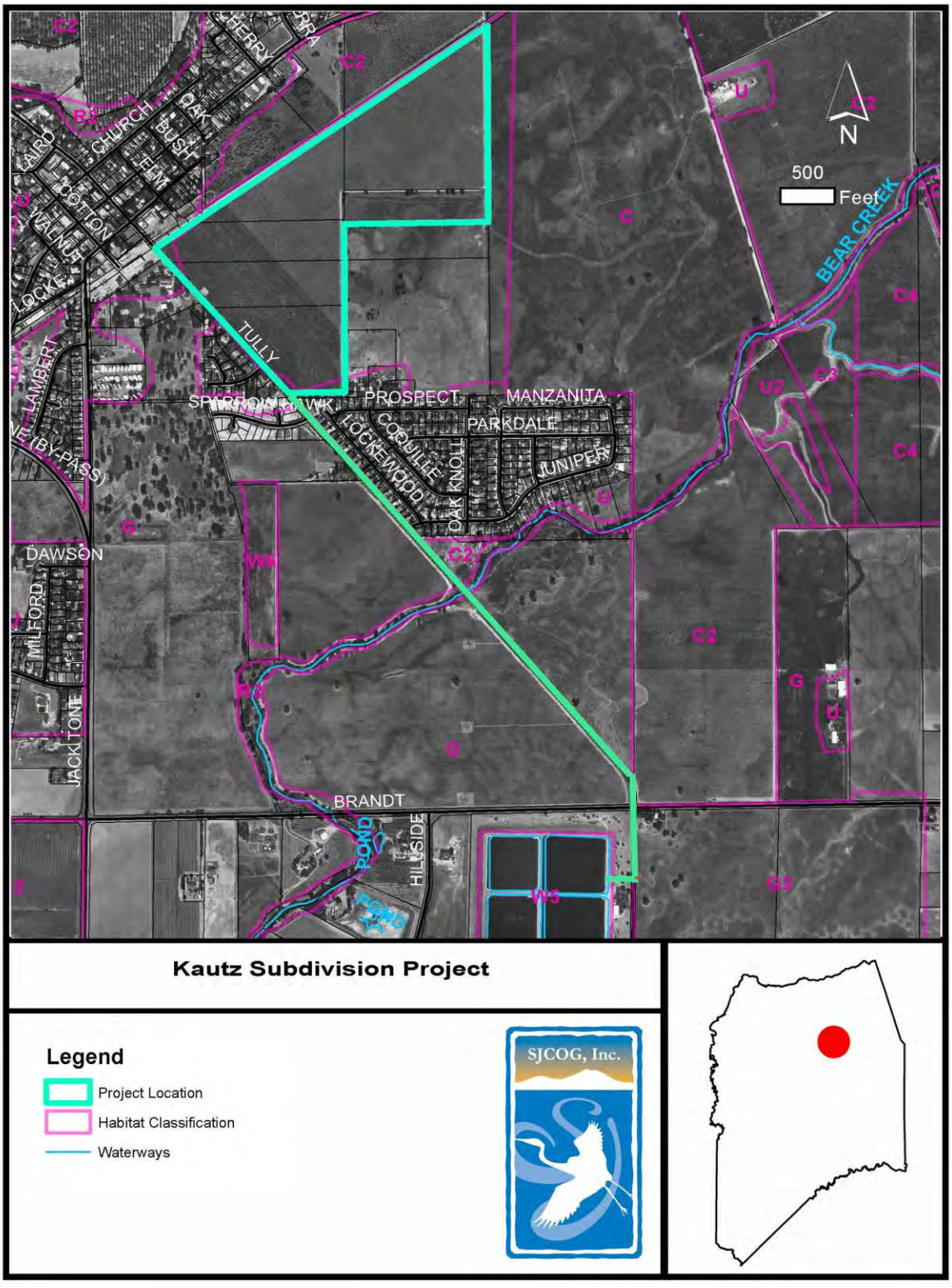


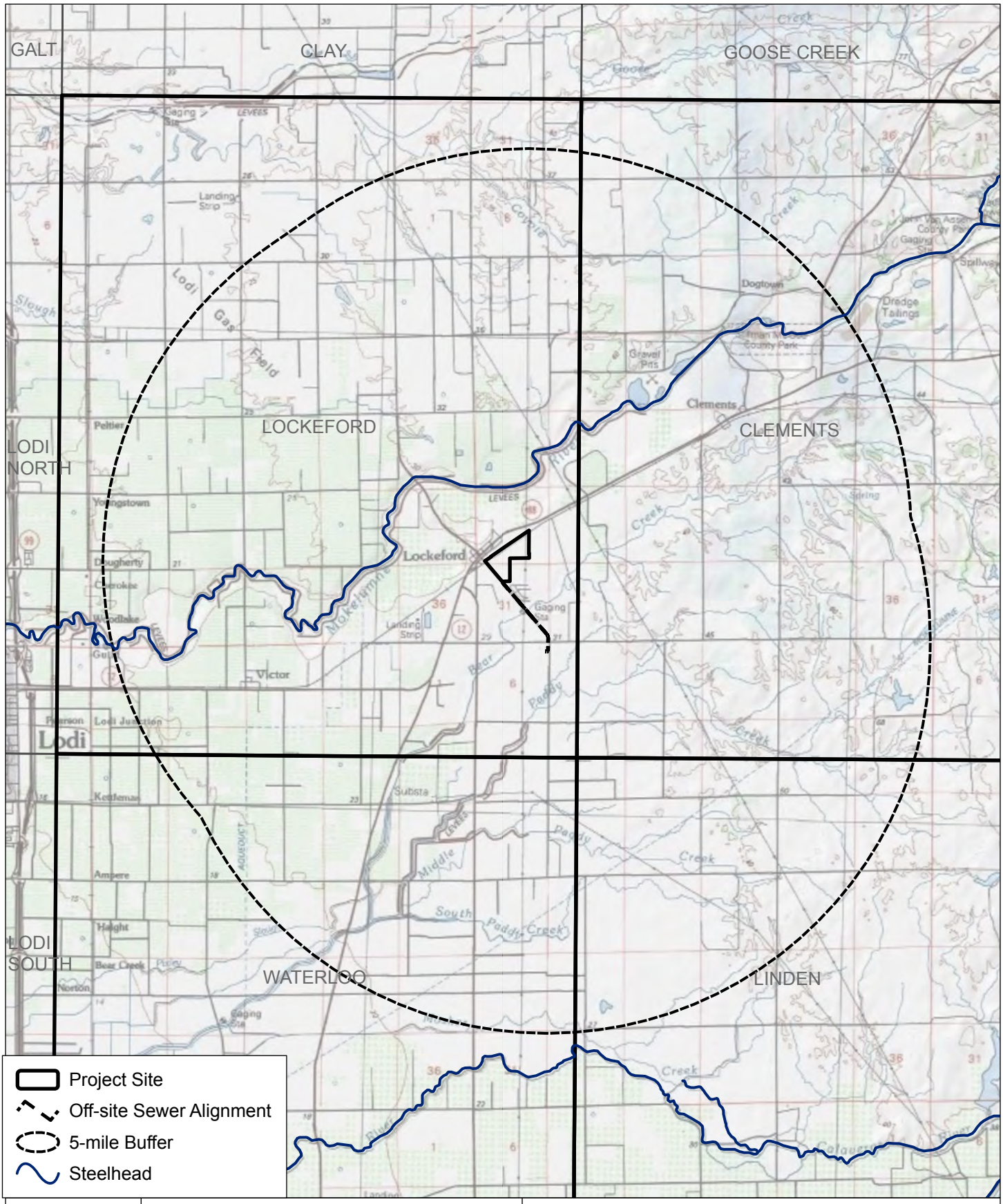
Figure ES-3
Staged Collection System Improvements for the District

ATTACHMENT 4



Attachment E

Designated Critical Habitat



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CRITICAL HABITAT

Kautz Lockeford Subdivision

San Joaquin County, CA

Moore Biological Consultants

Map Date: 05/06/2025
Source: USFWS; NOAA (2025), USA Topo Maps (2025)

APPENDIX C
CULTURAL RESOURCES REPORT (Confidential)

APPENDIX D
GEOTECHNICAL REPORT

Preliminary Geotechnical Engineering Report

Kautz Development
19390, 19260, 19480 N. Tully Road, and
14380, 14372, 14380 E ST RT 88 HWY
Lockeford, CA

December 3, 2018
Terracon Project No. NA185096

Prepared for:
Kautz Row Crops
Lodi, California

Prepared by:
Terracon Consultants, Inc.
Lodi, California

December 3, 2018

Mr. Jack Kautz
Kautz Row Crops Inc.
5490 Bear Creek Road
Lodi, CA 95240

Re: Preliminary Geotechnical Engineering Report
Kautz Development
19390, 19260, 19480 N. Tully Road, and 14380, 14372, 14380 E ST RT 88 HWY
Lockeford, California 95237
Terracon Project Number: NA185096

Dear Mr. Kautz:

Terracon Consultants, Inc. (Terracon) has completed the requested preliminary geotechnical engineering services for the above referenced project. This study was performed in general accordance with our proposal number PNA185096 dated July 13, 2018. This report presents the preliminary findings of the subsurface exploration and provides preliminary geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, soil compaction, pavement, underground utilities, and other earth connected phases for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Garret S.H. Hubbart, G.E. 2588
Principal
Office Manager

Patrick C. Dell, G.E. 2186
Senior Associate
Department Manager

Enclosures
cc: 1 – Client (PDF)
1 – File

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APPENDIX A – FIELD EXPLORATION

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Exhibit A-2	Exploration Plan
Exhibit A-3	Field Exploration Description
Exhibits A-4 to A-9	Test Pit Logs

APPENDIX B – SUPPORTING INFORMATION

Exhibit B-1	Laboratory Testing
Exhibits B-2 and B-3	R-Value Test Results
Exhibit B-4	Corrosion Analysis

APPENDIX C – SUPPORTING DOCUMENTS

Exhibit C-1 General Notes
Exhibit C-2 Unified Soil Classification System

EXECUTIVE SUMMARY

A preliminary geotechnical engineering report has been prepared for the proposed Kautz Development to be located at 19390, 19260, 19480 N. Tully Road, and 14380, 14372, 14380 E ST RT 88 HWY in Lockeford, California. Terracon's geotechnical engineering scope of work for this project included excavating six (6) test pits for subsurface exploration, laboratory testing, geotechnical engineering analysis, and preparation of this report. All six (6) of the test pits were advanced to between 8 and 10 feet below ground surface (bgs) and the two (2) R-Value samples were obtained from the upper 18 inches of the surface material.

Based on the information obtained from our engineering analyses of the field and laboratory data, the site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test pits. **This preliminary geotechnical engineering report is strictly for the purpose of preliminary design and planning. A more encompassing geotechnical engineering report will be required to complete the design, plans and construction documents.** The following geotechnical considerations were identified:

- The near surface soils encountered in our test pits generally consisted of dense to very dense sandy silt and silt with sand which in turn was underlain by combinations of medium dense to very dense silty sand, sandy silt, and silt with sand which was weakly to strongly cemented in places, extending to a maximum depths explored of 8 to 10 feet bgs.

- Groundwater was not encountered during this investigation, but is expected to be about 120 to 140 feet bgs based on historical groundwater data.

- A liquefaction analysis was not performed at the site due to the historical groundwater level. It is our opinion that the potential risks associated with liquefaction are low for the subject site.

- In order to avoid damage to the utilities and vineyard, we performed our test pits within the perimeter access roads. Some of the cemented soil encountered in test pit TP3 was broken, indicating previous deep ripping of the vineyard which likely occurred just prior to planting.

  During mass grading and after any cuts have been made, the original grade shall be over excavated 18 inches, the resulting subgrade compacted with a Caterpillar 815 compactor, or equivalent-sized compactor, or larger to penetrate the underlying 18 inches of subsurface loose soil from deep ripping.

- The proposed single family homes may be supported on spread foundations bearing on a minimum of 12 inches of compacted native soil or 12 inches of compacted engineered fill to provide more uniform support. This should be accomplished during mass grading, over-excavation and recompaction.

- The 2016 California Building Code seismic site classification for this site is D.

- Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of the subgrade, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project. Such evaluation is considered an extension of this study.

- Close monitoring of the construction operations discussed herein will be critical in achieving the design subgrade support. We therefore recommend that the Terracon be retained to monitor this portion of the work.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **GENERAL COMMENTS** should be read for an understanding of the report limitations.

PRELIMINARY GEOTECHNICAL ENGINEERING REPORT
KAUTZ DEVELOPMENT
19390, 19260, 19480 NORTH TULLY ROAD,
AND 14380, 14372, 14380 EAST ST RT 88 HWY
LOCKEFORD, CALIFORNIA

Terracon Project No. NA185096
December 3, 2018

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the proposed Kautz Development project located at 19390, 19260, 19480 N. Tully Road, and 14380, 14372, 14380 E ST RT 88 HWY in Lockeford, California.

The purpose of these services is to provide information and preliminary geotechnical engineering recommendations relative to:

- subsurface soil conditions
- pavement design
- earthwork and subgrade preparation
- seismic site classification
- foundation design and construction
- slab design and construction
- liquefaction potential

Our geotechnical engineering scope of work for this project included the excavation of six (6) test pits, soil classification, laboratory testing, geotechnical engineering analysis, and preparation of this report. Logs of the test pits along with a site location map and exploration plan are included in Appendix A of this report.

2.0 PROJECT INFORMATION

2.1 Project Description

Item	Description
Site layout	See Appendix A, Exhibit A-3: Exploration Plan
Development	The development will consist of approximately 150 acres and will include about 400 low density single family units. The development will also include infrastructure such as streets, sidewalks, and utilities stubbed to lots. Retention basins will likely be needed as well. Since basin locations are undetermined at this time, no infiltration testing was included in the scope of this work.

Item	Description
Structures	The proposed construction will include single and two story single family homes. Structures will be wood framed supported on shallow spread footings with concrete slab-on-grade floors.
Maximum Loads (assumed)	Column load –10 to 20 kips (assumed). Continuous Wall Load – 1 to 1.5 klf (assumed).
Grading	Based on the topography, cuts and fills are expected to be less than 3 feet in vertical extent.

2.2 Site Location and Description

Item	Description
Location	The site is located at 19390 N. Tully Road, 19260 N. Tully Road, 19480 N. Tully Road, 14380 E ST RT 88 HWY, 14372 E ST RT 88 HWY, and 14380 E ST RT 88 HWY in Lockeford, California. Assessor Parcel Numbers: 019-060-090, 019-060-100, 019-110-130, 019-110-140, 019-110-160, and 019-110-170.
Existing Features	The site consists of an operational vineyard.
Current Ground Cover	The current ground cover consists of bare ground planted with a vineyard.
Existing Topography	The site is relatively flat.

3.0 SUBSURFACE CONDITIONS

3.1 Seismic Considerations

3.1.1 Seismic Site Class and Parameters

The following table presents the seismic design values and site class as calculated from the USGS U.S. Seismic Design Maps website utilizing ASCE 7-10.

DESCRIPTION	VALUE
2016 California Building Code Site Classification (CBC) [1]	D
Site Latitude	38.164016°
Site Longitude	-121.143203°
S_S Spectral Acceleration for a Short Period	0.625 g
S_1 Spectral Acceleration for a 1-Second Period	0.271 g

DESCRIPTION	VALUE
F_a Site Coefficient for a Short Period	1.300
F_v Site Coefficient for a 1-Second Period	1.858
S_{Ds} Design Spectral Response Acceleration for a Short Period	0.542 g
S_{D1} Design Spectral Response Acceleration for a 1-Second Period	0.336 g

[1] Note: The 2016 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope does not include the required 100 foot soil profile determination. Test pits extended to a maximum depth of 10 feet, and this seismic site class definition considers that similar soils continue below the maximum depth of the subsurface exploration. Additional exploration to greater depths could be considered to confirm the conditions below the current depth of exploration. Alternatively, a geophysical exploration could be utilized in order to attempt to confirm the seismic site class.

3.1.2 Faulting and Estimated Ground Motions

The subject site is located in the California Central Valley Area which is a relatively low seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. Approximately 83 percent of the contributing sources are finite point sources approximately 7.3 to 19.7 kilometers from the site with magnitudes ranging from 5.7 to 6.24. These point sources each contribute about 1.2 to 4.1 percent to the total contribution. This summary is as calculated using the USGS Unified Hazard Tool, Dynamic: Conterminous U.S. 2008 data.

The USGS Design Maps Detailed Report evaluates the Peak Ground Acceleration (PGA_M) to be 0.289 g. Based on the 2008 interactive deaggregations, the PGA at the subject site for a 2% probability of exceedance in 50 years (return period of 2475 years) is expected to be about 0.226g. The site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of State Fault Hazard Maps.[1]

3.1.3 Liquefaction Potential Analysis

Liquefaction is a mode of ground failure that results from the generation of excess pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils are present below groundwater. The California Geologic Survey (CGS) has designated certain areas of California as potential liquefaction hazard zones. These are areas that are considered at risk of liquefaction-related ground failure during a seismic event, based on mapped surficial deposits and the presence of a relatively shallow water table. The project site has not been mapped for liquefaction hazard potential by the CGS. Due to the depth of the historical groundwater level[2] 120 to 140 feet bgs, it is our opinion that the potential for liquefaction to occur at this site is low.

[1] California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California.*
[2] Groundwater Information Center, *https://gis.water.ca.gov/app/gicima/*

3.2 Typical Profile

Based on the results of the test pits, subsurface conditions on the project site can be generalized as follows: The surficial soils are generally characterized by silt with sand and sandy silt that extend down to 5-10 feet below ground surface. The surficial silts have been plowed throughout the history of the vineyard as well as deep ripped prior to establishing the vineyard. Test pits 1 and 2 contain some layers of silty sands along with sandy silts and silts with sand. Underlying these silts in 4 of the 6 test pits is a light tan hard pan comprised of strongly cemented silts with sand. No hard pan was encountered in test pit 2, and the well cemented hard pan at test pit 4 was comprised of silty sand.

Conditions encountered at each test pit location are indicated on the individual test pit logs. Stratification boundaries on the test pit logs represent the approximate location of changes in soil types; in situ, the transition between materials may be gradual. Details for each of the test pits can be found on the test pit logs in Appendix A of this report.

3.3 Groundwater

Groundwater was not encountered during the investigation. Based on the review of historical groundwater levels in this area, groundwater is anticipated to be approximately 120 to 140 feet bgs.

4.0 PRELIMINARY RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

This preliminary geotechnical engineering report is strictly for the purpose of preliminary design and planning. A more encompassing geotechnical engineering report will be required to complete the design, plans, and construction documents.

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test pits, provided that the recommendations presented in this report are implemented during the design and construction phases of this project. Based on the geotechnical engineering analyses, subsurface exploration, and laboratory test results, we recommend that the proposed buildings be supported on spread footings bearing on compacted native material or engineered fill. The main geotechnical consideration for this project is to provide uniform support for the foundations.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, experience, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of fills on the project. The recommendations presented are for the design and construction of earth supported elements including foundations and concrete slabs and are contingent upon following the recommendations outlined in this section. All grading for the structures should incorporate the limits of the proposed structures plus a lateral distance of at least five feet beyond the outside perimeters (the building pad).

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of the subgrade, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project. Such evaluation is considered an extension of this study.

4.2.1 Site Preparation

Strip and remove existing structures, debris, vegetation, old foundations, irrigation systems, and other deleterious materials within the area of the proposed construction. This should include the removal of the existing vineyard and their root systems. Roots ½-inch in diameter and larger should be removed within the proposed construction area. Grape vine roots can extend up to 3 or 4 feet bgs an indicated in the test pits. Demolition of any structures should include complete removal of all foundation systems and remaining underground utilities within the proposed construction area. This should include removal of any loose backfill found adjacent to existing foundations. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction. All materials derived from the removal of existing vegetation and deleterious materials should be removed from the site and not be allowed for use as on-site fill.

Evidence of utilities or underground facilities was observed during the site reconnaissance, given the site was an operational vineyard. It is likely such utilities will be encountered during construction since there were existing structures on the site. If encountered, abandoned underground utilities and facilities should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction. This includes any irrigation systems.

4.2.2 Subgrade Preparation

Care should be taken to prevent wetting or drying of the bearing materials during construction. Wet, dry, or loose/disturbed material at the bottom of the footing excavations should be removed

before foundation concrete is placed. Place a lean concrete mud-mat over the bearing soils if the excavations must remain open for an extended period of time.

In order to provide more uniform subgrade support and once cuts have been made, the resulting subgrade shall be over excavated 18 inches, moisture conditioned as needed and compacted with a Caterpillar 815 compactor, or equivalent-sized compactor, or larger to penetrate to the underlying 18 inches of subsurface loose soils, resulting from past deep ripping of the vineyard. The soil shall be moisture conditioned and compacted per the compaction requirements in Section 4.2.4. The moisture content and compaction of subgrade soils should be maintained until foundation and pavement construction.

Exposed soils should be proof rolled with a loaded dump/water truck and approved by the Engineer prior to the placement of engineered fill. Any soft spots, where the Contractor may have difficulty in obtaining the desired compaction, shall be removed and replaced with compacted backfill as described in this report.

4.2.3 Material Requirements

All fill materials from any source should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer.

Imported earth materials for use as engineered fill should be pre-approved by our representative during construction. On-site soils may be used for engineered fill as well as general site grading and pavement areas. Imported non-expansive soils may be used as fill material for the following:

- general site grading
- foundation areas
- slab-on-grade floor
- foundation backfill
- trench backfill
- exterior floor slabs

Imported soils for use as compacted engineered fill material within the proposed building areas should conform to non-expansive materials as indicated as follows:

Gradation	**Percent Finer by Weight (ASTM C 136)**
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	20 - 40

- Liquid Limit ..... 30 (max)

- Plasticity Index ..... 10 (max)
- Maximum expansive index*..... 20 (max)

*ASTM D 4829

On site sands and silts shall be suitable for use as on site engineered fill. Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed twelve inches loose thickness.

4.2.4 Compaction Requirements

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Relative Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
Approved on-site or import engineered fill soils:			
Beneath foundations:	90	0%	+3%
Beneath slabs:	90	0%	+3%
Utility trenches [1]:	90	0%	+3%
Fill below top 5 feet of finish grade elevation:	95	0%	+3%
Fill within upper 5 feet of finish grade elevation:	90	0%	+3%
On-site Soils:			
Bottom of excavation receiving fill:	90	0%	+3%
Miscellaneous backfill:	90	0%	+3%
Utility trenches (Landscape areas):	90	0%	+3%
Beneath asphalt pavements:	95	0%	+3%
Beneath concrete pavements:	95	0%	+3%
Aggregate base and Subbase (beneath pavements):	95	0%	+3%

1. Utility trenches in pavement areas shall be compacted to a minimum 95 percent relative compaction in the upper 12 inches.

We recommend that compacted native soil or any engineered fill be tested for moisture content and relative compaction during placement. Should the results of the in-place density tests indicate the specified moisture content or compaction requirements have not been met, the area

represented by the test should be reworked and retested as required until the specified moisture content and relative compaction requirements are achieved.

4.2.5 Utility Trench Backfill

Utility trenches are a common source of water infiltration and migration. All utility trenches that penetrate beneath the structures should be effectively sealed to restrict water intrusion and flow through the trenches that could migrate below the structure. We recommend constructing an effective "trench plug" that extends at least 2 feet out from the face of the structure exterior. The plug material could consist of lean clay compacted at a water content at or above the soils optimum water content or lean concrete. The plug should be placed to completely surround the utility line. If lean concrete is used, then the utility line should be sleeved through flexible material and/or designed to be flexible.

4.2.6 Grading and Drainage

All final grades must provide effective drainage away from the structures during and after construction. Water permitted to pond next to the structures can result in greater soil movements than those discussed in this report. These greater movements can result in unacceptable differential floor slab movements, cracked slabs and walls, and roof leaks. Estimated movements described in this report are based on effective drainage for the life of the structures and cannot be relied upon if effective drainage is not maintained.

Exposed ground should be sloped at least 2 percent away from the structures for at least 10 feet beyond the perimeter of the structures. After building construction and landscaping, we recommend the Civil Engineer/Surveyor verify final grades to document that effective drainage has been achieved. Grades around the structures should also be periodically inspected and adjusted as necessary, as part of the structures' maintenance program.

Positive drainage should be provided during construction and maintained throughout the life of the structures. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

4.2.7 Earthwork Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment, however extra time should be budgeted for excavation within cemented soils (hardpan) Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively workable. On-site fine grained soils may pump or become unworkable at high water contents. The workability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unworkable conditions develop, workability may be improved by scarifying and drying. If the construction schedule does not allow for scarifying and drying by

aeration in place, the contractor may utilize dry crushed rock materials and geogrid to stabilize wet subgrade materials. If soil stabilization is needed, Terracon should be consulted to evaluate the situation as needed.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of the floor slab. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to construction.

As a minimum, all temporary excavations should be sloped or braced as required by Occupational Safety and Health Administration (OSHA) regulations to provide stability and safe working conditions. The contractor, by his contract, is responsible for designing and constructing stable, temporary excavations (including utility trenches) as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, and backfilling of excavations to the completed subgrade.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork may require additional mitigation measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

4.3 Foundations

In our opinion, after the site is prepared in accordance with the recommendations outlined herein, the proposed buildings can be supported by shallow spread footings bearing on a minimum of 12 inches of compacted native soil or 12 inches of compacted engineered fill. This should be accomplished by performing the initial compaction operations with the Caterpillar 815 compactor or equivalent once site is cut to grade, overexcavated, recompacted, and any subsequent fills are made. A footing excavation inspection shall be performed prior to placing any steel to verify our soils are as anticipated and designed for.

4.3.1 Foundation Design Recommendations

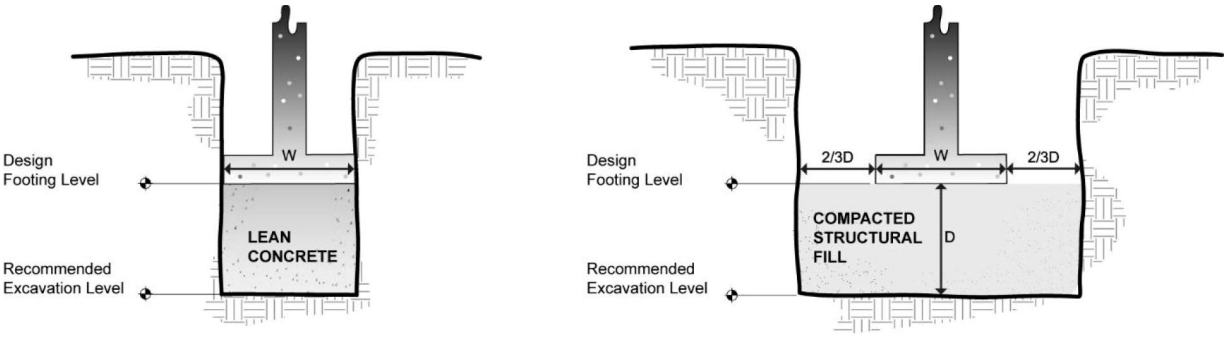
DESCRIPTION	RECOMMENDATION
Foundation Type	Conventional Shallow Spread Footings
Bearing Material	Compacted native soil or engineered fill
Allowable Bearing Pressure with 12 inches of compacted native soil or engineered fill[1,2]	2,000 psf for spread footings
Minimum Dimensions	Walls: 12 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade[3]	12 inches for single story and 18 inches of two story
Total Estimated Settlement[4]	Less than 1 inch for foundations bearing on compacted native soils or engineered fill
Estimated Differential Settlement[4]	½ inch in 40 feet.
Ultimate passive pressure[5]	350 pcf, equivalent fluid density
Ultimate coefficient of sliding friction[5]	0.32

1. The recommended allowable bearing pressure is the net pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Assumes any unsuitable existing fill or soft soils, if encountered, will be undercut and replaced with compacted structural fill. Based upon a minimum Factor of Safety of 3.
2. The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.
3. Finished grade is defined as the lowest adjacent grade within five feet of the foundation for perimeter (or exterior) footings.
4. The above settlement estimates from foundation loads have assumed that the minimum footing width is 2 feet for column footings and 1 foot for continuous footings.
5. The spread footing foundation excavation sides must be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure values to be valid. If the loaded side is sloped or benched, and then backfilled, the allowable passive pressure will be significantly reduced. Passive resistance in the upper 1 foot of the soil profile should be neglected. If passive resistance is used to resist lateral loads, the base friction should be reduced by 25 percent.

4.3.2 Foundation Construction Considerations

If unsuitable bearing soils are encountered in footing excavations, the excavation could be extended deeper to suitable soils and the footing could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. As an alternative, the footings could also bear on properly compacted structural backfill extending down to the suitable soils. Overexcavation for compacted structural fill placement below footings should extend laterally

beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with well graded granular material placed in lifts of 9 inches or less in loose thickness (6 inches or less if using hand-guided compaction equipment) and compacted to at least 90 percent of the maximum dry density as determined by the ASTM D1557 test method. The overexcavation and backfill procedure is described in the following figure.



NOTE: Excavations in sketches shown vertical for convenience. Excavations should be sloped as necessary for safety.

To ensure footings have adequate support, special care should be taken when footings are located adjacent to trenches. The bottom of such footings should be at least 1 foot below an imaginary plane with an inclination of 1.5 horizontal to 1.0 vertical extending upward from the nearest bottom edge of the adjacent trench.

4.4 Floor Slabs

4.4.1 Floor Slab Design Recommendations

Item	Description
Floor slab support[1]	A minimum of 12 inches of compacted native soil or engineered fill[1]
Capillary break	4 inches of free draining granular material

1. Upon completion of grading operations in the building areas, the recommend subgrade moisture content and density should be maintained through construction of the building floor slabs.

4.4.2 Floor Slab Construction Considerations

The use of a vapor retarder should be considered beneath concrete slabs-on-grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Some differential movement of a slab-on-grade floor system is possible should the moisture content of the subgrade soils vary significantly. Such movements are anticipated to be within

general tolerance for normal slab-on-grade construction. To reduce (not prevent) potential slab movements, the subgrade soils should be prepared as outlined in the **Earthwork** section of this report.

On most project sites, the site grading is generally accomplished early in the construction phase. However as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade may not be suitable for placement of drain rock and concrete and corrective action will be required.

Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material with properly compacted fill. All floor slab subgrade areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to placement of the drain rock and concrete.

4.6 Pavements

Two (2) representative soil samples were obtained from the near surface soils and subjected to R-value testing in our laboratory. The samples produced values of 66 and 57. A design R-value 50 was used in our calculations.

Traffic indices of 4.0, 5.0, 6.0, and 7.0 were used to design the pavement sections for the site. If different traffic indices are required, please contact our office and a suitable design can be provided. Flexible (asphalt concrete) pavement sections have been designed according to the latest edition of the Caltrans Highway Design Manual using a 20-year pavement life. The recommended pavement sections are shown in the table below.

CONVENTIONAL ASPHALT CONCRETE PAVEMENT SECTIONS FOR R-VALUE 50, (inches)			
Traffic Index	**Asphalt Surface**	**Aggregate Base**	**Total Thickness**
4.0	2.5	4.0	6.5
5.0	3.0	4.0	7.0
6.0	3.5	4.0	7.5
7.0	4.0	5.0	9.0

4.6.1 Pavement Construction Considerations

The upper 12 inches of all pavement subgrade should be scarified, moisture conditioned, and compacted to a minimum of 95 percent of the material's maximum dry density as determined by the ASTM D1557 test method.

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the latest edition of Caltrans Standard Specifications.

On most project sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrades may become disturbed due to utility excavations, construction traffic, rainfall, etc. As a result, the pavement subgrade may not be suitable for placement of aggregate base and pavement.

We recommend the area underlying the pavement be rough graded and proof rolled prior to placement of aggregate base material. Particular attention should be paid to high traffic areas and utility trenches that were backfilled. Areas where disturbance has occurred and materials are unsuitable should be removed and replaced with compacted engineered fill.

We recommend the pavement construction be scheduled in the later stage of construction activities when most heavy construction traffic such as concrete trucks and material delivery trucks will no longer come on site.

The aggregate base should be uniformly moisture-conditioned and compacted to a minimum of 95 percent of the maximum dry density as determined in the ASTM D1557 test method in accordance with this report. Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

Minimizing subgrade saturation is an important factor in maintaining subgrade strength. Water allowed to pond on or adjacent to pavements could saturate the subgrade and cause premature pavement deterioration. The pavement should be sloped to provide rapid surface drainage, and positive surface drainage should be maintained away from the edge of the paved areas. Design alternatives which could reduce the risk of subgrade saturation and improve long-term pavement performance include crowning the pavement subgrades to drain toward the edges, rather than to the center of the pavement areas; and installing surface drains next to any areas where surface water could pond. Properly designed and constructed subsurface drainage will reduce the time subgrade soils are saturated and can also improve subgrade strength and performance. In areas where there will be irrigation adjacent to pavements, we recommend the owner consider installing perimeter drains for the pavements.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g. crack and joint sealing and patching) and global maintenance (e.g. surface sealing). Preventive maintenance is usually the first priority when implementing a pavement maintenance program.

Additional engineering observation is recommended to determine the type and extent of a cost effective program. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required.

4.7 Corrosivity

The table below lists the results of laboratory soluble sulfate, soluble chloride, electrical resistivity, and pH testing. The values may be used to estimate potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

Corrosivity Test Results Summary						
Test Pit	**Sample Depth (feet)**	**Soil Description**	**Soluble Sulfate (ppm)**	**Soluble Chloride (ppm)**	**Electrical Resistivity (Ω-cm)**	**pH**
TP-2	1	Silt with Sand	58	175	5917	8.93

Results of soluble sulfate testing indicate samples of the on-site soils tested possess negligible sulfate concentrations when classified in accordance with Table 19.3.1 of the ACI Design Manual 318-14. The soil classifies as Class S0.

The chloride test results indicate that the soils have a relatively low chloride content present. According to Table 19.3.1.1 of ACI 318-14, the soil should not be considered an external source of chloride (i.e. sea water, etc.) to concrete foundations. Consequently, chloride classes of C0 and C1 should be used where applicable. C0 is defined as, “Concrete dry or protected from moisture” and C1 is defined as, “Concrete exposed to moisture but not to an external source of chlorides”. For the amount of chlorides allowed in concrete mix designs, Table 19.3.2.1 of ACI 318-14 shall be adhered to as appropriate.

Based on the results of the sulfate content test results, ACI 318-14, Section 19.3 does not specify the type of cement or a maximum water-cement ratio for concrete for sulfate Class S0. For further information, see ACI 318-14, Section 19.3.

5.0 GENERAL COMMENTS

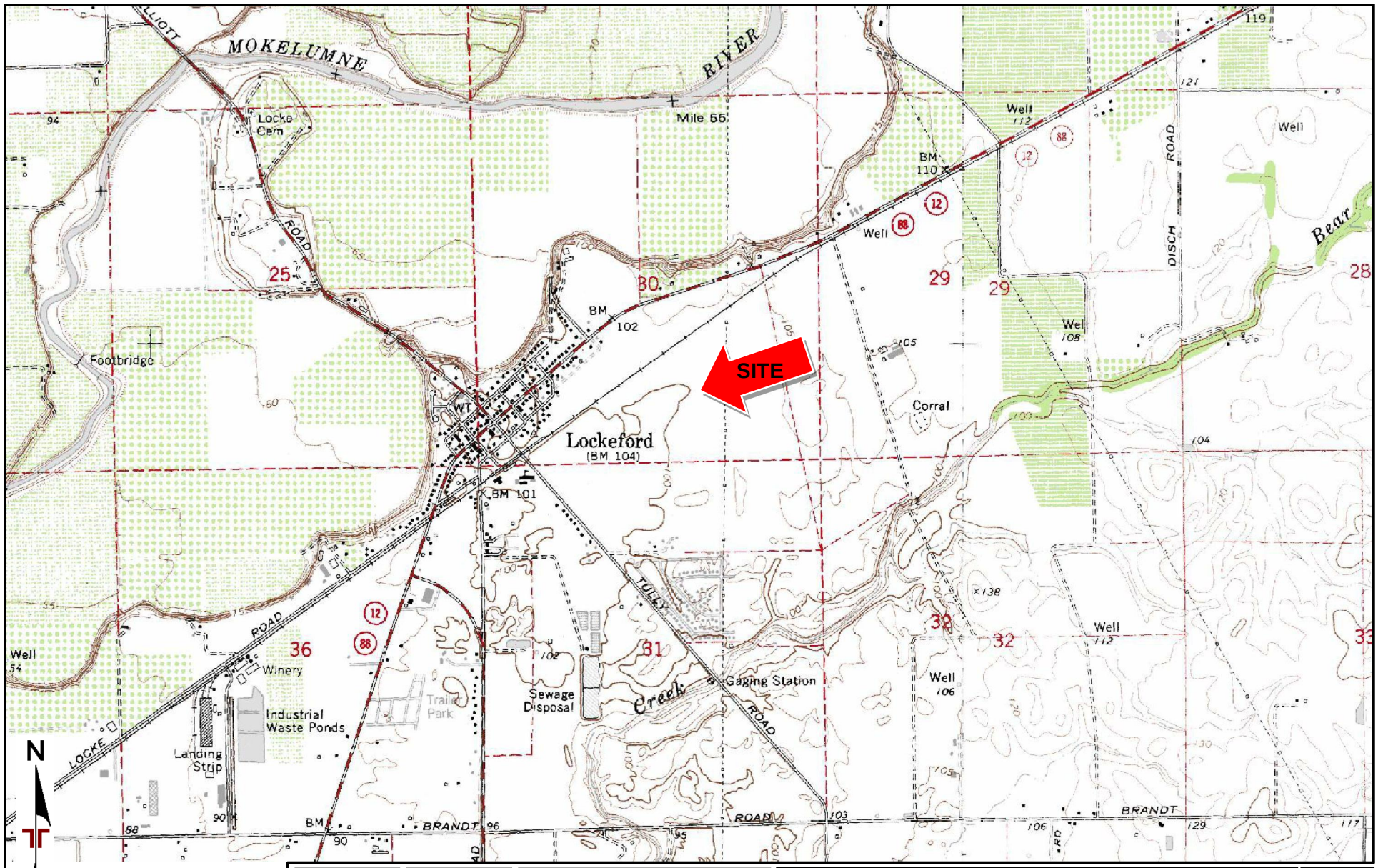
A comprehensive, final geotechnical engineering report should be prepared for this project. Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the test pits performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between test pits, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: LOCKEFORD, CA (1/1/1993) and CLEMENTS, CA (1/1/1993).

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	G. Hubbart
Drawn by:	K. Powell
Checked by:	G. Hubbart
Approved by:	G. Hubbart

Project No.	NA185096
Scale:	1"=2,000'
File Name:	N/A
Date:	12/4/2018

Terracon
902 Industrial Way
Lodi, CA 95240-3106

SITE LOCATION

Kautz Development
19390 N. Tully Road
Lockeford, CA

Exhibit
A-1

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	G. Hubbart
Drawn by:	K. Powell
Checked by:	G. Hubbart
Approved by:	G. Hubbart

Project No.	NA185096
Scale:	AS SHOWN
File Name:	N/A
Date:	12/4/2018

Terracon
902 Industrial Way
Lodi, CA 95240-3106

EXPLORATION PLAN

Kautz Development
19390 N. Tully Road
Lockeford, CA

Exhibit

A-2

Field Exploration

The test pit locations were laid out in the field by a Terracon representative using a scaled site plan provided by the client and utilizing hand-held GPS equipment. Ground surface elevations indicated on the test pit logs were estimated from Google Earth™ aerial photos. If elevations and a more precise test pit layout are desired, we recommend test pits be surveyed.

The test pits were excavated with a rubber-tired backhoe equipped with a 36-inch wide bucket. The sampling depths and other sampling information were recorded on the field test pit logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a geotechnical engineer. Our exploration team prepared field test pit logs as part of the field explorations. These field logs include visual classifications of the materials encountered during excavation and our interpretation of the subsurface conditions between samples. Final test pit logs are prepared from the field logs. The final test pit logs represent the geotechnical engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

TEST PIT LOG NO. TP1

PROJECT: Kautz Development

CLIENT: Kautz Row Crops, Inc.
Lodi, CA

SITE: 19390 N. Tully Road
Lockeford, CA

LOCATION See Exhibit A-2

Latitude: 38.1624° Longitude: -121.1479°

Surface Elev.: 107 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION	SAMPLE TYPE	WATER CONTENT (%)	PERCENT FINES
0	107	**SILT WITH SAND (ML)**, fine to medium grained, brown, dense to very dense			
1.0	106	**SILTY SAND (SM)**, fine to medium grained, brown, medium dense			
				3	
				3	43
4.0	103	**SANDY SILT (ML)**, fine to medium grained, brown, weakly cemented			
				5	
7.0	100	**SILTY SAND (SM)**, fine to medium grained, brown, medium dense		5	
8.0	99	**SILT WITH SAND (ML)**, fine to medium grained, light tan, strongly cemented (hard pan)		26	
8.5	98.5	***Test Pit Terminated at 8.5 Feet***			

DEPTH (Ft.): 5

WATER LEVEL OBSERVATIONS

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Rubber tire backhoe equipped with a 3' wide bucket

Abandonment Method:
Test pit backfilled with spoils upon completion. Loosely compacted. Not engineered fill.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using Google Earth

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
902 Industrial Way
Lodi, CA

Test Pit Started: 08-31-2018 | Test Pit Completed: 08-31-2018

Excavator: Backhoe | Operator: West Coast Backhoe

Project No.: NA185096 | Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NA185096 KAUTZ DEVELOPMENT.GPJ TERRACON_DATATEMPLATE.GDT 12/4/18

TEST PIT LOG NO. TP2

PROJECT: Kautz Development

CLIENT: Kautz Row Crops, Inc.
Lodi, CA

SITE: 19390 N. Tully Road
Lockeford, CA

LOCATION See Exhibit A-2

Latitude: 38.1651° Longitude: -121.1433°

Surface Elev.: 105 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION	SAMPLE TYPE	WATER CONTENT (%)
		SILT WITH SAND (ML), fine to medium grained, brown, dense to very dense		
1.0	104			
		SILTY SAND (SM), fine to medium grained, brown, medium dense		4
		1/2" diameter roots at 2.5 feet deep		3
				4
				4
10.0	95			
		Test Pit Terminated at 10 Feet		

DEPTH (Ft.): 5, 10

WATER LEVEL OBSERVATIONS

PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Rubber tire backhoe equipped with a 3' wide bucket

Abandonment Method:
Test pit backfilled with spoils upon completion. Loosely compacted. Not engineered fill.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Elevations estimated using Google Earth

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
902 Industrial Way
Lodi, CA

Test Pit Started: 08-31-2018

Test Pit Completed: 08-31-2018

Excavator: Backhoe

Operator: West Coast Backhoe

Project No.: NA185096

Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NA185096 KAUTZ DEVELOPMENT.GPJ TERRACON_DATATEMPLATE.GDT 12/4/18

TEST PIT LOG NO. TP3

PROJECT: Kautz Development

CLIENT: Kautz Row Crops, Inc.
Lodi, CA

SITE: 19390 N. Tully Road
Lockeford, CA

LOCATION See Exhibit A-2

Latitude: 38.167° Longitude: -121.1399°

Surface Elev.: 106 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	PERCENT FINES
SILT WITH SAND (ML), fine to medium grained, brown, dense to very dense						
medium dense, cemented in places, indication of deep ripping.					4	70
1/2" roots at 4.5 feet		5			4	
5.5	100.5					
SILT WITH SAND (ML), fine to medium grained, light tan, strongly cemented (hard pan) rust mottling					7	
8.0	98					
Test Pit Terminated at 8 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Rubber tire backhoe equipped with a 3' wide bucket

Abandonment Method:
Test pit backfilled with spoils upon completion. Loosely compacted. Not engineered fill.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Elevations estimated using Google Earth

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
902 Industrial Way
Lodi, CA

Test Pit Started: 08-31-2018

Test Pit Completed: 08-31-2018

Excavator: Backhoe

Operator: West Coast Backhoe

Project No.: NA185096

Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NA185096 KAUTZ DEVELOPMENT.GPJ TERRACON_DATATEMPLATE.GDT 12/4/18

TEST PIT LOG NO. TP4

PROJECT: Kautz Development

CLIENT: Kautz Row Crops, Inc.
Lodi, CA

SITE: 19390 N. Tully Road
Lockeford, CA

LOCATION See Exhibit A-2

Latitude: 38.1594° Longitude: -121.1425°

Surface Elev.: 104 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	PERCENT FINES
SANDY SILT (ML), fine to medium grained, brown, dense to very dense						
					7	65
3.0	101					
SILT WITH SAND (ML), fine to medium grained, brown, dense to very dense						
					9	72
		5				
7.0	97					
SILTY SAND (SM), fine to medium grained, brown, strongly cemented (hard pan)						
					6	
8.0	96					
Test Pit Terminated at 8 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Rubber tire backhoe equipped with a 3' wide bucket

Abandonment Method:
Test pit backfilled with spoils upon completion. Loosely compacted. Not engineered fill.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Elevations estimated using Google Earth

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
902 Industrial Way
Lodi, CA

Test Pit Started: 08-31-2018

Test Pit Completed: 08-31-2018

Excavator: Backhoe

Operator: West Coast Backhoe

Project No.: NA185096

Exhibit: A-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NA185096 KAUTZ DEVELOPMENT.GPJ TERRACON_DATATEMPLATE.GDT 12/4/18

TEST PIT LOG NO. TP5

PROJECT: Kautz Development

CLIENT: Kautz Row Crops, Inc.
Lodi, CA

SITE: 19390 N. Tully Road
Lockeford, CA

LOCATION See Exhibit A-2

Latitude: 38.1626° Longitude: -121.1425°

Surface Elev.: 104 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION	SAMPLE TYPE	WATER CONTENT (%)	PERCENT FINES
		SILT WITH SAND (ML), fine to medium grained, brown, dense to very dense			
1.0	103			3	
		SANDY SILT (ML), fine to medium grained, brown			
		dense			
		1/2" roots at 2 feet			
				11	61
		medium dense			
9.5	94.5				
		SILT WITH SAND (ML), fine to medium grained, light tan, strongly cemented (hard pan)		19	
10.0	94				
		Test Pit Terminated at 10 Feet			

DEPTH (Ft.): 5, 10

WATER LEVEL OBSERVATIONS

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Rubber tire backhoe equipped with a 3' wide bucket

Abandonment Method:
Test pit backfilled with spoils upon completion. Loosely compacted. Not engineered fill.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Elevations estimated using Google Earth

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
902 Industrial Way
Lodi, CA

Test Pit Started: 08-31-2018

Test Pit Completed: 08-31-2018

Excavator: Backhoe

Operator: West Coast Backhoe

Project No.: NA185096

Exhibit: A-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NA185096 KAUTZ DEVELOPMENT.GPJ TERRACON_DATATEMPLATE.GDT 12/4/18

TEST PIT LOG NO. TP6

PROJECT: Kautz Development

CLIENT: Kautz Row Crops, Inc.
Lodi, CA

SITE: 19390 N. Tully Road
Lockeford, CA

LOCATION See Exhibit A-2

Latitude: 38.1636° Longitude: -121.1389°

Surface Elev.: 104 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	PERCENT FINES
	SILT WITH SAND, fine to medium grained, brown, dense to very dense						
						3	
	1/2" roots at 4 feet						
						5	
	5.5	98.5	5				
	SILT WITH SAND, fine to medium grained, light tan, strongly cemented (hard pan) rust mottling						
						24	
	9.0	95					
	Test Pit Terminated at 9 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Rubber tire backhoe equipped with a 3' wide bucket

Abandonment Method:
Test pit backfilled with spoils upon completion. Loosely compacted. Not engineered fill.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using Google Earth

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
902 Industrial Way
Lodi, CA

Test Pit Started: 08-31-2018	Test Pit Completed: 08-31-2018
Excavator: Backhoe	Operator: West Coast Backhoe
Project No.: NA185096	Exhibit: A-9

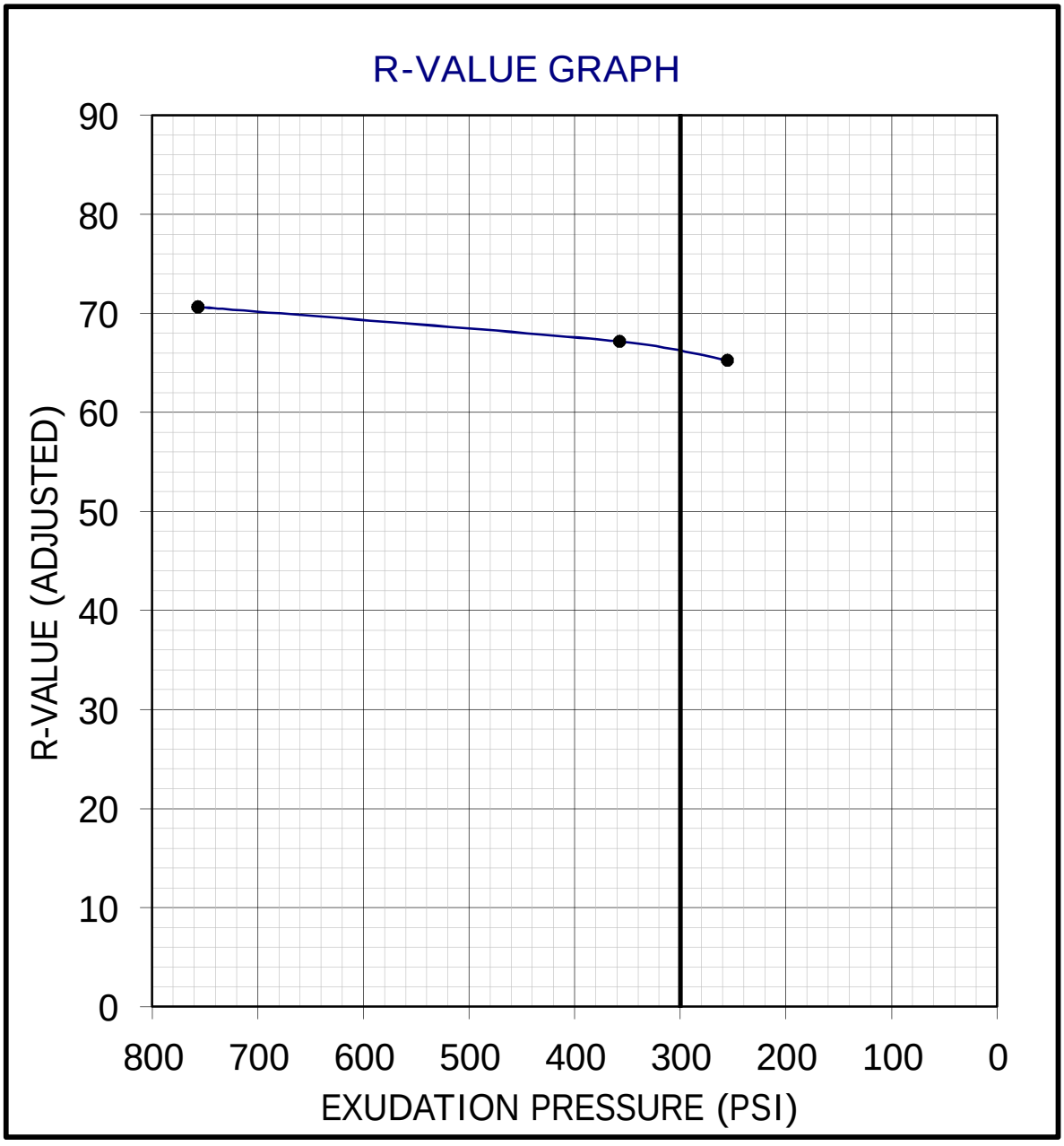
THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NA185096 KAUTZ DEVELOPMENT.GPJ TERRACON_DATATEMPLATE.GDT 12/4/18

APPENDIX B
SUPPORTING INFORMATION

Laboratory Testing

Soil samples were tested in the laboratory to measure their natural water content. The test results are provided on the test pit logs included in Appendix A. Descriptive classifications of the soils indicated on the test pit logs are in accordance with the enclosed General Notes and the Unified Soil Classification System. Also shown are estimated Unified Soil Classification Symbols. A brief description of this classification system is attached to this report. All classification was by visual manual procedures. Selected samples were further classified using the results of Wash No. 200 testing. The Wash No. 200 test results are also provided on the test pit logs. A corrosivity analysis was also performed and the results are summarized on Exhibit B-4.

JOB NAME:	Kautz Development	JOB #:	NA185096
SAMPLE NUMBER:	TP-1	Location:	0 to 18 inches
SAMPLE CLASSIFICATION:	Sandy Silt		

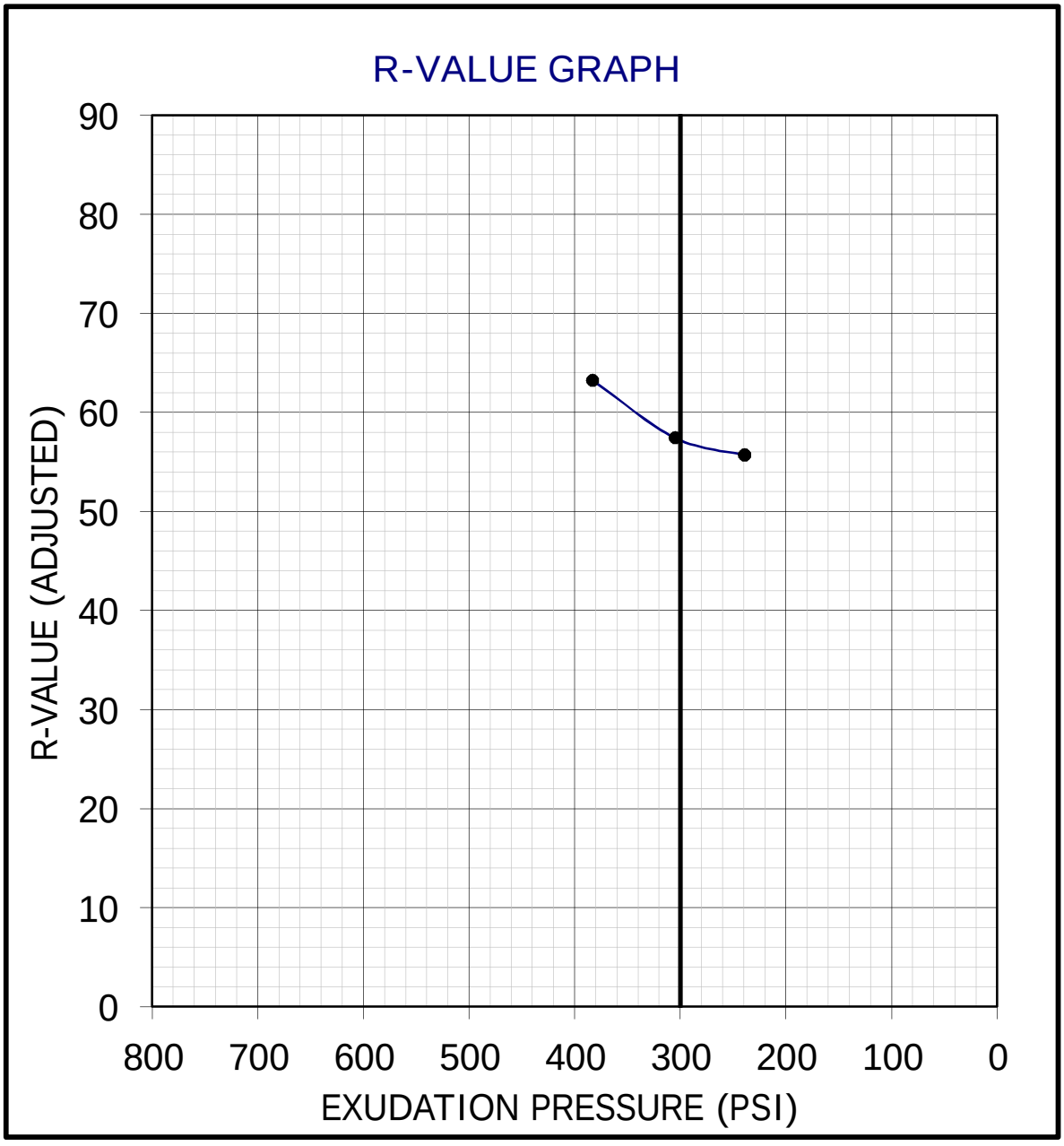


R-VALUE AT 300 PSI EXUDATION PRESSURE: 66

NOTES:

Exhibit B-2

JOB NAME:	Kautz Development	JOB #:	NA185096
SAMPLE NUMBER:	TP-6	Location:	0 to 18 inches
SAMPLE CLASSIFICATION:	Silt with Sand		



R-VALUE AT 300 PSI EXUDATION PRESSURE: 57

NOTES:

Exhibit B-3

CHEMICAL LABORATORY TEST REPORT

Project Number: NA185096
Service Date: 10/23/18
Report Date: 10/26/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Kautz Vineyards Inc
Lodi, CA

Project

Kautz Development

Sample Submitted By: Terracon (NA) **Date Received:** 10/22/2018 **Lab No.: 18-1280**

Results of Corrosion Analysis

Sample Number	1
Sample Location	TP2
Sample Depth (ft.)	1.0-1.5
pH Analysis, AWWA 4500 H	8.93
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	58
Sulfides, AWWA 4500-S D, (mg/kg)	Nil
Chlorides, ASTM D 512, (mg/kg)	175
Red-Ox, AWWA 2580, (mV)	+687
Total Salts, AWWA 2520 B, (mg/kg)	303
Resistivity, ASTM G 57, (ohm-cm)	5917

Analyzed By: Trisha Campo
Chemist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

APPENDIX C
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger

Split Spoon

Modified Cal

Macro Core

Ring Sampler

Rock Core

Grab Sample

No Recovery

WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, psf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Exhibit: C-1

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

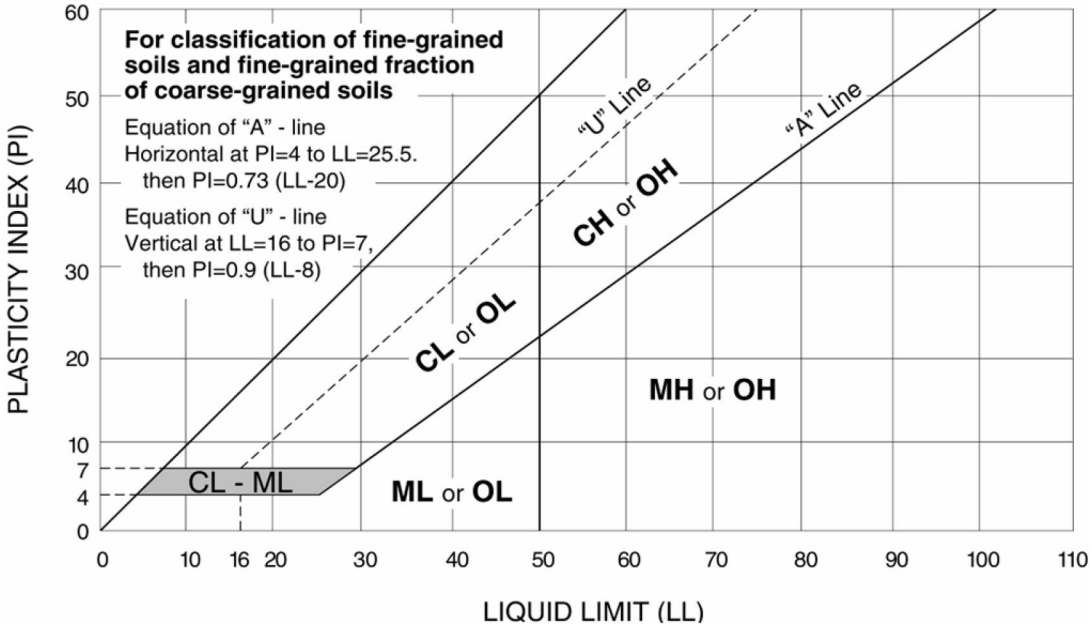
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Terracon

Exhibit: C-2

APPENDIX E
ENVIRONMENTAL SITE ASSESSMENTS

ICE

Innovative & Creative Environmental Solutions
3200 Powell Street, Suite 109
Emeryville CA 94608
916-652-3222

October 2, 2022 ICES 9315

Mr. Evan Licht
Director of Land Acquisitions - Northern California
LGI Homes
2251 Douglas Boulevard #110
Roseville, California 95661

Subject: Preliminary Site Investigation
Kautz Property
Lockeford, California

Dear Evan:

Enclosed is the Preliminary Site Investigation Report documenting the soil sampling that was conducted by Innovative and Creative Environmental Solutions at the Kautz Property located in Lockeford, California.

If you have any questions or comments concerning this report, please me.

Sincerely,

Kelly Leong
Principal Engineer

Enclosure

PRELIMINARY SITE INVESTIGATION

KAUTZ PROPERTY
LOCKEFORD, CALIFORNIA

October 2, 2022

ICES 9315

Prepared for:

Mr. Evan Licht
Director of Land Acquisitions – Northern California
LGI Homes
2251 Douglas Boulevard #110
Roseville, California 95661

ICES

Innovative & Creative Environmental Solutions
3300 Powell Street, Suite 109
Emeryville CA 94608
510-652-3222

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NUMBER	TITLE
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2	Test Pit Locations

October 2, 2022 ICES 9315

PRELIMINARY SITE INVESTIGATION
KAUTZ PROPERTY
LOCKEFORD, CALIFORNIA

1.0 INTRODUCTION

This report presents the findings of the Preliminary Site Investigation that was conducted by Innovative and Creative Environmental Solutions (ICES) at the Kautz Property located in Lockeford, California. ("the Site"; Figure 1).

The purpose of the preliminary sampling activities was to assess the potential presence of organochlorine pesticides, arsenic, lead, and mercury within the surficial soil that were associated with former agricultural activities.

2.0 SITE DESCRIPTION

The Site is located south of Highway 88 and is within the legal jurisdiction of Lockeford, in conjunction with San Joaquin County and the State of California. The Site is identified by the San Joaquin County Assessor's Office as Assessor Parcel Numbers 019-110-130-000, 019-110-140-000, 019-110-170-000, 019-110-160-000, 019-060-090-000, and 019-060-100-000.

The Site consists of six contiguous parcels covering an area of approximately 105.11 acres. The Site is currently vacant and undeveloped.

3.0 BACKGROUND

The Site had been used for agricultural applications since 1937 and was most recently planted with grapevines. The vineyard is currently abandoned with dried grapevines remaining on the rows of trellises.

4.0 SAMPLING ACTIVITIES

ICES collected soil samples on March 1, 2022. A total of five soil samples were collected from five test pit locations. The approximate test pit locations are shown in Figure 2.

Soil samples were collected from surficial sediments within the Site at a depth of approximately 6 to 9 inches below the existing ground surface (bgs). The soil samples were collected by scraping the sidewalls of each test pit location at the selected depth directly into 4-ounce glass jars.

After being sealed and labeled, the soil samples were immediately placed in a chilled cooler containing crushed ice for transportation to the laboratory. Proper documentation and field chain-of-custody procedures were followed.

All equipment used during the sampling activities which might have come into contact with contaminated materials was thoroughly decontaminated before and after each use. This was accomplished by washing with Alconox (a laboratory-grade detergent) and rinsing with distilled water.

5.0 LABORATORY ANALYSIS

The soil samples collected were sent to McCampbell Analytical, Inc. of Pacheco, California, a state-certified laboratory and analyzed as follows.

- Organochlorine pesticides using EPA Method 8081B; and
- Arsenic, lead, and mercury using EPA Method 6020.

The samples were analyzed on a normal turnaround basis.

6.0 INVESTIGATION RESULTS

The laboratory analytical results are presented below and summarized in Tables 1 and 2. Laboratory certificates are included in Appendix A.

6.1 Laboratory Analytical Results

Results of the preliminary sampling activities indicated that organochlorine pesticides, lead, and mercury were below their respective residential environmental screening levels (ESLs). The only detectable organochlorine pesticide was DDT. DDT concentrations ranging from less than 0.00010 mg/kg (not detected) to 0.00020 mg/kg were substantially below the residential ESL of 1.9 mg/kg.

Arsenic concentrations ranging from 1.9 mg/kg to 3.0 mg/kg were above the residential ESL of 0.067 mg/kg and within typical arsenic background levels of up to 11 mg/kg. Contaminant concentrations that are within background levels are considered acceptable by regulatory agencies where their background levels exceed the corresponding ESL. Lead and mercury were below their respective residential ESLs of 82 mg/kg and 13 mg/kg.

7.0 DISCUSSION

Based on the findings of this preliminary site investigation, it appears that the soil within the Site had not been impacted by agricultural activities that were formerly conducted at the Site. Organochlorine pesticides, lead, and mercury were below their respective residential ESLs; and arsenic concentrations were within background levels.

8.0 EXCLUSIONS

ICES assumes no responsibility or liability for the reliance hereon or use hereof of information contained in this report by anyone other than the party to whom it is addressed.

The evaluations and recommendations presented in this report are based on the sampling results available at this time and could be revised if new information necessitating further review of the Site becomes available.

TABLE 1

SOIL SAMPLE RESULTS
ORGANOCHLORINE PESTICIDES
Kautz Property
Lockeford Vista, California

Sample	DDT	Other Organochlorine Pesticides
K-1	0.00015	ND < 0.00010 – 0.0050
K-2	0.00017	ND < 0.00010 – 0.0050
K-3	ND < 0.00010	ND < 0.00010 – 0.0050
K-4	ND < 0.00010	ND < 0.00010 – 0.0050
K-5	0.00020	ND < 0.00010 – 0.0050

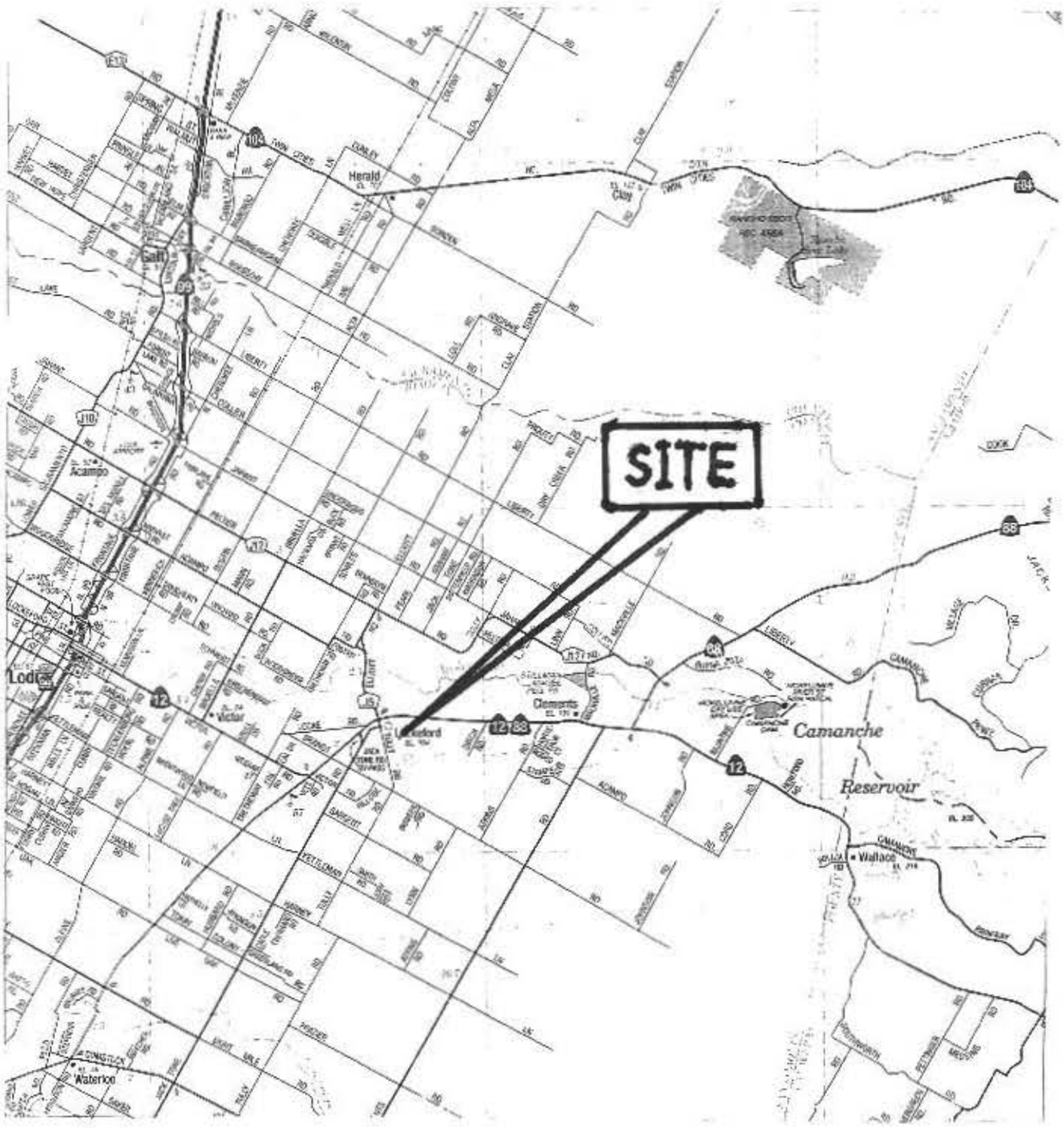
Notes:
Concentrations in mg/kg
ND : Not Detected

TABLE 2

SOIL SAMPLE RESULTS
METALS
Kautz Property
Lockeford Vista, California

Sample	Arsenic	Lead	Mercury
K-1	1.9	6.4	ND < 0.050
K-2	2.4	5.7	ND < 0.050
K-3	3.0	5.0	ND < 0.050
K-4	1.6	3.3	ND < 0.050
K-5	2.7	4.6	ND < 0.050

Notes:
Concentrations in mg/kg
ND : Not Detected



October 2022

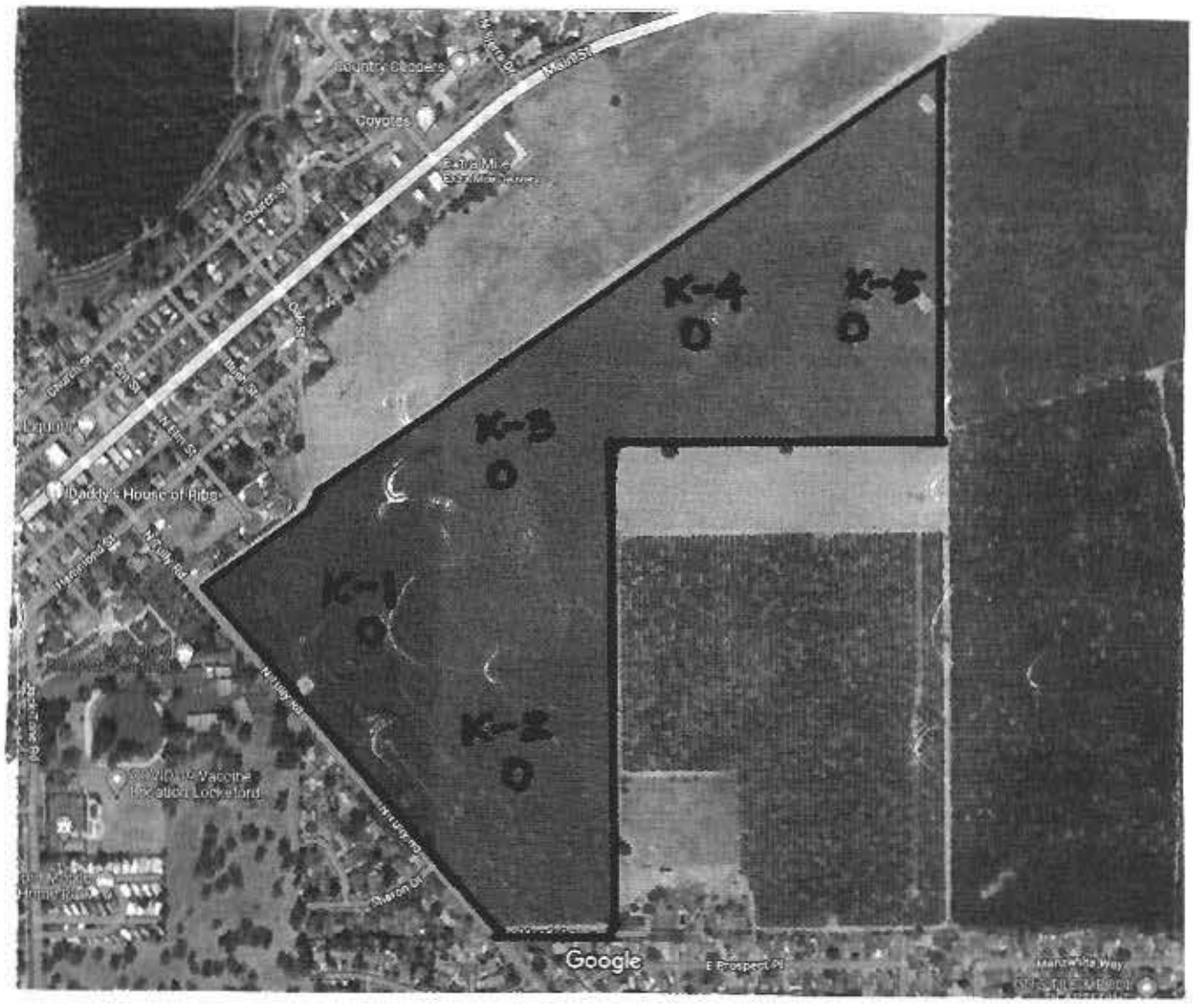
ICES
Innovative & Creative Environmental Solutions

SITE LOCATION

Kautz Property
Lockeford, California

Figure 1

ICES 9315



0 500
APPROXIMATE SCALE (feet)

SOURCE:
Google Maps

October 2022

ICES
Innovative & Creative Environmental Solutions

TEST PIT LOCATIONS

Kautz Property
Lockeford, California

Figure 2

ICES 9315

APPENDIX A

LABORATORY CERTIFICATES

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2203182

Report Created for: ICES

P.O. Box 99288
Emeryville, CA 94662

Project Contact: Peng Leong
Project P.O.:
Project: ICES 9315

Project Received: 03/02/2022

Analytical Report reviewed & approved for release on 03/18/2022 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2203182

Project: ICES 9315

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2203182
Project: ICES 9315

Analytical Qualifiers

H	Sample was analyzed out of hold time

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ICES	**WorkOrder:**	2203182
Date Received:	03/02/2022 15:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	03/16/2022	**Analytical Method:**	SW8081A
Project:	ICES 9315	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-1	**2203182-001A**	**Soil**	**03/01/2022**	**GC40 03172260.d**	**241411**

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND	H	0.00010	1	03/17/2022 21:50
a-BHC	ND	H	0.00010	1	03/17/2022 21:50
b-BHC	ND	H	0.00030	1	03/17/2022 21:50
d-BHC	ND	H	0.00020	1	03/17/2022 21:50
g-BHC	ND	H	0.00010	1	03/17/2022 21:50
Chlordane (Technical)	ND	H	0.0025	1	03/17/2022 21:50
a-Chlordane	ND	H	0.00010	1	03/17/2022 21:50
g-Chlordane	ND	H	0.00010	1	03/17/2022 21:50
p,p-DDD	ND	H	0.00010	1	03/17/2022 21:50
p,p-DDE	ND	H	0.00010	1	03/17/2022 21:50
p,p-DDT	**0.00015**	H	0.00010	1	03/17/2022 21:50
Dieldrin	ND	H	0.00010	1	03/17/2022 21:50
Endosulfan I	ND	H	0.00010	1	03/17/2022 21:50
Endosulfan II	ND	H	0.00010	1	03/17/2022 21:50
Endosulfan sulfate	ND	H	0.00010	1	03/17/2022 21:50
Endrin	ND	H	0.00010	1	03/17/2022 21:50
Endrin aldehyde	ND	H	0.00010	1	03/17/2022 21:50
Endrin ketone	ND	H	0.00010	1	03/17/2022 21:50
Heptachlor	ND	H	0.00010	1	03/17/2022 21:50
Heptachlor epoxide	ND	H	0.00010	1	03/17/2022 21:50
Hexachlorobenzene	ND	H	0.0010	1	03/17/2022 21:50
Hexachlorocyclopentadiene	ND	H	0.0020	1	03/17/2022 21:50
Methoxychlor	ND	H	0.00020	1	03/17/2022 21:50
Toxaphene	ND	H	0.0050	1	03/17/2022 21:50

Surrogates	REC (%)	Qualifiers	Limits	
Decachlorobiphenyl	101	H	20-145	03/17/2022 21:50

Analyst(s): CK

(Cont.)

CA ELAP 1644 • NELAP 4033ORELAP

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ICES	**WorkOrder:**	2203182
Date Received:	03/02/2022 15:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	03/16/2022	**Analytical Method:**	SW8081A
Project:	ICES 9315	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-2	**2203182-002A**	**Soil**	**03/01/2022**	**GC40 03172261.d**	**241411**

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND	H	0.00010	1	03/17/2022 22:04
a-BHC	ND	H	0.00010	1	03/17/2022 22:04
b-BHC	ND	H	0.00030	1	03/17/2022 22:04
d-BHC	ND	H	0.00020	1	03/17/2022 22:04
g-BHC	ND	H	0.00010	1	03/17/2022 22:04
Chlordane (Technical)	ND	H	0.0025	1	03/17/2022 22:04
a-Chlordane	ND	H	0.00010	1	03/17/2022 22:04
g-Chlordane	ND	H	0.00010	1	03/17/2022 22:04
p,p-DDD	ND	H	0.00010	1	03/17/2022 22:04
p,p-DDE	ND	H	0.00010	1	03/17/2022 22:04
p,p-DDT	**0.00017**	H	0.00010	1	03/17/2022 22:04
Dieldrin	ND	H	0.00010	1	03/17/2022 22:04
Endosulfan I	ND	H	0.00010	1	03/17/2022 22:04
Endosulfan II	ND	H	0.00010	1	03/17/2022 22:04
Endosulfan sulfate	ND	H	0.00010	1	03/17/2022 22:04
Endrin	ND	H	0.00010	1	03/17/2022 22:04
Endrin aldehyde	ND	H	0.00010	1	03/17/2022 22:04
Endrin ketone	ND	H	0.00010	1	03/17/2022 22:04
Heptachlor	ND	H	0.00010	1	03/17/2022 22:04
Heptachlor epoxide	ND	H	0.00010	1	03/17/2022 22:04
Hexachlorobenzene	ND	H	0.0010	1	03/17/2022 22:04
Hexachlorocyclopentadiene	ND	H	0.0020	1	03/17/2022 22:04
Methoxychlor	ND	H	0.00020	1	03/17/2022 22:04
Toxaphene	ND	H	0.0050	1	03/17/2022 22:04

Surrogates	REC (%)	Qualifiers	Limits	
Decachlorobiphenyl	100	H	20-145	03/17/2022 22:04

Analyst(s): CK

(Cont.)

CA ELAP 1644 • NELAP 4033ORELAP

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ICES	**WorkOrder:**	2203182
Date Received:	03/02/2022 15:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	03/16/2022	**Analytical Method:**	SW8081A
Project:	ICES 9315	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-3	2203182-003A	Soil	03/01/2022	GC40 03172262.d	241411

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND	H	0.00010	1	03/17/2022 22:18
a-BHC	ND	H	0.00010	1	03/17/2022 22:18
b-BHC	ND	H	0.00030	1	03/17/2022 22:18
d-BHC	ND	H	0.00020	1	03/17/2022 22:18
g-BHC	ND	H	0.00010	1	03/17/2022 22:18
Chlordane (Technical)	ND	H	0.0025	1	03/17/2022 22:18
a-Chlordane	ND	H	0.00010	1	03/17/2022 22:18
g-Chlordane	ND	H	0.00010	1	03/17/2022 22:18
p,p-DDD	ND	H	0.00010	1	03/17/2022 22:18
p,p-DDE	ND	H	0.00010	1	03/17/2022 22:18
p,p-DDT	ND	H	0.00010	1	03/17/2022 22:18
Dieldrin	ND	H	0.00010	1	03/17/2022 22:18
Endosulfan I	ND	H	0.00010	1	03/17/2022 22:18
Endosulfan II	ND	H	0.00010	1	03/17/2022 22:18
Endosulfan sulfate	ND	H	0.00010	1	03/17/2022 22:18
Endrin	ND	H	0.00010	1	03/17/2022 22:18
Endrin aldehyde	ND	H	0.00010	1	03/17/2022 22:18
Endrin ketone	ND	H	0.00010	1	03/17/2022 22:18
Heptachlor	ND	H	0.00010	1	03/17/2022 22:18
Heptachlor epoxide	ND	H	0.00010	1	03/17/2022 22:18
Hexachlorobenzene	ND	H	0.0010	1	03/17/2022 22:18
Hexachlorocyclopentadiene	ND	H	0.0020	1	03/17/2022 22:18
Methoxychlor	ND	H	0.00020	1	03/17/2022 22:18
Toxaphene	ND	H	0.0050	1	03/17/2022 22:18

Surrogates	REC (%)	Qualifiers	Limits	
Decachlorobiphenyl	86	H	20-145	03/17/2022 22:18

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2203182
Date Received:	03/02/2022 15:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	03/16/2022	**Analytical Method:**	SW8081A
Project:	ICES 9315	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-4	2203182-004A	Soil	03/01/2022	GC40 03172263.d	241411

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND	H	0.00010	1	03/17/2022 22:32
a-BHC	ND	H	0.00010	1	03/17/2022 22:32
b-BHC	ND	H	0.00030	1	03/17/2022 22:32
d-BHC	ND	H	0.00020	1	03/17/2022 22:32
g-BHC	ND	H	0.00010	1	03/17/2022 22:32
Chlordane (Technical)	ND	H	0.0025	1	03/17/2022 22:32
a-Chlordane	ND	H	0.00010	1	03/17/2022 22:32
g-Chlordane	ND	H	0.00010	1	03/17/2022 22:32
p,p-DDD	ND	H	0.00010	1	03/17/2022 22:32
p,p-DDE	ND	H	0.00010	1	03/17/2022 22:32
p,p-DDT	ND	H	0.00010	1	03/17/2022 22:32
Dieldrin	ND	H	0.00010	1	03/17/2022 22:32
Endosulfan I	ND	H	0.00010	1	03/17/2022 22:32
Endosulfan II	ND	H	0.00010	1	03/17/2022 22:32
Endosulfan sulfate	ND	H	0.00010	1	03/17/2022 22:32
Endrin	ND	H	0.00010	1	03/17/2022 22:32
Endrin aldehyde	ND	H	0.00010	1	03/17/2022 22:32
Endrin ketone	ND	H	0.00010	1	03/17/2022 22:32
Heptachlor	ND	H	0.00010	1	03/17/2022 22:32
Heptachlor epoxide	ND	H	0.00010	1	03/17/2022 22:32
Hexachlorobenzene	ND	H	0.0010	1	03/17/2022 22:32
Hexachlorocyclopentadiene	ND	H	0.0020	1	03/17/2022 22:32
Methoxychlor	ND	H	0.00020	1	03/17/2022 22:32
Toxaphene	ND	H	0.0050	1	03/17/2022 22:32

Surrogates	REC (%)	Qualifiers	Limits	
Decachlorobiphenyl	116	H	20-145	03/17/2022 22:32

Analyst(s): CK

(Cont.)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ICES	**WorkOrder:**	2203182
Date Received:	03/02/2022 15:00	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	03/16/2022	**Analytical Method:**	SW8081A
Project:	ICES 9315	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-5	**2203182-005A**	**Soil**	**03/01/2022**	**GC40 03172264.d**	**241411**

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND	H	0.00010	1	03/17/2022 22:46
a-BHC	ND	H	0.00010	1	03/17/2022 22:46
b-BHC	ND	H	0.00030	1	03/17/2022 22:46
d-BHC	ND	H	0.00020	1	03/17/2022 22:46
g-BHC	ND	H	0.00010	1	03/17/2022 22:46
Chlordane (Technical)	ND	H	0.0025	1	03/17/2022 22:46
a-Chlordane	ND	H	0.00010	1	03/17/2022 22:46
g-Chlordane	ND	H	0.00010	1	03/17/2022 22:46
p,p-DDD	ND	H	0.00010	1	03/17/2022 22:46
p,p-DDE	ND	H	0.00010	1	03/17/2022 22:46
p,p-DDT	**0.00020**	H	0.00010	1	03/17/2022 22:46
Dieldrin	ND	H	0.00010	1	03/17/2022 22:46
Endosulfan I	ND	H	0.00010	1	03/17/2022 22:46
Endosulfan II	ND	H	0.00010	1	03/17/2022 22:46
Endosulfan sulfate	ND	H	0.00010	1	03/17/2022 22:46
Endrin	ND	H	0.00010	1	03/17/2022 22:46
Endrin aldehyde	ND	H	0.00010	1	03/17/2022 22:46
Endrin ketone	ND	H	0.00010	1	03/17/2022 22:46
Heptachlor	ND	H	0.00010	1	03/17/2022 22:46
Heptachlor epoxide	ND	H	0.00010	1	03/17/2022 22:46
Hexachlorobenzene	ND	H	0.0010	1	03/17/2022 22:46
Hexachlorocyclopentadiene	ND	H	0.0020	1	03/17/2022 22:46
Methoxychlor	ND	H	0.00020	1	03/17/2022 22:46
Toxaphene	ND	H	0.0050	1	03/17/2022 22:46

Surrogates	REC (%)	Qualifiers	Limits	
Decachlorobiphenyl	90	H	20-145	03/17/2022 22:46

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2203182
Date Received:	03/02/2022 15:00	**Extraction Method:**	SW3050B
Date Prepared:	03/03/2022	**Analytical Method:**	SW6020
Project:	ICES 9315	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-1	2203182-001A	Soil	03/01/2022	ICP-MS4 127SMPL.d	240480

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.9**	0.50	1	03/08/2022 11:55
Lead	**6.4**	0.50	1	03/08/2022 11:55
Mercury	ND	0.050	1	03/08/2022 11:55

Surrogates	REC (%)	Limits	
Terbium	102	70-130	03/08/2022 11:55

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-2	2203182-002A	Soil	03/01/2022	ICP-MS4 178SMPL.d	240480

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.4**	0.50	1	03/04/2022 18:44
Lead	**5.7**	0.50	1	03/04/2022 18:44
Mercury	ND	0.050	1	03/04/2022 18:44

Surrogates	REC (%)	Limits	
Terbium	99	70-130	03/04/2022 18:44

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-3	2203182-003A	Soil	03/01/2022	ICP-MS4 179SMPL.d	240480

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**3.0**	0.50	1	03/04/2022 18:48
Lead	**5.0**	0.50	1	03/04/2022 18:48
Mercury	ND	0.050	1	03/04/2022 18:48

Surrogates	REC (%)	Limits	
Terbium	96	70-130	03/04/2022 18:48

Analyst(s): DB

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2203182
Date Received:	03/02/2022 15:00	**Extraction Method:**	SW3050B
Date Prepared:	03/03/2022	**Analytical Method:**	SW6020
Project:	ICES 9315	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-4	**2203182-004A**	**Soil**	**03/01/2022**	**ICP-MS4 180SMPL.d**	**240480**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.6**	0.50	1	03/04/2022 18:52
Lead	**3.3**	0.50	1	03/04/2022 18:52
Mercury	ND	0.050	1	03/04/2022 18:52

Surrogates	REC (%)	Limits	
Terbium	77	70-130	03/04/2022 18:52

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K-5	**2203182-005A**	**Soil**	**03/01/2022**	**ICP-MS4 181SMPL.d**	**240480**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.7**	0.50	1	03/04/2022 18:56
Lead	**4.6**	0.50	1	03/04/2022 18:56
Mercury	ND	0.050	1	03/04/2022 18:56

Surrogates	REC (%)	Limits	
Terbium	94	70-130	03/04/2022 18:56

Analyst(s): DB

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Quality Control Report

Client:	ICES	**WorkOrder:**	2203182
Date Prepared:	03/16/2022	**BatchID:**	241411
Date Analyzed:	03/17/2022	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC22	**Analytical Method:**	SW8081A
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315	**Sample ID:**	MB/LCS/LCSD-241411

QC Summary Report for SW8081A/8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.000036	0.00010	-	-	-
a-BHC	ND	0.000025	0.00010	-	-	-
b-BHC	ND	0.00025	0.00030	-	-	-
d-BHC	ND	0.00013	0.00020	-	-	-
g-BHC	ND	0.000066	0.00010	-	-	-
Chlordane (Technical)	ND	0.00043	0.0025	-	-	-
a-Chlordane	ND	0.000095	0.00010	-	-	-
g-Chlordane	ND	0.000047	0.00010	-	-	-
p,p-DDD	ND	0.000043	0.00010	-	-	-
p,p-DDE	ND	0.000094	0.00010	-	-	-
p,p-DDT	ND	0.000092	0.00010	-	-	-
Dieldrin	ND	0.000061	0.00010	-	-	-
Endosulfan I	ND	0.000048	0.00010	-	-	-
Endosulfan II	ND	0.000076	0.00010	-	-	-
Endosulfan sulfate	ND	0.000078	0.00010	-	-	-
Endrin	ND	0.000035	0.00010	-	-	-
Endrin aldehyde	ND	0.000067	0.00010	-	-	-
Endrin ketone	ND	0.000084	0.00010	-	-	-
Heptachlor	ND	0.000040	0.00010	-	-	-
Heptachlor epoxide	ND	0.000054	0.00010	-	-	-
Hexachlorobenzene	ND	0.00011	0.0010	-	-	-
Hexachlorocyclopentadiene	ND	0.00034	0.0020	-	-	-
Methoxychlor	ND	0.00013	0.00020	-	-	-
Toxaphene	ND	0.0034	0.0050	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.0052			0.005	105	28-170

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2203182
Date Prepared:	03/16/2022	**BatchID:**	241411
Date Analyzed:	03/17/2022	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC22	**Analytical Method:**	SW8081A
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315	**Sample ID:**	MB/LCS/LCSD-241411

QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.0033	0.0037	0.0050	65	73	31-155	11.0	20
a-BHC	0.0032	0.0036	0.0050	64	73	32-160	11.9	20
b-BHC	0.0030	0.0034	0.0050	60	68	44-149	11.8	20
d-BHC	0.0035	0.0039	0.0050	71	78	37-157	10.1	20
g-BHC	0.0033	0.0037	0.0050	66	74	43-154	11.6	20
a-Chlordane	0.0033	0.0037	0.0050	65	74	39-150	12.0	20
g-Chlordane	0.0034	0.0038	0.0050	67	75	39-151	11.2	20
p,p-DDD	0.0039	0.0042	0.0050	77	84	30-158	8.80	20
p,p-DDE	0.0034	0.0038	0.0050	67	75	47-149	11.4	20
p,p-DDT	0.0035	0.0038	0.0050	71	76	56-166	6.51	20
Dieldrin	0.0036	0.0040	0.0050	72	80	50-163	10.7	20
Endosulfan I	0.0034	0.0038	0.0050	68	77	45-159	12.1	20
Endosulfan II	0.0035	0.0038	0.0050	71	77	41-155	8.02	20
Endosulfan sulfate	0.0037	0.0040	0.0050	74	80	45-156	8.22	20
Endrin	0.0040	0.0044	0.0050	80	89	54-154	9.93	20
Endrin aldehyde	0.0033	0.0035	0.0050	65	70	27-159	6.87	20
Endrin ketone	0.0034	0.0037	0.0050	68	75	40-147	8.77	20
Heptachlor	0.0034	0.0038	0.0050	68	76	52-165	11.5	20
Heptachlor epoxide	0.0034	0.0039	0.0050	69	77	46-145	11.3	20
Hexachlorobenzene	0.0030	0.0033	0.0050	59	65	22-156	9.22	20
Hexachlorocyclopentadiene	0.0028	0.0031	0.0050	56	62	43-173	9.19	20
Methoxychlor	0.0037	0.0041	0.0050	74	82	49-150	10.1	20
Surrogate Recovery								
Decachlorobiphenyl	0.0050	0.0051	0.0050	99	102	28-170	2.08	20

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Quality Control Report

Client:	ICES	**WorkOrder:**	2203182
Date Prepared:	03/03/2022	**BatchID:**	240480
Date Analyzed:	03/03/2022 - 03/04/2022	**Extraction Method:**	SW3050B
Instrument:	ICP-MS4	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315	**Sample ID:**	MB/LCS/LCSD-240480

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Arsenic	ND	0.14	0.50	-	-	-
Lead	ND	0.069	0.50	-	-	-
Mercury	ND	0.038	0.050	-	-	-
Surrogate Recovery						
Terbium	480			500	96	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	51	50	50	101	100	75-125	1.60	20
Lead	47	48	50	95	96	75-125	1.35	20
Mercury	1.2	1.2	1.25	93	95	75-125	1.62	20
Surrogate Recovery								
Terbium	500	500	500	99	99	70-130	0.366	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2203182 **ClientCode: ICES**

☐ WaterTrax ☐ CLIP ☐ EDF ☒ EQuIS ☒ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☒ Detection Summary ☐ Excel

Report to:
Peng Leong
ICES
P.O. Box 99288
Emeryville, CA 94662
(510) 882-2200 FAX: (510) 652-3555

Email: alphaenv222@gmail.com;ices888@gmail.c
cc/3rd Party:
PO:
Project: ICES 9315

Bill to:
Accounts Payable
ICES
3300 Powell Street #109
Emeryville, CA 94608

Requested TAT: 5 days;

Date Received: **03/02/2022**
Date Logged: **03/02/2022**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2203182-001	K-1	Soil	3/1/2022 00:00	☐	A	A	A									
2203182-002	K-2	Soil	3/1/2022 00:00	☐	A	A	A									
2203182-003	K-3	Soil	3/1/2022 00:00	☐	A	A	A									
2203182-004	K-4	Soil	3/1/2022 00:00	☐	A	A	A									
2203182-005	K-5	Soil	3/1/2022 00:00	☐	A	A	A									

Test Legend:

1	8081_ESL_LL_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	
5		6		7		8	
9		10		11		12	

Prepared by: Lilly Ortiz

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ICES **Project:** ICES 9315 **Work Order:** 2203182
Client Contact: Peng Leong **QC Level:** LEVEL 2
Contact's Email: alphaenv222@gmail.com;ices888@gmail.com **Comments** **Date Logged:** 3/2/2022

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	K-1	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	8OZ GJ, Unpres	☐	☐	☐	3/1/2022	5 days	3/9/2022		☐	☐
			SW8081A (OC Pesticides) ESLs			☐	☐	☐		5 days	3/11/2022		☐	☐
002A	K-2	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	8OZ GJ, Unpres	☐	☐	☐	3/1/2022	5 days	3/9/2022		☐	☐
			SW8081A (OC Pesticides) ESLs			☐	☐	☐		5 days	3/11/2022		☐	☐
003A	K-3	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	8OZ GJ, Unpres	☐	☐	☐	3/1/2022	5 days	3/9/2022		☐	☐
			SW8081A (OC Pesticides) ESLs			☐	☐	☐		5 days	3/11/2022		☐	☐
004A	K-4	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	8OZ GJ, Unpres	☐	☐	☐	3/1/2022	5 days	3/9/2022		☐	☐
			SW8081A (OC Pesticides) ESLs			☐	☐	☐		5 days	3/11/2022		☐	☐
005A	K-5	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	8OZ GJ, Unpres	☐	☐	☐	3/1/2022	5 days	3/9/2022		☐	☐
			SW8081A (OC Pesticides) ESLs			☐	☐	☐		5 days	3/11/2022		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

General COC

MAI Work Order # 2203182

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CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	●	Quote #																
J-Flag / MDL		ESL	●	Cleanup Approved		Dry Weight		Bottle Order #																	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		Detect Summary																

Report To: Peng Leong Bill To: Same

Company: ICES

Address: 3300 Powell Street Suite 109 Emeryville CA 94608

Email: alphaenv222@gmail.com Tele: 510-652-3222

Project Name: Project #: ICES 9315

Project Location: PO #

Sampler Signature:

SAMPLE ID / Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	Multi Range as Gas, Diesel, and Motor Oil (8021/8015)	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)*	Baylands Requirements	Lab to filter sample for dissolved metals analysis	Arsenic, Lead, Mercury		
K-1	3/1/22		1	Soil									●									●		
K-2	3/1/22		1	Soil									●									●		
K-3	3/1/22		1	Soil									●									●		
K-4	3/1/22		1	Soil									●									●		
K-5	3/1/22		1	Soil									●									●		

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
			MAI	3/2/22	1043
MAI	3/2/22	1500		3/2/22	1500

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 7.6 °C Initials

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Sample Receipt Checklist

Client Name: **ICES**
Project: **ICES 9315**

Date and Time Received: **3/2/2022 15:00**
Date Logged: **3/2/2022**
Received by: Lilly Ortiz
Logged by: Lilly Ortiz

WorkOrder №: **2203182** Matrix: Soil
Carrier: Antonio Mason (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Custody seals intact on sample bottles?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 2.6°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

ICES

Innovative & Creative Environmental Solutions
3300 Powell Street, Suite 109
Emeryville CA 94608
510-652-3222

November 15, 2024 ICES 9315

Mr. Jack Kautz
Kautz Row Crops
5490 Bear Creek Road
Lodi, California 95240

Subject: Supplementary Site Investigation
Kautz Property
Lockeford, California

Dear Jack:

Enclosed is the Supplementary Site Investigation Report documenting the soil sampling that was conducted by Innovative and Creative Environmental Solutions at the Kautz Property located in Lockeford, California.

If you have any questions or comments concerning this report, please me.

Sincerely,

Peng Leong
Principal Engineer

Enclosure

SUPPLEMENTARY SITE INVESTIGATION

KAUTZ PROPERTY
LOCKEFORD, CALIFORNIA

November 15, 2024

ICES 9315

Prepared for:

Mr. Jack Kautz
Kautz Row Crops
5490 Bear Creek Road
Lodi, California 95240

ICES

Innovative & Creative Environmental Solutions
3300 Powell Street, Suite 109
Emeryville CA 94608
510-652-3222

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1	Soil Sample Results – Organochlorine Pesticides
2	Soil Sample Results – Metals

LIST OF FIGURES

NUMBER	TITLE
1	Site Location
2	Sample Locations

November 15, 2024 ICES 9315

SUPPLEMENTARY SITE INVESTIGATION
KAUTZ PROPERTY
LOCKEFORD, CALIFORNIA

1.0 INTRODUCTION

This report presents the findings of the Supplementary Site Investigation that was conducted by Innovative and Creative Environmental Solutions (ICES) at the Kautz Property located in Lockeford, California. ("the Site"; Figure 1).

The purpose of the supplementary sampling activities was to collect additional soil samples to assess the potential presence of organochlorine pesticides, arsenic, lead, and mercury within the surficial soil that were associated with former agricultural activities.

2.0 SITE DESCRIPTION

The Site is located south of Highway 88 and is within the legal jurisdiction of Lockeford, in conjunction with San Joaquin County and the State of California. The Site is identified by the San Joaquin County Assessor's Office as Assessor Parcel Numbers 019-010-240, 019-110-120, 019-110-200, 019-110-260, 019-110-430, and 019-110-440.

The Site consists of six contiguous parcels covering an area of approximately 105.11 acres. The Site is currently occupied by a vineyard.

3.0 BACKGROUND

The Site had been used for agricultural applications since 1937 and was most recently planted with grape vines since approximately 2000 when Kautz Row Crops acquired the Site.

ICES collected five soil samples in March 2024. The results of the preliminary sampling activities indicated that organochlorine pesticides, lead, and mercury were below their respective residential environmental screening levels (ESLs) and arsenic concentrations were within background levels.

4.0 SAMPLING ACTIVITIES

ICES collected additional soil samples on October 28, 2024. A total of twenty-five soil samples were collected from twenty-five test pit locations. The approximate test pit locations are shown in Figure 2.

Soil samples were collected from the surficial sediments within the entire Site at a depth of approximately 6 to 9 inches below the existing ground surface (bgs). The soil samples were collected by scraping the sidewalls of each test pit location at the selected depth directly into 4-ounce glass jars.

After being sealed and labeled, the soil samples were immediately placed in a chilled cooler containing crushed ice for transportation to the laboratory. Proper documentation and field chain-of-custody procedures were followed.

All equipment used during the sampling activities which might have come into contact with contaminated materials was thoroughly decontaminated before and after each use. This was accomplished by washing with Alconox (a laboratory-grade detergent) and rinsing with distilled water.

5.0 LABORATORY ANALYSIS

The soil samples were sent to McCampbell Analytical, Inc. of Pacheco, California, a state-certified laboratory and analyzed as follows.

- Organochlorine pesticides using EPA Method 8081B; and
- Arsenic, lead, and mercury using EPA Method 6020.

The samples were analyzed on a normal turnaround basis.

6.0 INVESTIGATION RESULTS

The laboratory analytical results are presented below and summarized in Tables 1 and 2. Laboratory certificates are included in Appendix A.

6.1 Laboratory Analytical Results

Results of the supplementary sampling activities indicated that organochlorine pesticides, lead, and mercury were below their respective residential ESLs. Five soil samples (K6, K7, K8, K10, and K24) had higher detection limits due to matrix interference which was most likely caused by a higher organic content in the surficial sediments.

The only detectable organochlorine pesticide was DDE. DDE was reported at a concentration of 0.036 mg/kg in one soil sample (K8). This concentration was substantially below the residential ESL of 1.8 mg/kg.

Arsenic concentrations ranging from 1.3 mg/kg to 2.4 mg/kg were above the residential ESL of 0.067 mg/kg and within typical arsenic background levels of up to 11 mg/kg. Contaminant concentrations that are within background levels are considered acceptable by regulatory agencies where their background levels exceed the corresponding ESL. Lead concentrations ranging from 3.8 mg/kg to 7.1 mg/kg and mercury levels of less than 0.050 mg/kg (not detected) were below their respective residential ESLs of 82 mg/kg and 13 mg/kg.

7.0 DISCUSSION

The results of this supplementary site investigation were generally consistent with the results of the initial preliminary site investigation. A total of thirty soil samples have been collected to date. We feel that the results of the thirty soil samples were more than adequate to fully characterize the surficial sediments at the Site based on our experience with similar agricultural properties especially where pesticides were applied uniformly throughout the entire Site.

Based on the findings of the preliminary and supplementary site investigations, it appears that the soil within the entire Site had not been impacted by agricultural activities that were

formerly conducted at the Site. Organochlorine pesticides, lead, and mercury were below their respective residential ESLs; and arsenic concentrations were within background levels. Additionally, the arsenic concentrations within the Site were below the remedial cleanup goal of 5.8 mg/kg that was developed for the adjacent Lockeford Vista residential subdivision to the north.

8.0 EXCLUSIONS

ICES assumes no responsibility or liability for the reliance hereon or use hereof of information contained in this report by anyone other than the party to whom it is addressed.

The evaluations and recommendations presented in this report are based on the sampling results available at this time and could be revised if new information necessitating further review of the Site becomes available.

APPENDIX A

LABORATORY CERTIFICATES

TABLE 1

SOIL SAMPLE RESULTS
ORGANOCHLORINE PESTICIDES
Kautz Property
Lockeford, California

		Other
Sample	DDE	Organochlorine
10/28/2024		Pesticides
	(mg/kg)	(mg/kg)
K1	ND < 0.0010	ND < 0.0010 - 0.20
K2	ND < 0.0010	ND < 0.0010 - 0.20
K3	ND < 0.0010	ND < 0.0010 - 0.20
K4	ND < 0.0010	ND < 0.0010 - 0.20
K5	ND < 0.0010	ND < 0.0010 - 0.20
K6	ND < 0.0050	ND < 0.0050 - 1.0
K7	ND < 0.020	ND < 0.020 - 4.0
K8	0.036	ND < 0.0050 - 1.0
K9	ND < 0.0010	ND < 0.0010 - 0.20
K10	ND < 0.020	ND < 0.020 - 4.0
K11	ND < 0.0010	ND < 0.0010 - 0.20
K12	ND < 0.0010	ND < 0.0010 - 0.20
K13	ND < 0.0010	ND < 0.0010 - 0.20
K14	ND < 0.0010	ND < 0.0010 - 0.20
K15	ND < 0.0010	ND < 0.0010 - 0.20
K16	ND < 0.0010	ND < 0.0010 - 0.20
K17	ND < 0.0010	ND < 0.0010 - 0.20
K18	ND < 0.0010	ND < 0.0010 - 0.20
K19	ND < 0.0010	ND < 0.0010 - 0.20
K20	ND < 0.0010	ND < 0.0010 - 0.20
K21	ND < 0.0010	ND < 0.0010 - 0.20
K22	ND < 0.0010	ND < 0.0010 - 0.20
K23	ND < 0.0010	ND < 0.0010 - 0.20
K24	ND < 0.020	ND < 0.020 - 4.0
K25	ND < 0.0010	ND < 0.0010 - 0.20

Note:
ND : Not Detected

TABLE 2

SOIL SAMPLE RESULTS
METALS
Kautz Property
Lockeford, California

Sample	Arsenic	Lead	Mercury
10/28/2024	(mg/kg)	(mg/kg)	(mg/kg)
K1	1.3	3.8	ND<0.050
K2	1.5	3.9	ND<0.050
K3	1.5	4.4	ND<0.050
K4	1.4	4.4	ND<0.050
K5	1.4	4.3	ND<0.050
K6	1.6	5.0	ND<0.050
K7	1.9	5.6	ND<0.050
K8	2.0	5.3	ND<0.050
K9	1.7	4.7	ND<0.050
K10	1.8	5.5	ND<0.050
K11	2.1	4.7	ND<0.050
K12	2.4	5.7	ND<0.050
K13	1.8	7.1	ND<0.050
K14	1.9	4.4	ND<0.050
K15	2.0	4.6	ND<0.050
K16	2.3	5.2	ND<0.050
K17	1.9	4.7	ND<0.050
K18	1.8	4.6	ND<0.050
K19	1.8	4.1	ND<0.050
K20	2.1	5.0	ND<0.050
K21	1.9	5.1	ND<0.050
K22	1.9	4.8	ND<0.050
K23	2.2	4.8	ND<0.050
K24	1.9	4.6	ND<0.050
K25	2.1	5.6	ND<0.050

Note:
ND : Not Detected

Google Maps Lockeford

Source: Google Maps

Map data ©2024 Google 5 mi

ICES

SITE LOCATION

Kautz Property
Lockeford, California

November 2024

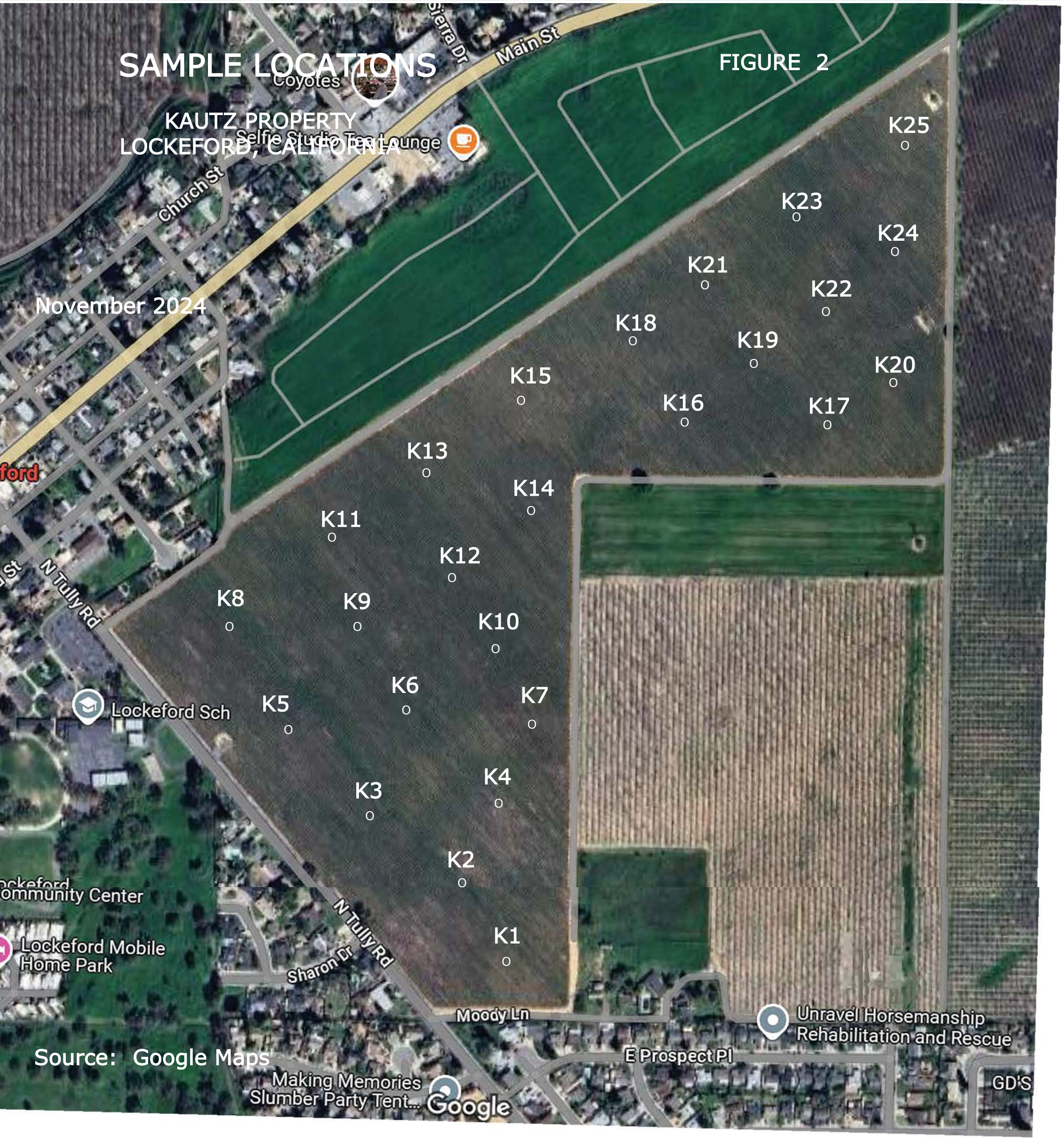
Figure 1

SAMPLE LOCATIONS

FIGURE 2

KAUTZ PROPERTY
LOCKEFORD, CALIFORNIA

November 2024



Source: Google Maps

APPENDIX A

LABORATORY CERTIFICATES

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2410L96

Report Created for: ICES

P.O. Box 99288
Emeryville, CA 94662

Project Contact: Peng Leong
Project P.O.:
Project: ICES 9315; Kautz Property

Project Location:
Project Received: 10/29/2024

Analytical Report reviewed & approved for release on 11/05/2024 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.

1534 Willow Pass Rd. Pittsburg, CA 94565 ♦ TEL: (877) 252-9262 ♦ FAX: (925) 252-9269 ♦ www.mccampbell.com
CA ELAP 1644 ♦ NELAP 4033 ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L96

Project: ICES 9315; Kautz Property

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CCV	Continuing Calibration Verification.
CCV REC (%)	% recovery of Continuing Calibration Verification.
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LCS2	Second LCS for the batch. Spike level is lower than that for the first LCS; applicable to method 1633.
LQL	Lowest Quantitation Level
MB	Method Blank
MB IS/SS % Rec	% Recovery of Internal Standard or Surrogate in Method Blank, if applicable
MB SS % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit [1]
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit [2]
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SNR	Surrogate is diluted out of the calibration range

[1] MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016. Values are based upon our default extraction volume/amount and are subject to change.

[2] RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.) Values are based upon our default extraction volume/amount and are subject to change.

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L96

Project: ICES 9315; Kautz Property

SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TNTC	“Too Numerous to Count;” greater than 250 colonies observed on the plate.
TZA	TimeZone Net Adjustment for sample collected outside of MAI's Coordinated Universal Time (UTC). (Adjustment for Daylight Saving is not accounted.)
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L96
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K1	2410L96-001A	Soil	10/28/2024	GC22 11042412.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 11:34
a-BHC	ND	0.0010	1	11/04/2024 11:34
b-BHC	ND	0.0010	1	11/04/2024 11:34
d-BHC	ND	0.0010	1	11/04/2024 11:34
g-BHC	ND	0.0010	1	11/04/2024 11:34
Chlordane (Technical)	ND	0.025	1	11/04/2024 11:34
a-Chlordane	ND	0.0010	1	11/04/2024 11:34
g-Chlordane	ND	0.0010	1	11/04/2024 11:34
p,p-DDD	ND	0.0010	1	11/04/2024 11:34
p,p-DDE	ND	0.0010	1	11/04/2024 11:34
p,p-DDT	ND	0.0010	1	11/04/2024 11:34
Dieldrin	ND	0.0010	1	11/04/2024 11:34
Endosulfan I	ND	0.0010	1	11/04/2024 11:34
Endosulfan II	ND	0.0010	1	11/04/2024 11:34
Endosulfan sulfate	ND	0.0010	1	11/04/2024 11:34
Endrin	ND	0.0010	1	11/04/2024 11:34
Endrin aldehyde	ND	0.0010	1	11/04/2024 11:34
Endrin ketone	ND	0.0010	1	11/04/2024 11:34
Heptachlor	ND	0.0010	1	11/04/2024 11:34
Heptachlor epoxide	ND	0.0010	1	11/04/2024 11:34
Hexachlorobenzene	ND	0.010	1	11/04/2024 11:34
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 11:34
Methoxychlor	ND	0.0010	1	11/04/2024 11:34
Toxaphene	ND	0.20	1	11/04/2024 11:34

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	104	60-130	11/04/2024 11:34

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L96
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K2	2410L96-002A	Soil	10/28/2024	GC22 11042415.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 12:24
a-BHC	ND	0.0010	1	11/04/2024 12:24
b-BHC	ND	0.0010	1	11/04/2024 12:24
d-BHC	ND	0.0010	1	11/04/2024 12:24
g-BHC	ND	0.0010	1	11/04/2024 12:24
Chlordane (Technical)	ND	0.025	1	11/04/2024 12:24
a-Chlordane	ND	0.0010	1	11/04/2024 12:24
g-Chlordane	ND	0.0010	1	11/04/2024 12:24
p,p-DDD	ND	0.0010	1	11/04/2024 12:24
p,p-DDE	ND	0.0010	1	11/04/2024 12:24
p,p-DDT	ND	0.0010	1	11/04/2024 12:24
Dieldrin	ND	0.0010	1	11/04/2024 12:24
Endosulfan I	ND	0.0010	1	11/04/2024 12:24
Endosulfan II	ND	0.0010	1	11/04/2024 12:24
Endosulfan sulfate	ND	0.0010	1	11/04/2024 12:24
Endrin	ND	0.0010	1	11/04/2024 12:24
Endrin aldehyde	ND	0.0010	1	11/04/2024 12:24
Endrin ketone	ND	0.0010	1	11/04/2024 12:24
Heptachlor	ND	0.0010	1	11/04/2024 12:24
Heptachlor epoxide	ND	0.0010	1	11/04/2024 12:24
Hexachlorobenzene	ND	0.010	1	11/04/2024 12:24
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 12:24
Methoxychlor	ND	0.0010	1	11/04/2024 12:24
Toxaphene	ND	0.20	1	11/04/2024 12:24

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	100	60-130	11/04/2024 12:24

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L96
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K3	2410L96-003A	Soil	10/28/2024	GC20 11012449.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/02/2024 02:31
a-BHC	ND	0.0010	1	11/02/2024 02:31
b-BHC	ND	0.0010	1	11/02/2024 02:31
d-BHC	ND	0.0010	1	11/02/2024 02:31
g-BHC	ND	0.0010	1	11/02/2024 02:31
Chlordane (Technical)	ND	0.025	1	11/02/2024 02:31
a-Chlordane	ND	0.0010	1	11/02/2024 02:31
g-Chlordane	ND	0.0010	1	11/02/2024 02:31
p,p-DDD	ND	0.0010	1	11/02/2024 02:31
p,p-DDE	ND	0.0010	1	11/02/2024 02:31
p,p-DDT	ND	0.0010	1	11/02/2024 02:31
Dieldrin	ND	0.0010	1	11/02/2024 02:31
Endosulfan I	ND	0.0010	1	11/02/2024 02:31
Endosulfan II	ND	0.0010	1	11/02/2024 02:31
Endosulfan sulfate	ND	0.0010	1	11/02/2024 02:31
Endrin	ND	0.0010	1	11/02/2024 02:31
Endrin aldehyde	ND	0.0010	1	11/02/2024 02:31
Endrin ketone	ND	0.0010	1	11/02/2024 02:31
Heptachlor	ND	0.0010	1	11/02/2024 02:31
Heptachlor epoxide	ND	0.0010	1	11/02/2024 02:31
Hexachlorobenzene	ND	0.010	1	11/02/2024 02:31
Hexachlorocyclopentadiene	ND	0.020	1	11/02/2024 02:31
Methoxychlor	ND	0.0010	1	11/02/2024 02:31
Toxaphene	ND	0.20	1	11/02/2024 02:31

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	102	60-130	11/02/2024 02:31

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L96
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K4	2410L96-004A	Soil	10/28/2024	GC22 11042409.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 10:44
a-BHC	ND	0.0010	1	11/04/2024 10:44
b-BHC	ND	0.0010	1	11/04/2024 10:44
d-BHC	ND	0.0010	1	11/04/2024 10:44
g-BHC	ND	0.0010	1	11/04/2024 10:44
Chlordane (Technical)	ND	0.025	1	11/04/2024 10:44
a-Chlordane	ND	0.0010	1	11/04/2024 10:44
g-Chlordane	ND	0.0010	1	11/04/2024 10:44
p,p-DDD	ND	0.0010	1	11/04/2024 10:44
p,p-DDE	ND	0.0010	1	11/04/2024 10:44
p,p-DDT	ND	0.0010	1	11/04/2024 10:44
Dieldrin	ND	0.0010	1	11/04/2024 10:44
Endosulfan I	ND	0.0010	1	11/04/2024 10:44
Endosulfan II	ND	0.0010	1	11/04/2024 10:44
Endosulfan sulfate	ND	0.0010	1	11/04/2024 10:44
Endrin	ND	0.0010	1	11/04/2024 10:44
Endrin aldehyde	ND	0.0010	1	11/04/2024 10:44
Endrin ketone	ND	0.0010	1	11/04/2024 10:44
Heptachlor	ND	0.0010	1	11/04/2024 10:44
Heptachlor epoxide	ND	0.0010	1	11/04/2024 10:44
Hexachlorobenzene	ND	0.010	1	11/04/2024 10:44
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 10:44
Methoxychlor	ND	0.0010	1	11/04/2024 10:44
Toxaphene	ND	0.20	1	11/04/2024 10:44

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	107	60-130	11/04/2024 10:44

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L96
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K5	2410L96-005A	Soil	10/28/2024	GC20 11012444.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/02/2024 01:16
a-BHC	ND	0.0010	1	11/02/2024 01:16
b-BHC	ND	0.0010	1	11/02/2024 01:16
d-BHC	ND	0.0010	1	11/02/2024 01:16
g-BHC	ND	0.0010	1	11/02/2024 01:16
Chlordane (Technical)	ND	0.025	1	11/02/2024 01:16
a-Chlordane	ND	0.0010	1	11/02/2024 01:16
g-Chlordane	ND	0.0010	1	11/02/2024 01:16
p,p-DDD	ND	0.0010	1	11/02/2024 01:16
p,p-DDE	ND	0.0010	1	11/02/2024 01:16
p,p-DDT	ND	0.0010	1	11/02/2024 01:16
Dieldrin	ND	0.0010	1	11/02/2024 01:16
Endosulfan I	ND	0.0010	1	11/02/2024 01:16
Endosulfan II	ND	0.0010	1	11/02/2024 01:16
Endosulfan sulfate	ND	0.0010	1	11/02/2024 01:16
Endrin	ND	0.0010	1	11/02/2024 01:16
Endrin aldehyde	ND	0.0010	1	11/02/2024 01:16
Endrin ketone	ND	0.0010	1	11/02/2024 01:16
Heptachlor	ND	0.0010	1	11/02/2024 01:16
Heptachlor epoxide	ND	0.0010	1	11/02/2024 01:16
Hexachlorobenzene	ND	0.010	1	11/02/2024 01:16
Hexachlorocyclopentadiene	ND	0.020	1	11/02/2024 01:16
Methoxychlor	ND	0.0010	1	11/02/2024 01:16
Toxaphene	ND	0.20	1	11/02/2024 01:16

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	111	60-130	11/02/2024 01:16

Analyst(s): CK

McCampbell Analytical, Inc.
"When Quality Counts"

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L96
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K1	2410L96-001A	Soil	10/28/2024	ICP-MS5 149SMPL.d	304938

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.3**	0.50	1	10/31/2024 13:04
Lead	**3.8**	0.50	1	10/31/2024 13:04
Mercury	ND	0.050	1	10/31/2024 13:04

Surrogates	REC (%)	Limits	
Terbium	103	70-130	10/31/2024 13:04

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K2	2410L96-002A	Soil	10/28/2024	ICP-MS5 150SMPL.d	304938

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.5**	0.50	1	10/31/2024 13:07
Lead	**3.9**	0.50	1	10/31/2024 13:07
Mercury	ND	0.050	1	10/31/2024 13:07

Surrogates	REC (%)	Limits	
Terbium	103	70-130	10/31/2024 13:07

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K3	2410L96-003A	Soil	10/28/2024	ICP-MS5 151SMPL.d	304938

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.5**	0.50	1	10/31/2024 13:11
Lead	**4.4**	0.50	1	10/31/2024 13:11
Mercury	ND	0.050	1	10/31/2024 13:11

Surrogates	REC (%)	Limits	
Terbium	103	70-130	10/31/2024 13:11

Analyst(s): MIG

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L96
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K4	**2410L96-004A**	**Soil**	**10/28/2024**	**ICP-MS5 152SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.4**	0.50	1	10/31/2024 13:15
Lead	**4.4**	0.50	1	10/31/2024 13:15
Mercury	ND	0.050	1	10/31/2024 13:15

Surrogates	REC (%)	Limits	
Terbium	106	70-130	10/31/2024 13:15

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K5	**2410L96-005A**	**Soil**	**10/28/2024**	**ICP-MS5 153SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.4**	0.50	1	10/31/2024 13:18
Lead	**4.3**	0.50	1	10/31/2024 13:18
Mercury	ND	0.050	1	10/31/2024 13:18

Surrogates	REC (%)	Limits	
Terbium	110	70-130	10/31/2024 13:18

Analyst(s): MIG

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L96
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Aldrin	ND	0.00042	0.0010	-	-	-
a-BHC	ND	0.00045	0.0010	-	-	-
b-BHC	ND	0.00038	0.0010	-	-	-
d-BHC	ND	0.00036	0.0010	-	-	-
g-BHC	ND	0.00036	0.0010	-	-	-
Chlordane (Technical)	ND	0.010	0.025	-	-	-
a-Chlordane	ND	0.00035	0.0010	-	-	-
g-Chlordane	ND	0.00067	0.0010	-	-	-
p,p-DDD	ND	0.00057	0.0010	-	-	-
p,p-DDE	ND	0.00034	0.0010	-	-	-
p,p-DDT	ND	0.00043	0.0010	-	-	-
Dieldrin	ND	0.00041	0.0010	-	-	-
Endosulfan I	ND	0.00040	0.0010	-	-	-
Endosulfan II	ND	0.00051	0.0010	-	-	-
Endosulfan sulfate	ND	0.00040	0.0010	-	-	-
Endrin	ND	0.00045	0.0010	-	-	-
Endrin aldehyde	ND	0.00045	0.0010	-	-	-
Endrin ketone	ND	0.00042	0.0010	-	-	-
Heptachlor	ND	0.00067	0.0010	-	-	-
Heptachlor epoxide	ND	0.00041	0.0010	-	-	-
Hexachlorobenzene	ND	0.00038	0.010	-	-	-
Hexachlorocyclopentadiene	ND	0.00064	0.020	-	-	-
Methoxychlor	ND	0.00063	0.0010	-	-	-
Toxaphene	ND	0.064	0.20	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.056			0.05	112	70-130

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L96
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.044	0.044	0.050	87	88	70-130	0.266	20
a-BHC	0.046	0.046	0.050	93	92	70-130	0.191	20
b-BHC	0.043	0.043	0.050	87	86	70-130	0.430	20
d-BHC	0.040	0.040	0.050	81	80	70-130	1.74	20
g-BHC	0.047	0.047	0.050	94	94	70-130	0.390	20
a-Chlordane	0.046	0.045	0.050	91	90	70-130	1.11	20
g-Chlordane	0.041	0.041	0.050	83	82	70-130	1.09	20
p,p-DDD	0.058	0.056	0.050	116	111	70-130	3.90	20
p,p-DDE	0.055	0.054	0.050	110	108	70-130	2.34	20
p,p-DDT	0.048	0.044	0.050	95	88	70-130	7.82	20
Dieldrin	0.049	0.048	0.050	97	96	70-130	1.31	20
Endosulfan I	0.045	0.044	0.050	89	89	70-130	0.816	20
Endosulfan II	0.045	0.044	0.050	90	88	70-130	2.75	20
Endosulfan sulfate	0.046	0.044	0.050	92	88	70-130	4.02	20
Endrin	0.077	0.074	0.050	154,F2	149,F2	70-130	3.45	20
Endrin aldehyde	0.043	0.042	0.050	87	84	70-130	3.24	20
Endrin ketone	0.041	0.039	0.050	82	78	70-130	5.41	20
Heptachlor	0.049	0.048	0.050	98	96	70-130	1.81	20
Heptachlor epoxide	0.046	0.046	0.050	92	91	70-130	0.420	20
Hexachlorobenzene	0.043	0.043	0.050	86	85	70-130	0.450	20
Hexachlorocyclopentadiene	0.035	0.033	0.050	70	67	50-130	4.76	20
Methoxychlor	0.051	0.046	0.050	101	93	70-130	8.70	20
Surrogate Recovery								
Decachlorobiphenyl	0.055	0.049	0.050	110	99	70-130	11.2	20

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L96
Date Prepared:	10/30/2024	**BatchID:**	304938
Date Analyzed:	10/31/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304938

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Arsenic	ND	0.084	0.50	-	-	-
Lead	ND	0.089	0.50	-	-	-
Mercury	ND	0.039	0.050	-	-	-
Surrogate Recovery						
Terbium	540			500	108	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	55	57	50	111	113	75-125	2.08	20
Lead	51	53	50	102	106	75-125	3.71	20
Mercury	1.3	1.3	1.25	102	107	75-125	4.74	20
Surrogate Recovery								
Terbium	550	540	500	110	108	70-130	1.35	20

McCampbell Analytical, Inc.
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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2410L96 **ClientCode: ICES**

☐ WaterTrax ☐ CLIP ☑ EDF ☐ EQuIS ☐ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Excel

Report to:
Peng Leong
ICES
P.O. Box 99288
Emeryville, CA 94662
(510) 882-2200 FAX: (510) 652-3555

Email: alphaenv222@gmail.com
cc/3rd Party:
PO:
Project: ICES 9315; Kautz Property

Bill to:
Accounts Payable
ICES
3300 Powell Street #109
Emeryville, CA 94608
alphaenv222@gmail.com; ices888@gm

Requested TAT: **5 days;**

Date Received: **10/29/2024**
Date Logged: **10/29/2024**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2410L96-001	K1	Soil	10/28/2024 00:00	☐	A	A	A	A								
2410L96-002	K2	Soil	10/28/2024 00:00	☐	A	A	A									
2410L96-003	K3	Soil	10/28/2024 00:00	☐	A	A	A									
2410L96-004	K4	Soil	10/28/2024 00:00	☐	A	A	A									
2410L96-005	K5	Soil	10/28/2024 00:00	☐	A	A	A									

Test Legend:

1	8081_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PREDF REPORT
5		6		7		8	
9		10		11		12	

Prepared by: Lilly Ortiz

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ICES
Client Contact: Peng Leong
Contact's Email: alphaenv222@gmail.com

Project: ICES 9315; Kautz Property
Comments

Work Order: 2410L96
QC Level: LEVEL 2
Date Logged: 10/29/2024

☐ WaterTrax ☐ CLIP ☑ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

LabID	ClientSampID	Matrix	Test Name	Cont./ Comp.	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	K1	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
002A	K2	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
003A	K3	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
004A	K4	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
005A	K5	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

Cont./Comp. = Containers /Composites

General COC

MAI Work Order # 2410L96

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CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	✓	Quote #						
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #							
Delivery Format:	PDF	✓	GeoTracker EDF	✓	EDD		CLIP EDT (DW)		Detect Summary						

Report To: PENG LEONG	Bill To: SAME																							
Company: ICES																								
Email: ALPHAENV222@GMAIL.COM																								
Alt Email:	Tele:																							
Project Name: KAUTZ PROPERTY	Project #: ICES 9315																							
Project Location:	PO #																							
Sampler Signature:																								

Analysis Requested

SAMPLE ID / Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	EPA 8081 (ALPEST)	ARSENIC, LEAD MERCURY
K1	10-28-24		1	SOIL		✓	✓
K2	"		1	"		✓	✓
K3	"		1	"		✓	✓
K4	"		1	"		✓	✓
K5	"		1	"		✓	✓

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
				10/29/24	1010
MAI	10/29/24	1645		10/29/24	1645

Comments / Instructions

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 4.6°C Initials

1 of 1

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Sample Receipt Checklist

Client Name:	ICES	Date and Time Received:	10/29/2024 16:45
Project:	ICES 9315; Kautz Property	Date Logged:	10/29/2024
		Received by:	Lilly Ortiz
WorkOrder №:	2410L96 Matrix: Soil	Logged by:	Lilly Ortiz
Carrier:	Antonio Mason (MAI Courier)		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Custody seals intact on sample bottles?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 1.6°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2)?	Yes	☐	No	☐	NA	☑

UCMR Samples:

pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

McCampbell Analytical, Inc.
"When Quality Counts"

Analytical Report

WorkOrder: 2410L92

Report Created for: ICES

P.O. Box 99288
Emeryville, CA 94662

Project Contact: Peng Leong
Project P.O.:
Project: ICES 9315; Kautz Property

Project Location:
Project Received: 10/29/2024

Analytical Report reviewed & approved for release on 11/06/2024 by:

Tracy Babjar
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L92

Project: ICES 9315; Kautz Property

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CCV	Continuing Calibration Verification.
CCV REC (%)	% recovery of Continuing Calibration Verification.
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LCS2	Second LCS for the batch. Spike level is lower than that for the first LCS; applicable to method 1633.
LQL	Lowest Quantitation Level
MB	Method Blank
MB IS/SS % Rec	% Recovery of Internal Standard or Surrogate in Method Blank, if applicable
MB SS % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit [1]
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit [2]
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SNR	Surrogate is diluted out of the calibration range

[1] MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016. Values are based upon our default extraction volume/amount and are subject to change.

[2] RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.) Values are based upon our default extraction volume/amount and are subject to change.

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L92

Project: ICES 9315; Kautz Property

SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TNTC	“Too Numerous to Count;” greater than 250 colonies observed on the plate.
TZA	TimeZone Net Adjustment for sample collected outside of MAI's Coordinated Universal Time (UTC). (Adjustment for Daylight Saving is not accounted.)
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

a2	Sample diluted due to cluttered chromatogram.
h7	Copper (EPA 3660B) cleanup

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L92
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K6	2410L92-001A	Soil	10/28/2024	GC40 11062413.d	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0050	5	11/06/2024 15:45
a-BHC	ND	0.0050	5	11/06/2024 15:45
b-BHC	ND	0.0050	5	11/06/2024 15:45
d-BHC	ND	0.0050	5	11/06/2024 15:45
g-BHC	ND	0.0050	5	11/06/2024 15:45
Chlordane (Technical)	ND	0.12	5	11/06/2024 15:45
a-Chlordane	ND	0.0050	5	11/06/2024 15:45
g-Chlordane	ND	0.0050	5	11/06/2024 15:45
p,p-DDD	ND	0.0050	5	11/06/2024 15:45
p,p-DDE	ND	0.0050	5	11/06/2024 15:45
p,p-DDT	ND	0.0050	5	11/06/2024 15:45
Dieldrin	ND	0.0050	5	11/06/2024 15:45
Endosulfan I	ND	0.0050	5	11/06/2024 15:45
Endosulfan II	ND	0.0050	5	11/06/2024 15:45
Endosulfan sulfate	ND	0.0050	5	11/06/2024 15:45
Endrin	ND	0.0050	5	11/06/2024 15:45
Endrin aldehyde	ND	0.0050	5	11/06/2024 15:45
Endrin ketone	ND	0.0050	5	11/06/2024 15:45
Heptachlor	ND	0.0050	5	11/06/2024 15:45
Heptachlor epoxide	ND	0.0050	5	11/06/2024 15:45
Hexachlorobenzene	ND	0.050	5	11/06/2024 15:45
Hexachlorocyclopentadiene	ND	0.10	5	11/06/2024 15:45
Methoxychlor	ND	0.0050	5	11/06/2024 15:45
Toxaphene	ND	1.0	5	11/06/2024 15:45

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	77	60-130	11/06/2024 15:45

Analyst(s): EEV Analytical Comments: a2,h7

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L92
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K7	2410L92-002A	Soil	10/28/2024	GC40 11052431.d	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.020	20	11/05/2024 18:07
a-BHC	ND	0.020	20	11/05/2024 18:07
b-BHC	ND	0.020	20	11/05/2024 18:07
d-BHC	ND	0.020	20	11/05/2024 18:07
g-BHC	ND	0.020	20	11/05/2024 18:07
Chlordane (Technical)	ND	0.50	20	11/05/2024 18:07
a-Chlordane	ND	0.020	20	11/05/2024 18:07
g-Chlordane	ND	0.020	20	11/05/2024 18:07
p,p-DDD	ND	0.020	20	11/05/2024 18:07
p,p-DDE	ND	0.020	20	11/05/2024 18:07
p,p-DDT	ND	0.020	20	11/05/2024 18:07
Dieldrin	ND	0.020	20	11/05/2024 18:07
Endosulfan I	ND	0.020	20	11/05/2024 18:07
Endosulfan II	ND	0.020	20	11/05/2024 18:07
Endosulfan sulfate	ND	0.020	20	11/05/2024 18:07
Endrin	ND	0.020	20	11/05/2024 18:07
Endrin aldehyde	ND	0.020	20	11/05/2024 18:07
Endrin ketone	ND	0.020	20	11/05/2024 18:07
Heptachlor	ND	0.020	20	11/05/2024 18:07
Heptachlor epoxide	ND	0.020	20	11/05/2024 18:07
Hexachlorobenzene	ND	0.20	20	11/05/2024 18:07
Hexachlorocyclopentadiene	ND	0.40	20	11/05/2024 18:07
Methoxychlor	ND	0.020	20	11/05/2024 18:07
Toxaphene	ND	4.0	20	11/05/2024 18:07

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	61	60-130	11/05/2024 18:07

Analyst(s): EEV Analytical Comments: a2,h7

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L92
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K8	2410L92-003A	Soil	10/28/2024	GC40 11062412.d	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0050	5	11/06/2024 15:30
a-BHC	ND	0.0050	5	11/06/2024 15:30
b-BHC	ND	0.0050	5	11/06/2024 15:30
d-BHC	ND	0.0050	5	11/06/2024 15:30
g-BHC	ND	0.0050	5	11/06/2024 15:30
Chlordane (Technical)	ND	0.12	5	11/06/2024 15:30
a-Chlordane	ND	0.0050	5	11/06/2024 15:30
g-Chlordane	ND	0.0050	5	11/06/2024 15:30
p,p-DDD	ND	0.0050	5	11/06/2024 15:30
p,p-DDE	**0.036**	0.0050	5	11/06/2024 15:30
p,p-DDT	ND	0.0050	5	11/06/2024 15:30
Dieldrin	ND	0.0050	5	11/06/2024 15:30
Endosulfan I	ND	0.0050	5	11/06/2024 15:30
Endosulfan II	ND	0.0050	5	11/06/2024 15:30
Endosulfan sulfate	ND	0.0050	5	11/06/2024 15:30
Endrin	ND	0.0050	5	11/06/2024 15:30
Endrin aldehyde	ND	0.0050	5	11/06/2024 15:30
Endrin ketone	ND	0.0050	5	11/06/2024 15:30
Heptachlor	ND	0.0050	5	11/06/2024 15:30
Heptachlor epoxide	ND	0.0050	5	11/06/2024 15:30
Hexachlorobenzene	ND	0.050	5	11/06/2024 15:30
Hexachlorocyclopentadiene	ND	0.10	5	11/06/2024 15:30
Methoxychlor	ND	0.0050	5	11/06/2024 15:30
Toxaphene	ND	1.0	5	11/06/2024 15:30

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	103	60-130	11/06/2024 15:30

Analyst(s): EEV Analytical Comments: a2,h7

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L92
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K9	2410L92-004A	Soil	10/28/2024	GC40 11042446.d	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 21:26
a-BHC	ND	0.0010	1	11/04/2024 21:26
b-BHC	ND	0.0010	1	11/04/2024 21:26
d-BHC	ND	0.0010	1	11/04/2024 21:26
g-BHC	ND	0.0010	1	11/04/2024 21:26
Chlordane (Technical)	ND	0.025	1	11/04/2024 21:26
a-Chlordane	ND	0.0010	1	11/04/2024 21:26
g-Chlordane	ND	0.0010	1	11/04/2024 21:26
p,p-DDD	ND	0.0010	1	11/04/2024 21:26
p,p-DDE	ND	0.0010	1	11/04/2024 21:26
p,p-DDT	ND	0.0010	1	11/04/2024 21:26
Dieldrin	ND	0.0010	1	11/04/2024 21:26
Endosulfan I	ND	0.0010	1	11/04/2024 21:26
Endosulfan II	ND	0.0010	1	11/04/2024 21:26
Endosulfan sulfate	ND	0.0010	1	11/04/2024 21:26
Endrin	ND	0.0010	1	11/04/2024 21:26
Endrin aldehyde	ND	0.0010	1	11/04/2024 21:26
Endrin ketone	ND	0.0010	1	11/04/2024 21:26
Heptachlor	ND	0.0010	1	11/04/2024 21:26
Heptachlor epoxide	ND	0.0010	1	11/04/2024 21:26
Hexachlorobenzene	ND	0.010	1	11/04/2024 21:26
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 21:26
Methoxychlor	ND	0.0010	1	11/04/2024 21:26
Toxaphene	ND	0.20	1	11/04/2024 21:26

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	80	60-130	11/04/2024 21:26

Analyst(s): EEV

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L92
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K10	2410L92-005A	Soil	10/28/2024	GC40 11052430.d	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.020	20	11/05/2024 17:52
a-BHC	ND	0.020	20	11/05/2024 17:52
b-BHC	ND	0.020	20	11/05/2024 17:52
d-BHC	ND	0.020	20	11/05/2024 17:52
g-BHC	ND	0.020	20	11/05/2024 17:52
Chlordane (Technical)	ND	0.50	20	11/05/2024 17:52
a-Chlordane	ND	0.020	20	11/05/2024 17:52
g-Chlordane	ND	0.020	20	11/05/2024 17:52
p,p-DDD	ND	0.020	20	11/05/2024 17:52
p,p-DDE	ND	0.020	20	11/05/2024 17:52
p,p-DDT	ND	0.020	20	11/05/2024 17:52
Dieldrin	ND	0.020	20	11/05/2024 17:52
Endosulfan I	ND	0.020	20	11/05/2024 17:52
Endosulfan II	ND	0.020	20	11/05/2024 17:52
Endosulfan sulfate	ND	0.020	20	11/05/2024 17:52
Endrin	ND	0.020	20	11/05/2024 17:52
Endrin aldehyde	ND	0.020	20	11/05/2024 17:52
Endrin ketone	ND	0.020	20	11/05/2024 17:52
Heptachlor	ND	0.020	20	11/05/2024 17:52
Heptachlor epoxide	ND	0.020	20	11/05/2024 17:52
Hexachlorobenzene	ND	0.20	20	11/05/2024 17:52
Hexachlorocyclopentadiene	ND	0.40	20	11/05/2024 17:52
Methoxychlor	ND	0.020	20	11/05/2024 17:52
Toxaphene	ND	4.0	20	11/05/2024 17:52

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	70	60-130	11/05/2024 17:52

Analyst(s): EEV

Analytical Comments: a2,h7

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L92
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K6	**2410L92-001A**	**Soil**	**10/28/2024**	**ICP-MS4 161SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.6**	0.50	1	10/31/2024 14:49
Lead	**5.0**	0.50	1	10/31/2024 14:49
Mercury	ND	0.050	1	10/31/2024 14:49

Surrogates	REC (%)	Limits	
Terbium	108	70-130	10/31/2024 14:49

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K7	**2410L92-002A**	**Soil**	**10/28/2024**	**ICP-MS4 162SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.9**	0.50	1	10/31/2024 14:53
Lead	**5.6**	0.50	1	10/31/2024 14:53
Mercury	ND	0.050	1	10/31/2024 14:53

Surrogates	REC (%)	Limits	
Terbium	109	70-130	10/31/2024 14:53

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K8	**2410L92-003A**	**Soil**	**10/28/2024**	**ICP-MS4 190SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.0**	0.50	1	10/31/2024 16:46
Lead	**5.3**	0.50	1	10/31/2024 16:46
Mercury	ND	0.050	1	10/31/2024 16:46

Surrogates	REC (%)	Limits	
Terbium	109	70-130	10/31/2024 16:46

Analyst(s): MIG

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L92
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K9	**2410L92-004A**	**Soil**	**10/28/2024**	**ICP-MS4 191SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.7**	0.50	1	10/31/2024 16:50
Lead	**4.7**	0.50	1	10/31/2024 16:50
Mercury	ND	0.050	1	10/31/2024 16:50

Surrogates	REC (%)	Limits	
Terbium	107	70-130	10/31/2024 16:50

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K10	**2410L92-005A**	**Soil**	**10/28/2024**	**ICP-MS4 192SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.8**	0.50	1	10/31/2024 16:54
Lead	**5.5**	0.50	1	10/31/2024 16:54
Mercury	ND	0.050	1	10/31/2024 16:54

Surrogates	REC (%)	Limits	
Terbium	104	70-130	10/31/2024 16:54

Analyst(s): MIG

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L92
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Aldrin	ND	0.00042	0.0010	-	-	-
a-BHC	ND	0.00045	0.0010	-	-	-
b-BHC	ND	0.00038	0.0010	-	-	-
d-BHC	ND	0.00036	0.0010	-	-	-
g-BHC	ND	0.00036	0.0010	-	-	-
Chlordane (Technical)	ND	0.010	0.025	-	-	-
a-Chlordane	ND	0.00035	0.0010	-	-	-
g-Chlordane	ND	0.00067	0.0010	-	-	-
p,p-DDD	ND	0.00057	0.0010	-	-	-
p,p-DDE	ND	0.00034	0.0010	-	-	-
p,p-DDT	ND	0.00043	0.0010	-	-	-
Dieldrin	ND	0.00041	0.0010	-	-	-
Endosulfan I	ND	0.00040	0.0010	-	-	-
Endosulfan II	ND	0.00051	0.0010	-	-	-
Endosulfan sulfate	ND	0.00040	0.0010	-	-	-
Endrin	ND	0.00045	0.0010	-	-	-
Endrin aldehyde	ND	0.00045	0.0010	-	-	-
Endrin ketone	ND	0.00042	0.0010	-	-	-
Heptachlor	ND	0.00067	0.0010	-	-	-
Heptachlor epoxide	ND	0.00041	0.0010	-	-	-
Hexachlorobenzene	ND	0.00038	0.010	-	-	-
Hexachlorocyclopentadiene	ND	0.00064	0.020	-	-	-
Methoxychlor	ND	0.00063	0.0010	-	-	-
Toxaphene	ND	0.064	0.20	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.056			0.05	112	70-130

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L92
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.044	0.044	0.050	87	88	70-130	0.266	20
a-BHC	0.046	0.046	0.050	93	92	70-130	0.191	20
b-BHC	0.043	0.043	0.050	87	86	70-130	0.430	20
d-BHC	0.040	0.040	0.050	81	80	70-130	1.74	20
g-BHC	0.047	0.047	0.050	94	94	70-130	0.390	20
a-Chlordane	0.046	0.045	0.050	91	90	70-130	1.11	20
g-Chlordane	0.041	0.041	0.050	83	82	70-130	1.09	20
p,p-DDD	0.058	0.056	0.050	116	111	70-130	3.90	20
p,p-DDE	0.055	0.054	0.050	110	108	70-130	2.34	20
p,p-DDT	0.048	0.044	0.050	95	88	70-130	7.82	20
Dieldrin	0.049	0.048	0.050	97	96	70-130	1.31	20
Endosulfan I	0.045	0.044	0.050	89	89	70-130	0.816	20
Endosulfan II	0.045	0.044	0.050	90	88	70-130	2.75	20
Endosulfan sulfate	0.046	0.044	0.050	92	88	70-130	4.02	20
Endrin	0.077	0.074	0.050	154,F2	149,F2	70-130	3.45	20
Endrin aldehyde	0.043	0.042	0.050	87	84	70-130	3.24	20
Endrin ketone	0.041	0.039	0.050	82	78	70-130	5.41	20
Heptachlor	0.049	0.048	0.050	98	96	70-130	1.81	20
Heptachlor epoxide	0.046	0.046	0.050	92	91	70-130	0.420	20
Hexachlorobenzene	0.043	0.043	0.050	86	85	70-130	0.450	20
Hexachlorocyclopentadiene	0.035	0.033	0.050	70	67	50-130	4.76	20
Methoxychlor	0.051	0.046	0.050	101	93	70-130	8.70	20
Surrogate Recovery								
Decachlorobiphenyl	0.055	0.049	0.050	110	99	70-130	11.2	20

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L92
Date Prepared:	10/30/2024	**BatchID:**	304938
Date Analyzed:	10/31/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304938

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Arsenic	ND	0.084	0.50	-	-	-
Lead	ND	0.089	0.50	-	-	-
Mercury	ND	0.039	0.050	-	-	-
Surrogate Recovery						
Terbium	540			500	108	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	55	57	50	111	113	75-125	2.08	20
Lead	51	53	50	102	106	75-125	3.71	20
Mercury	1.3	1.3	1.25	102	107	75-125	4.74	20
Surrogate Recovery								
Terbium	550	540	500	110	108	70-130	1.35	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2410L92 **ClientCode: ICES**

☐ WaterTrax ☐ CLIP ☐ EDF ☒ EQuIS ☒ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☒ Detection Summary ☐ Excel

Report to:
Peng Leong
ICES
P.O. Box 99288
Emeryville, CA 94662
(510) 882-2200 FAX: (510) 652-3555

Email: alphaenv222@gmail.com
cc/3rd Party:
PO:
Project: ICES 9315; Kautz Property

Bill to:
Accounts Payable
ICES
3300 Powell Street #109
Emeryville, CA 94608
alphaenv222@gmail.com; ices888@gm

Requested TAT: **5 days;**

Date Received: **10/29/2024**
Date Logged: **10/29/2024**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2410L92-001	K6	Soil	10/28/2024 00:00	☐	A	A	A	A								
2410L92-002	K7	Soil	10/28/2024 00:00	☐	A	A	A									
2410L92-003	K8	Soil	10/28/2024 00:00	☐	A	A	A									
2410L92-004	K9	Soil	10/28/2024 00:00	☐	A	A	A									
2410L92-005	K10	Soil	10/28/2024 00:00	☐	A	A	A									

Test Legend:

1	8081_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PREDF REPORT
5		6		7		8	
9		10		11		12	

Prepared by: Lilly Ortiz

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ICES
Client Contact: Peng Leong
Contact's Email: alphaenv222@gmail.com

Project: ICES 9315; Kautz Property
Comments

Work Order: 2410L92
QC Level: LEVEL 2
Date Logged: 10/29/2024

☐ WaterTrax ☐ CLIP ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

LabID	ClientSampID	Matrix	Test Name	Cont./ Comp.	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	K6	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
002A	K7	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
003A	K8	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
004A	K9	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
005A	K10	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

Cont./Comp. = Containers /Composites

General COC

MAI Work Order # 2410192

McCAMPBELL ANALYTICAL, INC.

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CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	✓	Quote #						
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #							
Delivery Format:	PDF	✓	GeoTracker EDF	✓	EDD		CLIP EDT (DW)		Detect Summary						

Report To:	PENG LEONG
Company:	ICES
Email:	ALPHAENV222@GMAIL.COM
Alt Email:	
Project Name:	KAUTZ PROPERTY
Project Location:	
Sampler Signature:	
Bill To:	SAME
Tele:	
Project #:	ICES 9315
PO #	

SAMPLE ID / Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	Analysis Requested: EPA 8081 (CLPEST)	Analysis Requested: ARSENIC, LEAD MERCURY
K6	10-28-24		1	Soil		✓	✓
K7			1			✓	✓
K8			1			✓	✓
K9			1			✓	✓
K10			1			✓	✓

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
	10/29/24	1645		10/29/24	1044
				10/29/24	1645

Comments / Instructions

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 1.6 °C Initials EO

1641 10/29/24

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Sample Receipt Checklist

Client Name: ICES
Project: ICES 9315; Kautz Property

WorkOrder №: 2410L92 Matrix: Soil
Carrier: Antonio Mason (MAI Courier)

Date and Time Received: 10/29/2024 16:45
Date Logged: 10/29/2024
Received by: Lilly Ortiz
Logged by: Lilly Ortiz

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Custody seals intact on sample bottles?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 1.6°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2)?	Yes	☐	No	☐	NA	☑

UCMR Samples:

pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2410L93

Report Created for: ICES

P.O. Box 99288
Emeryville, CA 94662

Project Contact: Peng Leong
Project P.O.:
Project: ICES 9315; Kautz Property

Project Location:
Project Received: 10/29/2024

Analytical Report reviewed & approved for release on 11/05/2024 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.

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CA ELAP 1644 ♦ NELAP 4033 ORELAP

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L93

Project: ICES 9315; Kautz Property

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CCV	Continuing Calibration Verification.
CCV REC (%)	% recovery of Continuing Calibration Verification.
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LCS2	Second LCS for the batch. Spike level is lower than that for the first LCS; applicable to method 1633.
LQL	Lowest Quantitation Level
MB	Method Blank
MB IS/SS % Rec	% Recovery of Internal Standard or Surrogate in Method Blank, if applicable
MB SS % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit [1]
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit [2]
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SNR	Surrogate is diluted out of the calibration range

[1] MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016. Values are based upon our default extraction volume/amount and are subject to change.

[2] RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.) Values are based upon our default extraction volume/amount and are subject to change.

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L93

Project: ICES 9315; Kautz Property

SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TNTC	“Too Numerous to Count;” greater than 250 colonies observed on the plate.
TZA	TimeZone Net Adjustment for sample collected outside of MAI's Coordinated Universal Time (UTC). (Adjustment for Daylight Saving is not accounted.)
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L93
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K11	2410L93-001A	Soil	10/28/2024	GC22 11042408.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 10:27
a-BHC	ND	0.0010	1	11/04/2024 10:27
b-BHC	ND	0.0010	1	11/04/2024 10:27
d-BHC	ND	0.0010	1	11/04/2024 10:27
g-BHC	ND	0.0010	1	11/04/2024 10:27
Chlordane (Technical)	ND	0.025	1	11/04/2024 10:27
a-Chlordane	ND	0.0010	1	11/04/2024 10:27
g-Chlordane	ND	0.0010	1	11/04/2024 10:27
p,p-DDD	ND	0.0010	1	11/04/2024 10:27
p,p-DDE	ND	0.0010	1	11/04/2024 10:27
p,p-DDT	ND	0.0010	1	11/04/2024 10:27
Dieldrin	ND	0.0010	1	11/04/2024 10:27
Endosulfan I	ND	0.0010	1	11/04/2024 10:27
Endosulfan II	ND	0.0010	1	11/04/2024 10:27
Endosulfan sulfate	ND	0.0010	1	11/04/2024 10:27
Endrin	ND	0.0010	1	11/04/2024 10:27
Endrin aldehyde	ND	0.0010	1	11/04/2024 10:27
Endrin ketone	ND	0.0010	1	11/04/2024 10:27
Heptachlor	ND	0.0010	1	11/04/2024 10:27
Heptachlor epoxide	ND	0.0010	1	11/04/2024 10:27
Hexachlorobenzene	ND	0.010	1	11/04/2024 10:27
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 10:27
Methoxychlor	ND	0.0010	1	11/04/2024 10:27
Toxaphene	ND	0.20	1	11/04/2024 10:27

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	114	60-130	11/04/2024 10:27

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L93
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K12	2410L93-002A	Soil	10/28/2024	GC20 11012450.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/02/2024 02:46
a-BHC	ND	0.0010	1	11/02/2024 02:46
b-BHC	ND	0.0010	1	11/02/2024 02:46
d-BHC	ND	0.0010	1	11/02/2024 02:46
g-BHC	ND	0.0010	1	11/02/2024 02:46
Chlordane (Technical)	ND	0.025	1	11/02/2024 02:46
a-Chlordane	ND	0.0010	1	11/02/2024 02:46
g-Chlordane	ND	0.0010	1	11/02/2024 02:46
p,p-DDD	ND	0.0010	1	11/02/2024 02:46
p,p-DDE	ND	0.0010	1	11/02/2024 02:46
p,p-DDT	ND	0.0010	1	11/02/2024 02:46
Dieldrin	ND	0.0010	1	11/02/2024 02:46
Endosulfan I	ND	0.0010	1	11/02/2024 02:46
Endosulfan II	ND	0.0010	1	11/02/2024 02:46
Endosulfan sulfate	ND	0.0010	1	11/02/2024 02:46
Endrin	ND	0.0010	1	11/02/2024 02:46
Endrin aldehyde	ND	0.0010	1	11/02/2024 02:46
Endrin ketone	ND	0.0010	1	11/02/2024 02:46
Heptachlor	ND	0.0010	1	11/02/2024 02:46
Heptachlor epoxide	ND	0.0010	1	11/02/2024 02:46
Hexachlorobenzene	ND	0.010	1	11/02/2024 02:46
Hexachlorocyclopentadiene	ND	0.020	1	11/02/2024 02:46
Methoxychlor	ND	0.0010	1	11/02/2024 02:46
Toxaphene	ND	0.20	1	11/02/2024 02:46

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	102	60-130	11/02/2024 02:46

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L93
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K13	2410L93-003A	Soil	10/28/2024	GC22 11042410.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 11:01
a-BHC	ND	0.0010	1	11/04/2024 11:01
b-BHC	ND	0.0010	1	11/04/2024 11:01
d-BHC	ND	0.0010	1	11/04/2024 11:01
g-BHC	ND	0.0010	1	11/04/2024 11:01
Chlordane (Technical)	ND	0.025	1	11/04/2024 11:01
a-Chlordane	ND	0.0010	1	11/04/2024 11:01
g-Chlordane	ND	0.0010	1	11/04/2024 11:01
p,p-DDD	ND	0.0010	1	11/04/2024 11:01
p,p-DDE	ND	0.0010	1	11/04/2024 11:01
p,p-DDT	ND	0.0010	1	11/04/2024 11:01
Dieldrin	ND	0.0010	1	11/04/2024 11:01
Endosulfan I	ND	0.0010	1	11/04/2024 11:01
Endosulfan II	ND	0.0010	1	11/04/2024 11:01
Endosulfan sulfate	ND	0.0010	1	11/04/2024 11:01
Endrin	ND	0.0010	1	11/04/2024 11:01
Endrin aldehyde	ND	0.0010	1	11/04/2024 11:01
Endrin ketone	ND	0.0010	1	11/04/2024 11:01
Heptachlor	ND	0.0010	1	11/04/2024 11:01
Heptachlor epoxide	ND	0.0010	1	11/04/2024 11:01
Hexachlorobenzene	ND	0.010	1	11/04/2024 11:01
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 11:01
Methoxychlor	ND	0.0010	1	11/04/2024 11:01
Toxaphene	ND	0.20	1	11/04/2024 11:01

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	98	60-130	11/04/2024 11:01

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L93
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K14	2410L93-004A	Soil	10/28/2024	GC22 11042417.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 12:58
a-BHC	ND	0.0010	1	11/04/2024 12:58
b-BHC	ND	0.0010	1	11/04/2024 12:58
d-BHC	ND	0.0010	1	11/04/2024 12:58
g-BHC	ND	0.0010	1	11/04/2024 12:58
Chlordane (Technical)	ND	0.025	1	11/04/2024 12:58
a-Chlordane	ND	0.0010	1	11/04/2024 12:58
g-Chlordane	ND	0.0010	1	11/04/2024 12:58
p,p-DDD	ND	0.0010	1	11/04/2024 12:58
p,p-DDE	ND	0.0010	1	11/04/2024 12:58
p,p-DDT	ND	0.0010	1	11/04/2024 12:58
Dieldrin	ND	0.0010	1	11/04/2024 12:58
Endosulfan I	ND	0.0010	1	11/04/2024 12:58
Endosulfan II	ND	0.0010	1	11/04/2024 12:58
Endosulfan sulfate	ND	0.0010	1	11/04/2024 12:58
Endrin	ND	0.0010	1	11/04/2024 12:58
Endrin aldehyde	ND	0.0010	1	11/04/2024 12:58
Endrin ketone	ND	0.0010	1	11/04/2024 12:58
Heptachlor	ND	0.0010	1	11/04/2024 12:58
Heptachlor epoxide	ND	0.0010	1	11/04/2024 12:58
Hexachlorobenzene	ND	0.010	1	11/04/2024 12:58
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 12:58
Methoxychlor	ND	0.0010	1	11/04/2024 12:58
Toxaphene	ND	0.20	1	11/04/2024 12:58

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	99	60-130	11/04/2024 12:58

Analyst(s): CK

(Cont.)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ICES	**WorkOrder:**	2410L93
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K15	2410L93-005A	Soil	10/28/2024	GC22 11042414.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 12:08
a-BHC	ND	0.0010	1	11/04/2024 12:08
b-BHC	ND	0.0010	1	11/04/2024 12:08
d-BHC	ND	0.0010	1	11/04/2024 12:08
g-BHC	ND	0.0010	1	11/04/2024 12:08
Chlordane (Technical)	ND	0.025	1	11/04/2024 12:08
a-Chlordane	ND	0.0010	1	11/04/2024 12:08
g-Chlordane	ND	0.0010	1	11/04/2024 12:08
p,p-DDD	ND	0.0010	1	11/04/2024 12:08
p,p-DDE	ND	0.0010	1	11/04/2024 12:08
p,p-DDT	ND	0.0010	1	11/04/2024 12:08
Dieldrin	ND	0.0010	1	11/04/2024 12:08
Endosulfan I	ND	0.0010	1	11/04/2024 12:08
Endosulfan II	ND	0.0010	1	11/04/2024 12:08
Endosulfan sulfate	ND	0.0010	1	11/04/2024 12:08
Endrin	ND	0.0010	1	11/04/2024 12:08
Endrin aldehyde	ND	0.0010	1	11/04/2024 12:08
Endrin ketone	ND	0.0010	1	11/04/2024 12:08
Heptachlor	ND	0.0010	1	11/04/2024 12:08
Heptachlor epoxide	ND	0.0010	1	11/04/2024 12:08
Hexachlorobenzene	ND	0.010	1	11/04/2024 12:08
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 12:08
Methoxychlor	ND	0.0010	1	11/04/2024 12:08
Toxaphene	ND	0.20	1	11/04/2024 12:08

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	104	60-130	11/04/2024 12:08

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L93
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K11	**2410L93-001A**	**Soil**	**10/28/2024**	**ICP-MS4 193SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.1**	0.50	1	10/31/2024 16:58
Lead	**4.7**	0.50	1	10/31/2024 16:58
Mercury	ND	0.050	1	10/31/2024 16:58

Surrogates	REC (%)	Limits	
Terbium	108	70-130	10/31/2024 16:58

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K12	**2410L93-002A**	**Soil**	**10/28/2024**	**ICP-MS4 196SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.4**	0.50	1	10/31/2024 17:10
Lead	**5.7**	0.50	1	10/31/2024 17:10
Mercury	ND	0.050	1	10/31/2024 17:10

Surrogates	REC (%)	Limits	
Terbium	109	70-130	10/31/2024 17:10

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K13	**2410L93-003A**	**Soil**	**10/28/2024**	**ICP-MS4 197SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.8**	0.50	1	10/31/2024 17:14
Lead	**7.1**	0.50	1	10/31/2024 17:14
Mercury	ND	0.050	1	10/31/2024 17:14

Surrogates	REC (%)	Limits	
Terbium	103	70-130	10/31/2024 17:14

Analyst(s): MIG

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L93
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K14	**2410L93-004A**	**Soil**	**10/28/2024**	**ICP-MS4 198SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.9**	0.50	1	10/31/2024 17:18
Lead	**4.4**	0.50	1	10/31/2024 17:18
Mercury	ND	0.050	1	10/31/2024 17:18

Surrogates	REC (%)	Limits	
Terbium	109	70-130	10/31/2024 17:18

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K15	**2410L93-005A**	**Soil**	**10/28/2024**	**ICP-MS4 199SMPL.d**	**304938**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.0**	0.50	1	10/31/2024 17:22
Lead	**4.6**	0.50	1	10/31/2024 17:22
Mercury	ND	0.050	1	10/31/2024 17:22

Surrogates	REC (%)	Limits	
Terbium	110	70-130	10/31/2024 17:22

Analyst(s): MIG

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L93
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Aldrin	ND	0.00042	0.0010	-	-	-
a-BHC	ND	0.00045	0.0010	-	-	-
b-BHC	ND	0.00038	0.0010	-	-	-
d-BHC	ND	0.00036	0.0010	-	-	-
g-BHC	ND	0.00036	0.0010	-	-	-
Chlordane (Technical)	ND	0.010	0.025	-	-	-
a-Chlordane	ND	0.00035	0.0010	-	-	-
g-Chlordane	ND	0.00067	0.0010	-	-	-
p,p-DDD	ND	0.00057	0.0010	-	-	-
p,p-DDE	ND	0.00034	0.0010	-	-	-
p,p-DDT	ND	0.00043	0.0010	-	-	-
Dieldrin	ND	0.00041	0.0010	-	-	-
Endosulfan I	ND	0.00040	0.0010	-	-	-
Endosulfan II	ND	0.00051	0.0010	-	-	-
Endosulfan sulfate	ND	0.00040	0.0010	-	-	-
Endrin	ND	0.00045	0.0010	-	-	-
Endrin aldehyde	ND	0.00045	0.0010	-	-	-
Endrin ketone	ND	0.00042	0.0010	-	-	-
Heptachlor	ND	0.00067	0.0010	-	-	-
Heptachlor epoxide	ND	0.00041	0.0010	-	-	-
Hexachlorobenzene	ND	0.00038	0.010	-	-	-
Hexachlorocyclopentadiene	ND	0.00064	0.020	-	-	-
Methoxychlor	ND	0.00063	0.0010	-	-	-
Toxaphene	ND	0.064	0.20	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.056			0.05	112	70-130

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L93
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.044	0.044	0.050	87	88	70-130	0.266	20
a-BHC	0.046	0.046	0.050	93	92	70-130	0.191	20
b-BHC	0.043	0.043	0.050	87	86	70-130	0.430	20
d-BHC	0.040	0.040	0.050	81	80	70-130	1.74	20
g-BHC	0.047	0.047	0.050	94	94	70-130	0.390	20
a-Chlordane	0.046	0.045	0.050	91	90	70-130	1.11	20
g-Chlordane	0.041	0.041	0.050	83	82	70-130	1.09	20
p,p-DDD	0.058	0.056	0.050	116	111	70-130	3.90	20
p,p-DDE	0.055	0.054	0.050	110	108	70-130	2.34	20
p,p-DDT	0.048	0.044	0.050	95	88	70-130	7.82	20
Dieldrin	0.049	0.048	0.050	97	96	70-130	1.31	20
Endosulfan I	0.045	0.044	0.050	89	89	70-130	0.816	20
Endosulfan II	0.045	0.044	0.050	90	88	70-130	2.75	20
Endosulfan sulfate	0.046	0.044	0.050	92	88	70-130	4.02	20
Endrin	0.077	0.074	0.050	154,F2	149,F2	70-130	3.45	20
Endrin aldehyde	0.043	0.042	0.050	87	84	70-130	3.24	20
Endrin ketone	0.041	0.039	0.050	82	78	70-130	5.41	20
Heptachlor	0.049	0.048	0.050	98	96	70-130	1.81	20
Heptachlor epoxide	0.046	0.046	0.050	92	91	70-130	0.420	20
Hexachlorobenzene	0.043	0.043	0.050	86	85	70-130	0.450	20
Hexachlorocyclopentadiene	0.035	0.033	0.050	70	67	50-130	4.76	20
Methoxychlor	0.051	0.046	0.050	101	93	70-130	8.70	20
Surrogate Recovery								
Decachlorobiphenyl	0.055	0.049	0.050	110	99	70-130	11.2	20

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L93
Date Prepared:	10/30/2024	**BatchID:**	304938
Date Analyzed:	10/31/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304938

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Arsenic	ND	0.084	0.50	-	-	-
Lead	ND	0.089	0.50	-	-	-
Mercury	ND	0.039	0.050	-	-	-
Surrogate Recovery						
Terbium	540			500	108	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	55	57	50	111	113	75-125	2.08	20
Lead	51	53	50	102	106	75-125	3.71	20
Mercury	1.3	1.3	1.25	102	107	75-125	4.74	20
Surrogate Recovery								
Terbium	550	540	500	110	108	70-130	1.35	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2410L93 **ClientCode: ICES**

☐ WaterTrax ☐ CLIP ☑ EDF ☐ EQuIS ☐ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Excel

Report to:
Peng Leong
ICES
P.O. Box 99288
Emeryville, CA 94662
(510) 882-2200 FAX: (510) 652-3555

Email: alphaenv222@gmail.com
cc/3rd Party:
PO:
Project: ICES 9315; Kautz Property

Bill to:
Accounts Payable
ICES
3300 Powell Street #109
Emeryville, CA 94608
alphaenv222@gmail.com; ices888@gm

Requested TAT: **5 days;**

Date Received: **10/29/2024**
Date Logged: **10/29/2024**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2410L93-001	K11	Soil	10/28/2024 00:00	☐	A	A	A	A								
2410L93-002	K12	Soil	10/28/2024 00:00	☐	A	A	A									
2410L93-003	K13	Soil	10/28/2024 00:00	☐	A	A	A									
2410L93-004	K14	Soil	10/28/2024 00:00	☐	A	A	A									
2410L93-005	K15	Soil	10/28/2024 00:00	☐	A	A	A									

Test Legend:

1	8081_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PREDF REPORT
5		6		7		8	
9		10		11		12	

Prepared by: Lilly Ortiz

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ICES
Client Contact: Peng Leong
Contact's Email: alphaenv222@gmail.com

Project: ICES 9315; Kautz Property
Comments

Work Order: 2410L93
QC Level: LEVEL 2
Date Logged: 10/29/2024

☐ WaterTrax ☐ CLIP ☑ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

LabID	ClientSampID	Matrix	Test Name	Cont./ Comp.	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	K11	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
002A	K12	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
003A	K13	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
004A	K14	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
005A	K15	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

Cont./Comp. = Containers /Composites

General COC

MAI Work Order # 24102493

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1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	✓	Quote #						
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #							
Delivery Format:	PDF	✓	GeoTracker EDF	✓	EDD		CLIP EDT (DW)		Detect Summary						

Report To:	PENG LEONG	Bill To:	SAME																			
Company:	ICES																					
Email:	ALPHAENV222@GMAIL.COM																					
Alt Email:		Tele:																				
Project Name:	KAUTZ PROPERTY	Project #:	ICES 9315																			
Project Location:		PO #																				
Sampler Signature:																						

Analysis Requested

SAMPLE ID / Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	EPA 8081 (CLPEST)	ARSENIC, LEAD MERCURY															
K11	10-28-24		1	SOIL		✓	✓															
K12			1			✓	✓															
K13			1			✓	✓															
K14			1			✓	✓															
K15	↓		1	↓		✓	✓															

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
	10/29/24	1645		10/29/24	1040
				10/29/24	1645

Comments / Instructions

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 1.6 °C Initials LO

1641

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Sample Receipt Checklist

Client Name: ICES
Project: ICES 9315; Kautz Property

WorkOrder №: 2410L93 Matrix: Soil
Carrier: Antonio Mason (MAI Courier)

Date and Time Received: 10/29/2024 16:45
Date Logged: 10/29/2024
Received by: Lilly Ortiz
Logged by: Lilly Ortiz

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Custody seals intact on sample bottles?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 1.6°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2)?	Yes	☐	No	☐	NA	☑

UCMR Samples:

pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2410L94

Report Created for: ICES

P.O. Box 99288
Emeryville, CA 94662

Project Contact: Peng Leong
Project P.O.:
Project: ICES 9315; Kautz Property

Project Location:
Project Received: 10/29/2024

Analytical Report reviewed & approved for release on 11/05/2024 by:

Yen Cao
Project Manager

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L94

Project: ICES 9315; Kautz Property

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CCV	Continuing Calibration Verification.
CCV REC (%)	% recovery of Continuing Calibration Verification.
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LCS2	Second LCS for the batch. Spike level is lower than that for the first LCS; applicable to method 1633.
LQL	Lowest Quantitation Level
MB	Method Blank
MB IS/SS % Rec	% Recovery of Internal Standard or Surrogate in Method Blank, if applicable
MB SS % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit [1]
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit [2]
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SNR	Surrogate is diluted out of the calibration range

[1] MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016. Values are based upon our default extraction volume/amount and are subject to change.

[2] RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.) Values are based upon our default extraction volume/amount and are subject to change.

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L94

Project: ICES 9315; Kautz Property

SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TNTC	“Too Numerous to Count;” greater than 250 colonies observed on the plate.
TZA	TimeZone Net Adjustment for sample collected outside of MAI's Coordinated Universal Time (UTC). (Adjustment for Daylight Saving is not accounted.)
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria.
F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L94
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K16	2410L94-001A	Soil	10/28/2024	GC20 11012446.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/02/2024 01:46
a-BHC	ND	0.0010	1	11/02/2024 01:46
b-BHC	ND	0.0010	1	11/02/2024 01:46
d-BHC	ND	0.0010	1	11/02/2024 01:46
g-BHC	ND	0.0010	1	11/02/2024 01:46
Chlordane (Technical)	ND	0.025	1	11/02/2024 01:46
a-Chlordane	ND	0.0010	1	11/02/2024 01:46
g-Chlordane	ND	0.0010	1	11/02/2024 01:46
p,p-DDD	ND	0.0010	1	11/02/2024 01:46
p,p-DDE	ND	0.0010	1	11/02/2024 01:46
p,p-DDT	ND	0.0010	1	11/02/2024 01:46
Dieldrin	ND	0.0010	1	11/02/2024 01:46
Endosulfan I	ND	0.0010	1	11/02/2024 01:46
Endosulfan II	ND	0.0010	1	11/02/2024 01:46
Endosulfan sulfate	ND	0.0010	1	11/02/2024 01:46
Endrin	ND	0.0010	1	11/02/2024 01:46
Endrin aldehyde	ND	0.0010	1	11/02/2024 01:46
Endrin ketone	ND	0.0010	1	11/02/2024 01:46
Heptachlor	ND	0.0010	1	11/02/2024 01:46
Heptachlor epoxide	ND	0.0010	1	11/02/2024 01:46
Hexachlorobenzene	ND	0.010	1	11/02/2024 01:46
Hexachlorocyclopentadiene	ND	0.020	1	11/02/2024 01:46
Methoxychlor	ND	0.0010	1	11/02/2024 01:46
Toxaphene	ND	0.20	1	11/02/2024 01:46

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	108	60-130	11/02/2024 01:46

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L94
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K17	2410L94-002A	Soil	10/28/2024	GC22 11042425.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 15:11
a-BHC	ND	0.0010	1	11/04/2024 15:11
b-BHC	ND	0.0010	1	11/04/2024 15:11
d-BHC	ND	0.0010	1	11/04/2024 15:11
g-BHC	ND	0.0010	1	11/04/2024 15:11
Chlordane (Technical)	ND	0.025	1	11/04/2024 15:11
a-Chlordane	ND	0.0010	1	11/04/2024 15:11
g-Chlordane	ND	0.0010	1	11/04/2024 15:11
p,p-DDD	ND	0.0010	1	11/04/2024 15:11
p,p-DDE	ND	0.0010	1	11/04/2024 15:11
p,p-DDT	ND	0.0010	1	11/04/2024 15:11
Dieldrin	ND	0.0010	1	11/04/2024 15:11
Endosulfan I	ND	0.0010	1	11/04/2024 15:11
Endosulfan II	ND	0.0010	1	11/04/2024 15:11
Endosulfan sulfate	ND	0.0010	1	11/04/2024 15:11
Endrin	ND	0.0010	1	11/04/2024 15:11
Endrin aldehyde	ND	0.0010	1	11/04/2024 15:11
Endrin ketone	ND	0.0010	1	11/04/2024 15:11
Heptachlor	ND	0.0010	1	11/04/2024 15:11
Heptachlor epoxide	ND	0.0010	1	11/04/2024 15:11
Hexachlorobenzene	ND	0.010	1	11/04/2024 15:11
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 15:11
Methoxychlor	ND	0.0010	1	11/04/2024 15:11
Toxaphene	ND	0.20	1	11/04/2024 15:11

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	98	60-130	11/04/2024 15:11

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L94
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K18	2410L94-003A	Soil	10/28/2024	GC20 11012448.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/02/2024 02:16
a-BHC	ND	0.0010	1	11/02/2024 02:16
b-BHC	ND	0.0010	1	11/02/2024 02:16
d-BHC	ND	0.0010	1	11/02/2024 02:16
g-BHC	ND	0.0010	1	11/02/2024 02:16
Chlordane (Technical)	ND	0.025	1	11/02/2024 02:16
a-Chlordane	ND	0.0010	1	11/02/2024 02:16
g-Chlordane	ND	0.0010	1	11/02/2024 02:16
p,p-DDD	ND	0.0010	1	11/02/2024 02:16
p,p-DDE	ND	0.0010	1	11/02/2024 02:16
p,p-DDT	ND	0.0010	1	11/02/2024 02:16
Dieldrin	ND	0.0010	1	11/02/2024 02:16
Endosulfan I	ND	0.0010	1	11/02/2024 02:16
Endosulfan II	ND	0.0010	1	11/02/2024 02:16
Endosulfan sulfate	ND	0.0010	1	11/02/2024 02:16
Endrin	ND	0.0010	1	11/02/2024 02:16
Endrin aldehyde	ND	0.0010	1	11/02/2024 02:16
Endrin ketone	ND	0.0010	1	11/02/2024 02:16
Heptachlor	ND	0.0010	1	11/02/2024 02:16
Heptachlor epoxide	ND	0.0010	1	11/02/2024 02:16
Hexachlorobenzene	ND	0.010	1	11/02/2024 02:16
Hexachlorocyclopentadiene	ND	0.020	1	11/02/2024 02:16
Methoxychlor	ND	0.0010	1	11/02/2024 02:16
Toxaphene	ND	0.20	1	11/02/2024 02:16

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	108	60-130	11/02/2024 02:16

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L94
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K19	2410L94-004A	Soil	10/28/2024	GC22 11042426.D	304930

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 15:28
a-BHC	ND	0.0010	1	11/04/2024 15:28
b-BHC	ND	0.0010	1	11/04/2024 15:28
d-BHC	ND	0.0010	1	11/04/2024 15:28
g-BHC	ND	0.0010	1	11/04/2024 15:28
Chlordane (Technical)	ND	0.025	1	11/04/2024 15:28
a-Chlordane	ND	0.0010	1	11/04/2024 15:28
g-Chlordane	ND	0.0010	1	11/04/2024 15:28
p,p-DDD	ND	0.0010	1	11/04/2024 15:28
p,p-DDE	ND	0.0010	1	11/04/2024 15:28
p,p-DDT	ND	0.0010	1	11/04/2024 15:28
Dieldrin	ND	0.0010	1	11/04/2024 15:28
Endosulfan I	ND	0.0010	1	11/04/2024 15:28
Endosulfan II	ND	0.0010	1	11/04/2024 15:28
Endosulfan sulfate	ND	0.0010	1	11/04/2024 15:28
Endrin	ND	0.0010	1	11/04/2024 15:28
Endrin aldehyde	ND	0.0010	1	11/04/2024 15:28
Endrin ketone	ND	0.0010	1	11/04/2024 15:28
Heptachlor	ND	0.0010	1	11/04/2024 15:28
Heptachlor epoxide	ND	0.0010	1	11/04/2024 15:28
Hexachlorobenzene	ND	0.010	1	11/04/2024 15:28
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 15:28
Methoxychlor	ND	0.0010	1	11/04/2024 15:28
Toxaphene	ND	0.20	1	11/04/2024 15:28

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	103	60-130	11/04/2024 15:28

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L94
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K20	2410L94-005A	Soil	10/28/2024	GC20 11012433.D	304956

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/01/2024 22:31
a-BHC	ND	0.0010	1	11/01/2024 22:31
b-BHC	ND	0.0010	1	11/01/2024 22:31
d-BHC	ND	0.0010	1	11/01/2024 22:31
g-BHC	ND	0.0010	1	11/01/2024 22:31
Chlordane (Technical)	ND	0.025	1	11/01/2024 22:31
a-Chlordane	ND	0.0010	1	11/01/2024 22:31
g-Chlordane	ND	0.0010	1	11/01/2024 22:31
p,p-DDD	ND	0.0010	1	11/01/2024 22:31
p,p-DDE	ND	0.0010	1	11/01/2024 22:31
p,p-DDT	ND	0.0010	1	11/01/2024 22:31
Dieldrin	ND	0.0010	1	11/01/2024 22:31
Endosulfan I	ND	0.0010	1	11/01/2024 22:31
Endosulfan II	ND	0.0010	1	11/01/2024 22:31
Endosulfan sulfate	ND	0.0010	1	11/01/2024 22:31
Endrin	ND	0.0010	1	11/01/2024 22:31
Endrin aldehyde	ND	0.0010	1	11/01/2024 22:31
Endrin ketone	ND	0.0010	1	11/01/2024 22:31
Heptachlor	ND	0.0010	1	11/01/2024 22:31
Heptachlor epoxide	ND	0.0010	1	11/01/2024 22:31
Hexachlorobenzene	ND	0.010	1	11/01/2024 22:31
Hexachlorocyclopentadiene	ND	0.020	1	11/01/2024 22:31
Methoxychlor	ND	0.0010	1	11/01/2024 22:31
Toxaphene	ND	0.20	1	11/01/2024 22:31

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	109	60-130	11/01/2024 22:31

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L94
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K16	2410L94-001A	Soil	10/28/2024	ICP-MS5 133SMPL.d	304938

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.3**	0.50	1	10/31/2024 12:05
Lead	**5.2**	0.50	1	10/31/2024 12:05
Mercury	ND	0.050	1	10/31/2024 12:05

Surrogates	REC (%)	Limits	
Terbium	107	70-130	10/31/2024 12:05

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K17	2410L94-002A	Soil	10/28/2024	ICP-MS5 114SMPL.d	304957

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.9**	0.50	1	10/31/2024 10:55
Lead	**4.7**	0.50	1	10/31/2024 10:55
Mercury	ND	0.050	1	10/31/2024 10:55

Surrogates	REC (%)	Limits	
Terbium	110	70-130	10/31/2024 10:55

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K18	2410L94-003A	Soil	10/28/2024	ICP-MS5 139SMPL.d	304957

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.8**	0.50	1	10/31/2024 12:27
Lead	**4.6**	0.50	1	10/31/2024 12:27
Mercury	ND	0.050	1	10/31/2024 12:27

Surrogates	REC (%)	Limits	
Terbium	106	70-130	10/31/2024 12:27

Analyst(s): AL

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L94
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K19	**2410L94-004A**	**Soil**	**10/28/2024**	**ICP-MS5 140SMPL.d**	**304957**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.8**	0.50	1	10/31/2024 12:31
Lead	**4.1**	0.50	1	10/31/2024 12:31
Mercury	ND	0.050	1	10/31/2024 12:31

Surrogates	REC (%)	Limits	
Terbium	108	70-130	10/31/2024 12:31

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K20	**2410L94-005A**	**Soil**	**10/28/2024**	**ICP-MS5 141SMPL.d**	**304957**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.1**	0.50	1	10/31/2024 12:34
Lead	**5.0**	0.50	1	10/31/2024 12:34
Mercury	ND	0.050	1	10/31/2024 12:34

Surrogates	REC (%)	Limits	
Terbium	107	70-130	10/31/2024 12:34

Analyst(s): AL

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L94
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Aldrin	ND	0.00042	0.0010	-	-	-
a-BHC	ND	0.00045	0.0010	-	-	-
b-BHC	ND	0.00038	0.0010	-	-	-
d-BHC	ND	0.00036	0.0010	-	-	-
g-BHC	ND	0.00036	0.0010	-	-	-
Chlordane (Technical)	ND	0.010	0.025	-	-	-
a-Chlordane	ND	0.00035	0.0010	-	-	-
g-Chlordane	ND	0.00067	0.0010	-	-	-
p,p-DDD	ND	0.00057	0.0010	-	-	-
p,p-DDE	ND	0.00034	0.0010	-	-	-
p,p-DDT	ND	0.00043	0.0010	-	-	-
Dieldrin	ND	0.00041	0.0010	-	-	-
Endosulfan I	ND	0.00040	0.0010	-	-	-
Endosulfan II	ND	0.00051	0.0010	-	-	-
Endosulfan sulfate	ND	0.00040	0.0010	-	-	-
Endrin	ND	0.00045	0.0010	-	-	-
Endrin aldehyde	ND	0.00045	0.0010	-	-	-
Endrin ketone	ND	0.00042	0.0010	-	-	-
Heptachlor	ND	0.00067	0.0010	-	-	-
Heptachlor epoxide	ND	0.00041	0.0010	-	-	-
Hexachlorobenzene	ND	0.00038	0.010	-	-	-
Hexachlorocyclopentadiene	ND	0.00064	0.020	-	-	-
Methoxychlor	ND	0.00063	0.0010	-	-	-
Toxaphene	ND	0.064	0.20	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.056			0.05	112	70-130

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L94
Date Prepared:	10/29/2024	**BatchID:**	304930
Date Analyzed:	11/04/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304930

QC Summary Report for SW8081B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.044	0.044	0.050	87	88	70-130	0.266	20
a-BHC	0.046	0.046	0.050	93	92	70-130	0.191	20
b-BHC	0.043	0.043	0.050	87	86	70-130	0.430	20
d-BHC	0.040	0.040	0.050	81	80	70-130	1.74	20
g-BHC	0.047	0.047	0.050	94	94	70-130	0.390	20
a-Chlordane	0.046	0.045	0.050	91	90	70-130	1.11	20
g-Chlordane	0.041	0.041	0.050	83	82	70-130	1.09	20
p,p-DDD	0.058	0.056	0.050	116	111	70-130	3.90	20
p,p-DDE	0.055	0.054	0.050	110	108	70-130	2.34	20
p,p-DDT	0.048	0.044	0.050	95	88	70-130	7.82	20
Dieldrin	0.049	0.048	0.050	97	96	70-130	1.31	20
Endosulfan I	0.045	0.044	0.050	89	89	70-130	0.816	20
Endosulfan II	0.045	0.044	0.050	90	88	70-130	2.75	20
Endosulfan sulfate	0.046	0.044	0.050	92	88	70-130	4.02	20
Endrin	0.077	0.074	0.050	154,F2	149,F2	70-130	3.45	20
Endrin aldehyde	0.043	0.042	0.050	87	84	70-130	3.24	20
Endrin ketone	0.041	0.039	0.050	82	78	70-130	5.41	20
Heptachlor	0.049	0.048	0.050	98	96	70-130	1.81	20
Heptachlor epoxide	0.046	0.046	0.050	92	91	70-130	0.420	20
Hexachlorobenzene	0.043	0.043	0.050	86	85	70-130	0.450	20
Hexachlorocyclopentadiene	0.035	0.033	0.050	70	67	50-130	4.76	20
Methoxychlor	0.051	0.046	0.050	101	93	70-130	8.70	20
Surrogate Recovery								
Decachlorobiphenyl	0.055	0.049	0.050	110	99	70-130	11.2	20

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L94
Date Prepared:	10/29/2024	**BatchID:**	304956
Date Analyzed:	11/01/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304956 2410L94-005AMS/MSD

QC Summary Report for SW8081B

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Aldrin	ND	0.00042	0.0010	-	-	-
a-BHC	ND	0.00045	0.0010	-	-	-
b-BHC	ND	0.00038	0.0010	-	-	-
d-BHC	ND	0.00036	0.0010	-	-	-
g-BHC	ND	0.00036	0.0010	-	-	-
Chlordane (Technical)	ND	0.010	0.025	-	-	-
a-Chlordane	ND	0.00035	0.0010	-	-	-
g-Chlordane	ND	0.00067	0.0010	-	-	-
p,p-DDD	ND	0.00057	0.0010	-	-	-
p,p-DDE	ND	0.00034	0.0010	-	-	-
p,p-DDT	ND	0.00043	0.0010	-	-	-
Dieldrin	ND	0.00041	0.0010	-	-	-
Endosulfan I	ND	0.00040	0.0010	-	-	-
Endosulfan II	ND	0.00051	0.0010	-	-	-
Endosulfan sulfate	ND	0.00040	0.0010	-	-	-
Endrin	ND	0.00045	0.0010	-	-	-
Endrin aldehyde	ND	0.00045	0.0010	-	-	-
Endrin ketone	ND	0.00042	0.0010	-	-	-
Heptachlor	ND	0.00067	0.0010	-	-	-
Heptachlor epoxide	ND	0.00041	0.0010	-	-	-
Hexachlorobenzene	ND	0.00038	0.010	-	-	-
Hexachlorocyclopentadiene	ND	0.00064	0.020	-	-	-
Methoxychlor	ND	0.00063	0.0010	-	-	-
Toxaphene	ND	0.064	0.20	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.050			0.05	100	70-130

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L94
Date Prepared:	10/29/2024	**BatchID:**	304956
Date Analyzed:	11/01/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304956 2410L94-005AMS/MSD

QC Summary Report for SW8081B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.046	0.045	0.050	92	91	70-130	1.64	20
a-BHC	0.044	0.044	0.050	89	88	70-130	1.24	20
b-BHC	0.045	0.044	0.050	90	89	70-130	1.50	20
d-BHC	0.042	0.041	0.050	84	82	70-130	1.92	20
g-BHC	0.049	0.048	0.050	97	96	70-130	1.06	20
a-Chlordane	0.048	0.047	0.050	96	93	70-130	2.23	20
g-Chlordane	0.043	0.042	0.050	85	83	70-130	2.28	20
p,p-DDD	0.055	0.053	0.050	110	106	70-130	3.76	20
p,p-DDE	0.058	0.057	0.050	116	113	70-130	2.21	20
p,p-DDT	0.050	0.048	0.050	100	97	70-130	3.04	20
Dieldrin	0.051	0.050	0.050	102	100	70-130	2.08	20
Endosulfan I	0.047	0.046	0.050	94	92	70-130	1.91	20
Endosulfan II	0.046	0.045	0.050	93	90	70-130	2.61	20
Endosulfan sulfate	0.047	0.046	0.050	94	92	70-130	2.81	20
Endrin	0.081	0.079	0.050	161,F2	157,F2	70-130	2.38	20
Endrin aldehyde	0.045	0.044	0.050	90	88	70-130	2.51	20
Endrin ketone	0.042	0.041	0.050	84	81	70-130	3.20	20
Heptachlor	0.050	0.050	0.050	100	99	70-130	1.18	20
Heptachlor epoxide	0.048	0.047	0.050	97	95	70-130	1.91	20
Hexachlorobenzene	0.044	0.044	0.050	89	88	70-130	1.00	20
Hexachlorocyclopentadiene	0.036	0.037	0.050	73	74	50-130	1.19	20
Methoxychlor	0.052	0.050	0.050	104	101	70-130	3.21	20
Surrogate Recovery								
Decachlorobiphenyl	0.053	0.051	0.050	106	102	70-130	3.15	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aldrin	1	0.046	0.048	0.050	ND	92	97	60-130	5.16	20
a-BHC	1	0.048	0.050	0.050	ND	96	100	60-130	4.27	20
b-BHC	1	0.047	0.048	0.050	ND	93	97	60-130	3.74	20
d-BHC	1	0.045	0.047	0.050	ND	89	93	60-130	4.23	20
g-BHC	1	0.047	0.049	0.050	ND	94	99	60-130	4.27	20
a-Chlordane	1	0.053	0.055	0.050	ND	106	110	60-130	3.94	20
g-Chlordane	1	0.050	0.052	0.050	ND	100	103	60-130	3.52	20
p,p-DDD	1	0.061	0.064	0.050	ND	121	129	60-130	5.80	20
p,p-DDE	1	0.069	0.071	0.050	ND	138,F1	143,F1	60-130	3.34	20

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L94
Date Prepared:	10/29/2024	**BatchID:**	304956
Date Analyzed:	11/01/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304956 2410L94-005AMS/MSD

QC Summary Report for SW8081B

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
p,p-DDT	1	0.050	0.052	0.050	ND	100	104	60-130	3.72	20
Dieldrin	1	0.061	0.063	0.050	ND	122	125	60-130	2.46	20
Endosulfan I	1	0.056	0.059	0.050	ND	113	119	60-130	5.18	20
Endosulfan II	1	0.048	0.051	0.050	ND	96	101	60-130	5.30	20
Endosulfan sulfate	1	0.049	0.051	0.050	ND	97	102	60-130	5.13	20
Endrin	1	0.088	0.093	0.050	ND	176,F1	186,F1	60-130	5.37	20
Endrin aldehyde	1	0.046	0.049	0.050	ND	93	98	60-130	5.20	20
Endrin ketone	1	0.044	0.046	0.050	ND	88	92	60-130	4.70	20
Heptachlor	1	0.054	0.057	0.050	ND	108	113	60-130	4.64	20
Heptachlor epoxide	1	0.053	0.055	0.050	ND	105	110	60-130	4.19	20
Hexachlorobenzene	1	0.045	0.047	0.050	ND	89	93	60-130	4.27	20
Hexachlorocyclopentadiene	1	0.038	0.038	0.050	ND	76	75	50-130	0.693	20
Methoxychlor	1	0.060	0.061	0.050	ND	119	122	60-130	2.01	20
Surrogate Recovery										
Decachlorobiphenyl	1	0.056	0.056	0.050		111	111	60-130	0.0130	20

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L94
Date Prepared:	10/30/2024	**BatchID:**	304938
Date Analyzed:	10/31/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304938

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Arsenic	ND	0.084	0.50	-	-	-
Lead	ND	0.089	0.50	-	-	-
Mercury	ND	0.039	0.050	-	-	-
Surrogate Recovery						
Terbium	540			500	108	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	55	57	50	111	113	75-125	2.08	20
Lead	51	53	50	102	106	75-125	3.71	20
Mercury	1.3	1.3	1.25	102	107	75-125	4.74	20
Surrogate Recovery								
Terbium	550	540	500	110	108	70-130	1.35	20

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L94
Date Prepared:	10/30/2024	**BatchID:**	304957
Date Analyzed:	10/31/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304957 2410L94-002AMS/MSD

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Arsenic	ND	0.084	0.50	-	-	-
Lead	ND	0.089	0.50	-	-	-
Mercury	ND	0.039	0.050	-	-	-
Surrogate Recovery						
Terbium	550			500	111	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	55	54	50	110	109	75-125	1.46	20
Lead	51	50	50	102	101	75-125	1.15	20
Mercury	1.3	1.3	1.25	103	104	75-125	1.01	20
Surrogate Recovery								
Terbium	530	530	500	106	106	70-130	0.496	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Arsenic	1	59	60	50	1.904	114	116	75-125	1.38	20
Lead	1	58	59	50	4.667	106	108	75-125	2.15	20
Mercury	1	1.3	1.4	1.25	ND	106	109	75-125	3.28	20
Surrogate Recovery										
Terbium	1	540	560	500		108	112	70-130	4.03	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Arsenic	ND<2.5	1.9	3.36	-
Lead	4.5	4.7	3.26	-
Mercury	ND<0.25	ND		-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

McCampbell Analytical, Inc.
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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2410L94 **ClientCode: ICES**

☐ WaterTrax ☐ CLIP ☑ EDF ☐ EQuIS ☐ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Excel

Report to:
Peng Leong
ICES
P.O. Box 99288
Emeryville, CA 94662
(510) 882-2200 FAX: (510) 652-3555

Email: alphaenv222@gmail.com
cc/3rd Party:
PO:
Project: ICES 9315; Kautz Property

Bill to:
Accounts Payable
ICES
3300 Powell Street #109
Emeryville, CA 94608
alphaenv222@gmail.com; ices888@gm

Requested TAT: **5 days;**

Date Received: **10/29/2024**
Date Logged: **10/29/2024**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2410L94-001	K16	Soil	10/28/2024 00:00	☐	A	A	A	A								
2410L94-002	K17	Soil	10/28/2024 00:00	☐	A	A	A									
2410L94-003	K18	Soil	10/28/2024 00:00	☐	A	A	A									
2410L94-004	K19	Soil	10/28/2024 00:00	☐	A	A	A									
2410L94-005	K20	Soil	10/28/2024 00:00	☐	A	A	A									

Test Legend:

1	8081_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PREDF REPORT
5		6		7		8	
9		10		11		12	

Prepared by: Lilly Ortiz

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ICES
Client Contact: Peng Leong
Contact's Email: alphaenv222@gmail.com

Project: ICES 9315; Kautz Property
Comments

Work Order: 2410L94
QC Level: LEVEL 2
Date Logged: 10/29/2024

☐ WaterTrax ☐ CLIP ☑ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

LabID	ClientSampID	Matrix	Test Name	Cont./ Comp.	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	K16	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
002A	K17	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
003A	K18	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
004A	K19	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
005A	K20	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

Cont./Comp. = Containers /Composites

General COC

MAI Work Order # 2410194

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CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	✓	Quote #				
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #					
Delivery Format:	PDF	✓	GeoTracker EDF	✓	EDD		CLIP EDT (DW)		Detect Summary				

Report To: PENG LEONG Bill To: SAME
Company: ICES
Email: ALPHAENV222@GMAIL.COM
Alt Email: Tele:
Project Name: KRUTZ PROPERTY Project #: ICES 9315
Project Location: PO #
Sampler Signature:

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	EPA 8081 (CLPEST)	ARSENIC, LEAD MERCURY
K16	10-28-24		1	SOIL		✓	✓
K17			1			✓	✓
K18			1			✓	✓
K19			1			✓	✓
K20			1			✓	✓

Analysis Requested

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
				10/29/24	1045
	10/29/24	1645		10/29/24	1645

Comments / Instructions

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 4.0 °C Initials LO

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Sample Receipt Checklist

Client Name:	ICES	Date and Time Received:	10/29/2024 16:45
Project:	ICES 9315; Kautz Property	Date Logged:	10/29/2024
		Received by:	Lilly Ortiz
WorkOrder №:	2410L94 Matrix: Soil	Logged by:	Lilly Ortiz
Carrier:	Antonio Mason (MAI Courier)		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Custody seals intact on sample bottles?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 1.6°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2)?	Yes	☐	No	☐	NA	☑

UCMR Samples:

pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

McCampbell Analytical, Inc.
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Analytical Report

WorkOrder: 2410L95

Report Created for: ICES

P.O. Box 99288
Emeryville, CA 94662

Project Contact: Peng Leong
Project P.O.:
Project: ICES 9315; Kautz Property

Project Location:
Project Received: 10/29/2024

Analytical Report reviewed & approved for release on 11/06/2024 by:

Tracy Babjar
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L95

Project: ICES 9315; Kautz Property

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CCV	Continuing Calibration Verification.
CCV REC (%)	% recovery of Continuing Calibration Verification.
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LCS2	Second LCS for the batch. Spike level is lower than that for the first LCS; applicable to method 1633.
LQL	Lowest Quantitation Level
MB	Method Blank
MB IS/SS % Rec	% Recovery of Internal Standard or Surrogate in Method Blank, if applicable
MB SS % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit [1]
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit [2]
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SNR	Surrogate is diluted out of the calibration range

[1] MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016. Values are based upon our default extraction volume/amount and are subject to change.

[2] RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.) Values are based upon our default extraction volume/amount and are subject to change.

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Glossary of Terms & Qualifier Definitions

Client: ICES **WorkOrder:** 2410L95

Project: ICES 9315; Kautz Property

SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TNTC	“Too Numerous to Count;” greater than 250 colonies observed on the plate.
TZA	TimeZone Net Adjustment for sample collected outside of MAI's Coordinated Universal Time (UTC). (Adjustment for Daylight Saving is not accounted.)
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

a2	Sample diluted due to cluttered chromatogram.
h7	Copper (EPA 3660B) cleanup

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L95
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K21	2410L95-001A	Soil	10/28/2024	GC22 11042411.D	304956

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 11:17
a-BHC	ND	0.0010	1	11/04/2024 11:17
b-BHC	ND	0.0010	1	11/04/2024 11:17
d-BHC	ND	0.0010	1	11/04/2024 11:17
g-BHC	ND	0.0010	1	11/04/2024 11:17
Chlordane (Technical)	ND	0.025	1	11/04/2024 11:17
a-Chlordane	ND	0.0010	1	11/04/2024 11:17
g-Chlordane	ND	0.0010	1	11/04/2024 11:17
p,p-DDD	ND	0.0010	1	11/04/2024 11:17
p,p-DDE	ND	0.0010	1	11/04/2024 11:17
p,p-DDT	ND	0.0010	1	11/04/2024 11:17
Dieldrin	ND	0.0010	1	11/04/2024 11:17
Endosulfan I	ND	0.0010	1	11/04/2024 11:17
Endosulfan II	ND	0.0010	1	11/04/2024 11:17
Endosulfan sulfate	ND	0.0010	1	11/04/2024 11:17
Endrin	ND	0.0010	1	11/04/2024 11:17
Endrin aldehyde	ND	0.0010	1	11/04/2024 11:17
Endrin ketone	ND	0.0010	1	11/04/2024 11:17
Heptachlor	ND	0.0010	1	11/04/2024 11:17
Heptachlor epoxide	ND	0.0010	1	11/04/2024 11:17
Hexachlorobenzene	ND	0.010	1	11/04/2024 11:17
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 11:17
Methoxychlor	ND	0.0010	1	11/04/2024 11:17
Toxaphene	ND	0.20	1	11/04/2024 11:17

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	103	60-130	11/04/2024 11:17

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L95
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K22	2410L95-002A	Soil	10/28/2024	GC22 11042413.D	304956

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 11:51
a-BHC	ND	0.0010	1	11/04/2024 11:51
b-BHC	ND	0.0010	1	11/04/2024 11:51
d-BHC	ND	0.0010	1	11/04/2024 11:51
g-BHC	ND	0.0010	1	11/04/2024 11:51
Chlordane (Technical)	ND	0.025	1	11/04/2024 11:51
a-Chlordane	ND	0.0010	1	11/04/2024 11:51
g-Chlordane	ND	0.0010	1	11/04/2024 11:51
p,p-DDD	ND	0.0010	1	11/04/2024 11:51
p,p-DDE	ND	0.0010	1	11/04/2024 11:51
p,p-DDT	ND	0.0010	1	11/04/2024 11:51
Dieldrin	ND	0.0010	1	11/04/2024 11:51
Endosulfan I	ND	0.0010	1	11/04/2024 11:51
Endosulfan II	ND	0.0010	1	11/04/2024 11:51
Endosulfan sulfate	ND	0.0010	1	11/04/2024 11:51
Endrin	ND	0.0010	1	11/04/2024 11:51
Endrin aldehyde	ND	0.0010	1	11/04/2024 11:51
Endrin ketone	ND	0.0010	1	11/04/2024 11:51
Heptachlor	ND	0.0010	1	11/04/2024 11:51
Heptachlor epoxide	ND	0.0010	1	11/04/2024 11:51
Hexachlorobenzene	ND	0.010	1	11/04/2024 11:51
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 11:51
Methoxychlor	ND	0.0010	1	11/04/2024 11:51
Toxaphene	ND	0.20	1	11/04/2024 11:51

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	104	60-130	11/04/2024 11:51

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L95
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K23	2410L95-003A	Soil	10/28/2024	GC20 11012445.D	304956

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/02/2024 01:31
a-BHC	ND	0.0010	1	11/02/2024 01:31
b-BHC	ND	0.0010	1	11/02/2024 01:31
d-BHC	ND	0.0010	1	11/02/2024 01:31
g-BHC	ND	0.0010	1	11/02/2024 01:31
Chlordane (Technical)	ND	0.025	1	11/02/2024 01:31
a-Chlordane	ND	0.0010	1	11/02/2024 01:31
g-Chlordane	ND	0.0010	1	11/02/2024 01:31
p,p-DDD	ND	0.0010	1	11/02/2024 01:31
p,p-DDE	ND	0.0010	1	11/02/2024 01:31
p,p-DDT	ND	0.0010	1	11/02/2024 01:31
Dieldrin	ND	0.0010	1	11/02/2024 01:31
Endosulfan I	ND	0.0010	1	11/02/2024 01:31
Endosulfan II	ND	0.0010	1	11/02/2024 01:31
Endosulfan sulfate	ND	0.0010	1	11/02/2024 01:31
Endrin	ND	0.0010	1	11/02/2024 01:31
Endrin aldehyde	ND	0.0010	1	11/02/2024 01:31
Endrin ketone	ND	0.0010	1	11/02/2024 01:31
Heptachlor	ND	0.0010	1	11/02/2024 01:31
Heptachlor epoxide	ND	0.0010	1	11/02/2024 01:31
Hexachlorobenzene	ND	0.010	1	11/02/2024 01:31
Hexachlorocyclopentadiene	ND	0.020	1	11/02/2024 01:31
Methoxychlor	ND	0.0010	1	11/02/2024 01:31
Toxaphene	ND	0.20	1	11/02/2024 01:31

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	111	60-130	11/02/2024 01:31

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L95
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K24	2410L95-004A	Soil	10/28/2024	GC40 11052429.d	304956

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.020	20	11/05/2024 17:38
a-BHC	ND	0.020	20	11/05/2024 17:38
b-BHC	ND	0.020	20	11/05/2024 17:38
d-BHC	ND	0.020	20	11/05/2024 17:38
g-BHC	ND	0.020	20	11/05/2024 17:38
Chlordane (Technical)	ND	0.50	20	11/05/2024 17:38
a-Chlordane	ND	0.020	20	11/05/2024 17:38
g-Chlordane	ND	0.020	20	11/05/2024 17:38
p,p-DDD	ND	0.020	20	11/05/2024 17:38
p,p-DDE	ND	0.020	20	11/05/2024 17:38
p,p-DDT	ND	0.020	20	11/05/2024 17:38
Dieldrin	ND	0.020	20	11/05/2024 17:38
Endosulfan I	ND	0.020	20	11/05/2024 17:38
Endosulfan II	ND	0.020	20	11/05/2024 17:38
Endosulfan sulfate	ND	0.020	20	11/05/2024 17:38
Endrin	ND	0.020	20	11/05/2024 17:38
Endrin aldehyde	ND	0.020	20	11/05/2024 17:38
Endrin ketone	ND	0.020	20	11/05/2024 17:38
Heptachlor	ND	0.020	20	11/05/2024 17:38
Heptachlor epoxide	ND	0.020	20	11/05/2024 17:38
Hexachlorobenzene	ND	0.20	20	11/05/2024 17:38
Hexachlorocyclopentadiene	ND	0.40	20	11/05/2024 17:38
Methoxychlor	ND	0.020	20	11/05/2024 17:38
Toxaphene	ND	4.0	20	11/05/2024 17:38

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	70	60-130	11/05/2024 17:38

Analyst(s): EEV Analytical Comments: a2,h7

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L95
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3550B
Date Prepared:	10/29/2024	**Analytical Method:**	SW8081B
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K25	2410L95-005A	Soil	10/28/2024	GC22 11042416.D	304956

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	1	11/04/2024 12:41
a-BHC	ND	0.0010	1	11/04/2024 12:41
b-BHC	ND	0.0010	1	11/04/2024 12:41
d-BHC	ND	0.0010	1	11/04/2024 12:41
g-BHC	ND	0.0010	1	11/04/2024 12:41
Chlordane (Technical)	ND	0.025	1	11/04/2024 12:41
a-Chlordane	ND	0.0010	1	11/04/2024 12:41
g-Chlordane	ND	0.0010	1	11/04/2024 12:41
p,p-DDD	ND	0.0010	1	11/04/2024 12:41
p,p-DDE	ND	0.0010	1	11/04/2024 12:41
p,p-DDT	ND	0.0010	1	11/04/2024 12:41
Dieldrin	ND	0.0010	1	11/04/2024 12:41
Endosulfan I	ND	0.0010	1	11/04/2024 12:41
Endosulfan II	ND	0.0010	1	11/04/2024 12:41
Endosulfan sulfate	ND	0.0010	1	11/04/2024 12:41
Endrin	ND	0.0010	1	11/04/2024 12:41
Endrin aldehyde	ND	0.0010	1	11/04/2024 12:41
Endrin ketone	ND	0.0010	1	11/04/2024 12:41
Heptachlor	ND	0.0010	1	11/04/2024 12:41
Heptachlor epoxide	ND	0.0010	1	11/04/2024 12:41
Hexachlorobenzene	ND	0.010	1	11/04/2024 12:41
Hexachlorocyclopentadiene	ND	0.020	1	11/04/2024 12:41
Methoxychlor	ND	0.0010	1	11/04/2024 12:41
Toxaphene	ND	0.20	1	11/04/2024 12:41

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	102	60-130	11/04/2024 12:41

Analyst(s): CK

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L95
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K21	2410L95-001A	Soil	10/28/2024	ICP-MS5 142SMPL.d	304957

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.9**	0.50	1	10/31/2024 12:38
Lead	**5.1**	0.50	1	10/31/2024 12:38
Mercury	ND	0.050	1	10/31/2024 12:38

Surrogates	REC (%)	Limits	
Terbium	104	70-130	10/31/2024 12:38

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K22	2410L95-002A	Soil	10/28/2024	ICP-MS5 143SMPL.d	304957

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.9**	0.50	1	10/31/2024 12:42
Lead	**4.8**	0.50	1	10/31/2024 12:42
Mercury	ND	0.050	1	10/31/2024 12:42

Surrogates	REC (%)	Limits	
Terbium	107	70-130	10/31/2024 12:42

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K23	2410L95-003A	Soil	10/28/2024	ICP-MS5 144SMPL.d	304957

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.2**	0.50	1	10/31/2024 12:45
Lead	**4.8**	0.50	1	10/31/2024 12:45
Mercury	ND	0.050	1	10/31/2024 12:45

Surrogates	REC (%)	Limits	
Terbium	102	70-130	10/31/2024 12:45

Analyst(s): AL

(Cont.)

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Analytical Report

Client:	ICES	**WorkOrder:**	2410L95
Date Received:	10/29/2024 16:45	**Extraction Method:**	SW3050B
Date Prepared:	10/30/2024	**Analytical Method:**	SW6020
Project:	ICES 9315; Kautz Property	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K24	**2410L95-004A**	**Soil**	**10/28/2024**	**ICP-MS5 145SMPL.d**	**304957**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**1.9**	0.50	1	10/31/2024 12:49
Lead	**4.6**	0.50	1	10/31/2024 12:49
Mercury	ND	0.050	1	10/31/2024 12:49

Surrogates	REC (%)	Limits	
Terbium	102	70-130	10/31/2024 12:49

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
K25	**2410L95-005A**	**Soil**	**10/28/2024**	**ICP-MS5 148SMPL.d**	**304957**

Analytes	Result	RL	DF	Date Analyzed
Arsenic	**2.1**	0.50	1	10/31/2024 13:00
Lead	**5.6**	0.50	1	10/31/2024 13:00
Mercury	ND	0.050	1	10/31/2024 13:00

Surrogates	REC (%)	Limits	
Terbium	106	70-130	10/31/2024 13:00

Analyst(s): MIG

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L95
Date Prepared:	10/29/2024	**BatchID:**	304956
Date Analyzed:	11/01/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304956

QC Summary Report for SW8081B

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Aldrin	ND	0.00042	0.0010	-	-	-
a-BHC	ND	0.00045	0.0010	-	-	-
b-BHC	ND	0.00038	0.0010	-	-	-
d-BHC	ND	0.00036	0.0010	-	-	-
g-BHC	ND	0.00036	0.0010	-	-	-
Chlordane (Technical)	ND	0.010	0.025	-	-	-
a-Chlordane	ND	0.00035	0.0010	-	-	-
g-Chlordane	ND	0.00067	0.0010	-	-	-
p,p-DDD	ND	0.00057	0.0010	-	-	-
p,p-DDE	ND	0.00034	0.0010	-	-	-
p,p-DDT	ND	0.00043	0.0010	-	-	-
Dieldrin	ND	0.00041	0.0010	-	-	-
Endosulfan I	ND	0.00040	0.0010	-	-	-
Endosulfan II	ND	0.00051	0.0010	-	-	-
Endosulfan sulfate	ND	0.00040	0.0010	-	-	-
Endrin	ND	0.00045	0.0010	-	-	-
Endrin aldehyde	ND	0.00045	0.0010	-	-	-
Endrin ketone	ND	0.00042	0.0010	-	-	-
Heptachlor	ND	0.00067	0.0010	-	-	-
Heptachlor epoxide	ND	0.00041	0.0010	-	-	-
Hexachlorobenzene	ND	0.00038	0.010	-	-	-
Hexachlorocyclopentadiene	ND	0.00064	0.020	-	-	-
Methoxychlor	ND	0.00063	0.0010	-	-	-
Toxaphene	ND	0.064	0.20	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.050			0.05	100	70-130

(Cont.)

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L95
Date Prepared:	10/29/2024	**BatchID:**	304956
Date Analyzed:	11/01/2024	**Extraction Method:**	SW3550B
Instrument:	GC20	**Analytical Method:**	SW8081B
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304956

QC Summary Report for SW8081B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.046	0.045	0.050	92	91	70-130	1.64	20
a-BHC	0.044	0.044	0.050	89	88	70-130	1.24	20
b-BHC	0.045	0.044	0.050	90	89	70-130	1.50	20
d-BHC	0.042	0.041	0.050	84	82	70-130	1.92	20
g-BHC	0.049	0.048	0.050	97	96	70-130	1.06	20
a-Chlordane	0.048	0.047	0.050	96	93	70-130	2.23	20
g-Chlordane	0.043	0.042	0.050	85	83	70-130	2.28	20
p,p-DDD	0.055	0.053	0.050	110	106	70-130	3.76	20
p,p-DDE	0.058	0.057	0.050	116	113	70-130	2.21	20
p,p-DDT	0.050	0.048	0.050	100	97	70-130	3.04	20
Dieldrin	0.051	0.050	0.050	102	100	70-130	2.08	20
Endosulfan I	0.047	0.046	0.050	94	92	70-130	1.91	20
Endosulfan II	0.046	0.045	0.050	93	90	70-130	2.61	20
Endosulfan sulfate	0.047	0.046	0.050	94	92	70-130	2.81	20
Endrin	0.081	0.079	0.050	161,F2	157,F2	70-130	2.38	20
Endrin aldehyde	0.045	0.044	0.050	90	88	70-130	2.51	20
Endrin ketone	0.042	0.041	0.050	84	81	70-130	3.20	20
Heptachlor	0.050	0.050	0.050	100	99	70-130	1.18	20
Heptachlor epoxide	0.048	0.047	0.050	97	95	70-130	1.91	20
Hexachlorobenzene	0.044	0.044	0.050	89	88	70-130	1.00	20
Hexachlorocyclopentadiene	0.036	0.037	0.050	73	74	50-130	1.19	20
Methoxychlor	0.052	0.050	0.050	104	101	70-130	3.21	20
Surrogate Recovery								
Decachlorobiphenyl	0.053	0.051	0.050	106	102	70-130	3.15	20

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Quality Control Report

Client:	ICES	**WorkOrder:**	2410L95
Date Prepared:	10/30/2024	**BatchID:**	304957
Date Analyzed:	10/31/2024	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	ICES 9315; Kautz Property	**Sample ID:**	MB/LCS/LCSD-304957

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB IS/SS %REC	MB IS/SS Limits
Arsenic	ND	0.084	0.50	-	-	-
Lead	ND	0.089	0.50	-	-	-
Mercury	ND	0.039	0.050	-	-	-
Surrogate Recovery						
Terbium	550			500	111	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	55	54	50	110	109	75-125	1.46	20
Lead	51	50	50	102	101	75-125	1.15	20
Mercury	1.3	1.3	1.25	103	104	75-125	1.01	20
Surrogate Recovery								
Terbium	530	530	500	106	106	70-130	0.496	20

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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2410L95 **ClientCode: ICES**

☐ WaterTrax ☐ CLIP ☑ EDF ☐ EQuIS ☐ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Excel

Report to:
Peng Leong
ICES
P.O. Box 99288
Emeryville, CA 94662
(510) 882-2200 FAX: (510) 652-3555

Email: alphaenv222@gmail.com
cc/3rd Party:
PO:
Project: ICES 9315; Kautz Property

Bill to:
Accounts Payable
ICES
3300 Powell Street #109
Emeryville, CA 94608
alphaenv222@gmail.com; ices888@gm

Requested TAT: **5 days;**

Date Received: **10/29/2024**
Date Logged: **10/29/2024**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2410L95-001	K21	Soil	10/28/2024 00:00	☐	A	A	A	A								
2410L95-002	K22	Soil	10/28/2024 00:00	☐	A	A	A									
2410L95-003	K23	Soil	10/28/2024 00:00	☐	A	A	A									
2410L95-004	K24	Soil	10/28/2024 00:00	☐	A	A	A									
2410L95-005	K25	Soil	10/28/2024 00:00	☐	A	A	A									

Test Legend:

1	8081_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PREDF REPORT
5		6		7		8	
9		10		11		12	

Prepared by: Lilly Ortiz

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ICES
Client Contact: Peng Leong
Contact's Email: alphaenv222@gmail.com

Project: ICES 9315; Kautz Property
Comments

Work Order: 2410L95
QC Level: LEVEL 2
Date Logged: 10/29/2024

☐ WaterTrax ☐ CLIP ☑ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

LabID	ClientSampID	Matrix	Test Name	Cont./ Comp.	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	K21	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
002A	K22	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
003A	K23	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
004A	K24	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐
005A	K25	Soil	SW6020 (Metals) <Arsenic, Lead, Mercury>	1	4OZ GJ, Unpres	☐	☐	☐	10/28/2024	5 days	11/5/2024		☐	☐
			SW8081B (OC Pesticides)			☐	☐	☐		5 days	11/5/2024		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

Cont./Comp. = Containers /Composites

General COC

MAI Work Order # 2410695

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www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	✓	Quote #						
J-Flag / MDL		ESL		Cleanup Approved			Dry Weight		Bottle Order #						
Delivery Format:	PDF	✓	GeoTracker EDF	✓	EDD		CLIP EDT (DW)		Detect Summary						

Report To:	PENG LEONG
Company:	ICES
Email:	ALPHAENV222@GMAIL.COM
Alt Email:	
Project Name:	KAUTZ PROPERTY
Project Location:	
Sampler Signature:	
Bill To:	SAME
Tele:	
Project #:	ICES 9315
PO #	

SAMPLE ID / Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	Analysis Requested: EPA 8081 (CLPEST)	Analysis Requested: ARSENIC, LEAD MERCURY
K21	10-28-24		1	SOIL		✓	✓
K22			1			✓	✓
K23			1			✓	✓
K24			1			✓	✓
K25			1			✓	✓

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
MAI	10/29/24	1645	MAI	10/29/24	1040
				10/29/24	1645

Comments / Instructions

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 1.6 °C / 1241 Initials

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Sample Receipt Checklist

Client Name: ICES
Project: ICES 9315; Kautz Property

WorkOrder №: 2410L95 Matrix: Soil
Carrier: Antonio Mason (MAI Courier)

Date and Time Received: 10/29/2024 16:45
Date Logged: 10/29/2024
Received by: Lilly Ortiz
Logged by: Lilly Ortiz

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Custody seals intact on sample bottles?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 1.6°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2)?	Yes	☐	No	☐	NA	☑

UCMR Samples:

pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

APPENDIX F
NOISE REPORT

Environmental Noise Assessment

Kautz Lockeford Subdivision

San Joaquin County, California

BAC Job # 2024-107

Prepared For:

Kautz Row Crops

Jack Kautz
5490 Bear Creek Road
Lodi, CA 95240

Prepared By:

Bollard Acoustical Consultants, Inc.

Paul Bollard, President

July 25, 2024

BOLLARD
Acoustical Consultants

Introduction

The Kautz Lockeford Subdivision (project) is a single-family residential development located in San Joaquin County, California. The project site is bordered to the northwest by future Malbec Drive, and to the southwest by existing N Tully Road. The project site maintains a separation of approximately 850' from Main Street (Highway 88) to the northwest. The project proposes the development of a total of 296 single-family residential lots on land currently developed for agriculture. Existing land uses in the area consist largely of residential and agricultural uses. The project area is illustrated on Figure 1. The project tentative subdivision map is illustrated on Figure 2.

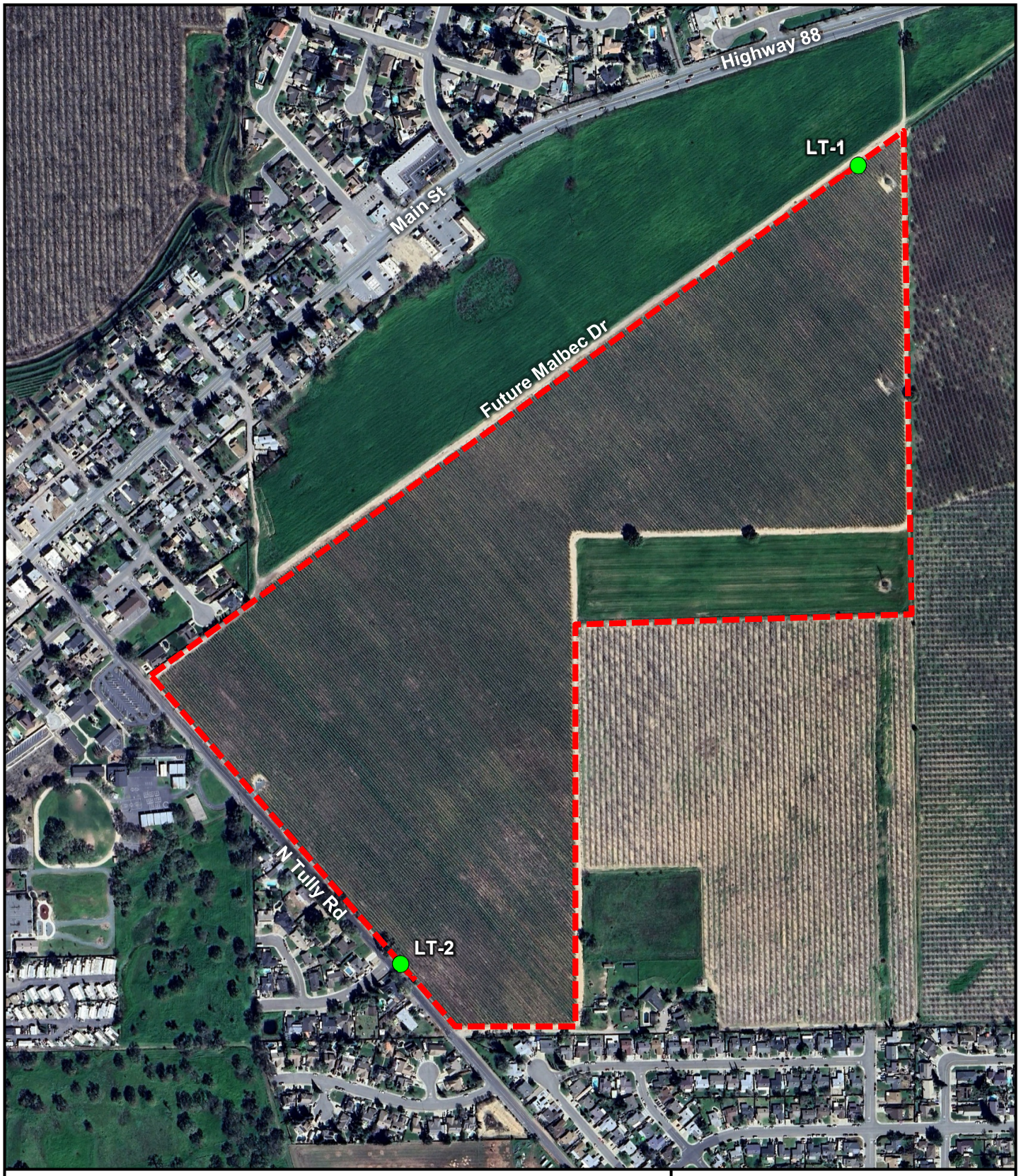
Due to the potential for elevated traffic noise levels at the project site, Bollard Acoustical Consultants, Inc. (BAC) was retained by the project applicant to prepare this noise assessment. Specifically, the purposes of this assessment are to quantify noise generated by traffic on existing N Tully Road and Main Street, and to compare those noise levels against the applicable San Joaquin County exterior and interior noise level standards for new residential developments.

Noise Fundamentals and Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard, and thus are called sound. Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness. Appendix A contains definitions of Acoustical Terminology. Figure 3 shows common noise levels associated with various sources.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in decibels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}) over a given time period (usually one hour). The L_{eq} is the foundation of the Day-Night Average Level noise descriptor, L_{dn} or DNL, and shows very good correlation with community response to noise. The median noise level descriptor, denoted L_{50}, represents the noise level which is exceeded 50% of the hour. In other words, half of the hour ambient conditions are higher than the L_{50} and the other half are lower than the L_{50}.



Legend

- Project Boundary (Approximate)
- Ambient Noise Level Survey Locations

N

Scale (Feet)

0 200 400

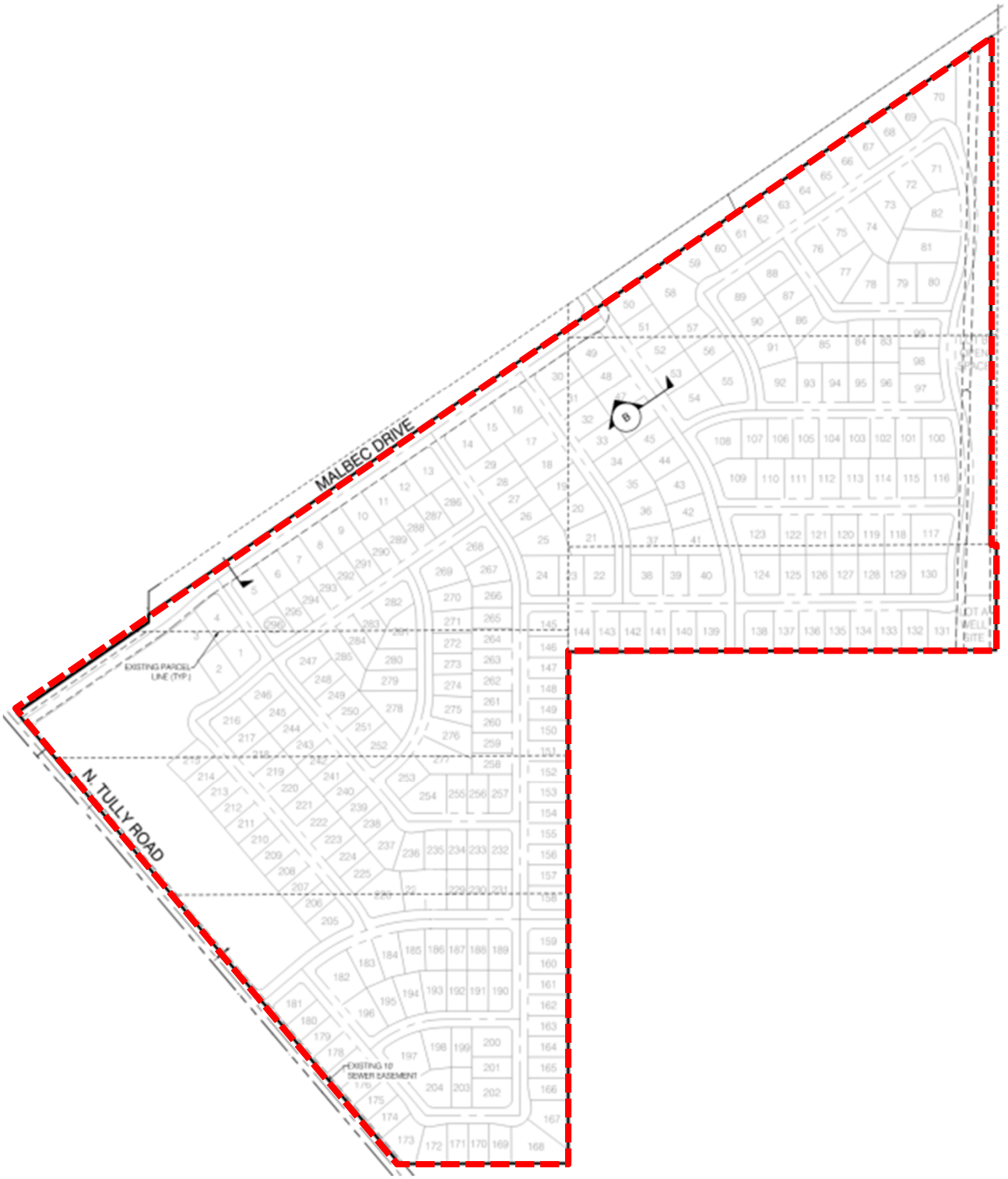
Kautz Lockeford Subdivision

San Joaquin County, California

Project Area

Figure 1

BOLLARD Acoustical Consultants



Legend

Project Boundary (Approximate)

N

Scale (Feet)

0 200 400

Kautz Lockeford Subdivision

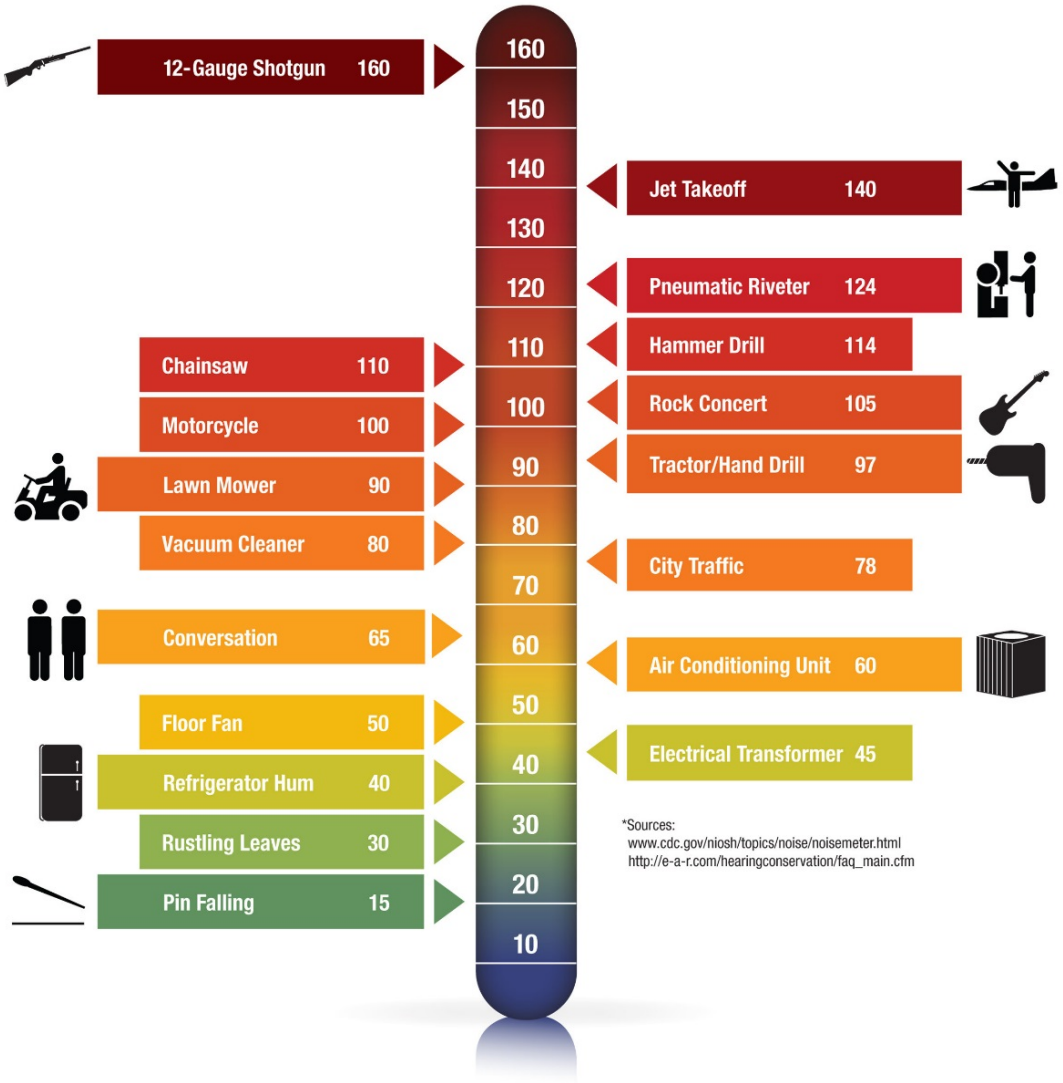
San Joaquin County, California

Project Tentative Subdivision Map

Figure 2

BOLLARD Acoustical Consultants

Figure 3
Noise Levels Associated with Common Noise Sources



The DNL is based upon the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. DNL and Community Noise Equivalent Level (CNEL) -based noise standards are commonly used to assess noise impacts associated with traffic, railroad, and aircraft noise sources. The CNEL is usually within 1 dB of the DNL, and for all intents and purposes, the two are interchangeable (Note: The DNL is easier to compute and is more commonly used). A single noise event is an individual distinct loud activity, such as a train passage, vehicle passby, or any other brief and discrete noise-generating activity. Because most noise policies applicable to transportation noise sources are typically specified in terms of 24-hour-averaged descriptors, such as DNL or CNEL, the potential for annoyance or sleep disturbance associated with individual loud events can be masked by the averaging process.

Criteria for Acceptable Noise Exposure

San Joaquin County General Plan

The Public Health and Safety chapter of the San Joaquin County General Plan establishes acceptable noise level limits for residential developments affected by transportation noise sources. Specifically, The General Plan applies exterior and interior noise level standards of 65 dB DNL and 45 dB DNL (respectively) for residential developments. The General Plan exterior noise level limit of 65 dB DNL is to be applied at the outdoor activity area (i.e., backyard) of single-family residences, such as those proposed by the project.

Existing Ambient Noise Level Environment at the Project Site

The existing ambient noise environment at the Kautz Lockeford Subdivision site is defined primarily by traffic on N Tully Road and Main Street. To quantify the existing ambient noise level environment at the project site, BAC conducted a long-term (48-hour) noise level survey on the project site July 16-17, 2024 at the locations shown on Figure 1.

Larson-Davis Laboratories (LDL) precision (Type 1) integrating sound level meters were used to complete the ambient noise level survey at the project site. The meters were calibrated immediately before with an LDL Model CAL200 acoustical calibrator to ensure the accuracy off the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

Noise measurement site LT-1 was specifically selected to document the ambient traffic noise environment from Main Street at the closest (northernmost) proposed residential lots of the development. Site LT-1 was located approximately 500’ from the centerline of Main Street. Noise measurement site LT-2 was located at the southern portion of the development, and was specifically selected to be document the existing ambient traffic noise environment from N Tully Road at the residences proposed nearest this roadway. Site LT-2 was located approximately 40’ from the centerline of N Tully Road. Photographs of the noise level measurement locations are provided in Appendix B.

The long-term ambient noise level survey results are summarized in Table 1. The detailed results of the ambient noise level survey are contained in Appendix C in tabular format and graphically in Appendix D.

Table 1
Summary of Long-Term Noise Survey Measurement Results at the Project Site[1]

Site Description[2]	Date	DNL (dB)	Average Measured Hourly Noise Levels (dB)			
			Daytime[3]		Nighttime[4]	
			L_{eq}	L_{max}	L_{eq}	L_{max}
LT-1	Tuesday, July 16, 2024	54	48	61	48	61
	Wednesday, July 17, 2024	57	47	61	51	65
LT-2	Tuesday, July 16, 2024	63	60	80	56	79
	Wednesday, July 17, 2024	63	60	79	55	76

[1] Detailed summaries of the noise monitoring results are provided in Appendices C and D.
[2] Long-term noise survey locations are identified in Figure 1.
[3] Daytime hours: 7:00 a.m. to 10:00 p.m.
[4] Nighttime hours: 10:00 p.m. to 7:00 a.m.

Source: Bollard Acoustical Consultants, Inc. (2024)

The Table 1 data indicates that the measured day-night average noise levels (DNLs) at the project site were in compliance with the San Joaquin County General Plan 65 dB DNL exterior noise level standard for residential uses. However, to ensure future compliance with the County's standards, a detailed analysis of future traffic noise level exposure at the project site was conducted and that analysis is presented in the following section.

Evaluation of Future Traffic Noise Levels at the Project Site

Predicted Future Exterior Traffic Noise Levels

To predict future Main Street and N Tully Road traffic noise level exposure at the project site, BAC utilized the results from the BAC long-term ambient noise level survey conducted July 16-17, 2024. Specifically, future traffic volumes on the segments of N Tully Road and Main Street adjacent to the project site were conservatively assumed to increase by 50% in the future, resulting in a 2 dB increase in traffic noise levels relative to the measured existing conditions. The predicted future traffic noise levels were projected to the individual outdoor activity areas (i.e., backyards) and exterior building facades of the single-family residences proposed nearest the roadways based on a 4.5 dB decrease per doubling of distance from the noise source. The results of those projections are summarized in Table 2.

Table 2
Predicted Future Exterior Traffic Noise Levels at the Project Site

Roadways	Lot(s)	Location Description	Predicted DNL (dB)[1,2]
Main Street	3-4	Backyards	55
		First-floor building facades	55
		Upper-floor building facades	57
	5-16	Backyards	55
		First-floor building facades	54
		Upper-floor building facades	56
	30, 49	Backyards	54
		First-floor building facades	54
		Upper-floor building facades	56
	50	Backyard	54
		First-floor building facade	54
		Upper-floor building facade	56
	70	Backyard	58
		First-floor building facade	57
		Upper-floor building facade	58
N Tully Road	171	Backyard	56
		First-floor building facade	57
		Upper-floor building facade	59
	172	Backyard	60
		First-floor building facade	60
		Upper-floor building facade	62
	173-181	Backyards	64
		First-floor building facades	62
		Upper-floor building facades	64
	205-215	Backyards	53
		First-floor building facades	52
		Upper-floor building facades	54

[1] Predicted future traffic noise levels based on reference noise levels of 58 dB DNL at 500' from roadway centerline (Main Street) and 65 dB DNL at 40' from roadway centerline (N Tully Road), which include a +2 dB increase to account for a 50% increase in traffic volumes over the next 20 years.
[2] A +2 dB offset was applied at all upper-floor building facades to account for reduced ground absorption of sound at elevated positions.

Source: Bollard Acoustical Consultants, Inc. (2024)

Exterior Noise Compliance Evaluation

As indicated in Table 2, future traffic noise levels at the outdoor activity areas (backyards) of the residential lots located nearest to Main Street and N Tully Road are predicted to comply with the San Joaquin County General Plan 65 dB DNL exterior noise level standard. As a result, traffic noise mitigation would not be required for this project relative to the County's exterior noise level criterion.

Interior Noise Compliance Evaluation

Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows

open. Therefore, provided that future traffic noise levels do not exceed 70 dB DNL at proposed exterior building facades, standard construction would normally be adequate to ensure compliance with the San Joaquin County General Plan 45 dB DNL interior noise level standard.

As indicated in Table 2, future traffic noise levels are predicted to be approximately 62 dB DNL or less at the first-floor building facades proposed nearest to the roadways. Due to reduced ground absorption at elevated positions, future traffic noise levels at a portion of the closest upper-floor facades are predicted to approach 64 dB DNL. Based on the above-identified exterior to interior noise reduction typically achieved with standard residential construction, construction upgrades would not be warranted for satisfaction of the General Plan 45 dB DNL interior noise level standard at the project site. Nonetheless, mechanical ventilation (air conditioning) should be provided for all residences of the development to allow the occupants to close doors and windows as desired for additional acoustical isolation.

Conclusions

The proposed Kautz Lockeford Subdivision is expected to be exposed to future Main Street and N Tully Road traffic noise level exposure in compliance with the applicable San Joaquin County General Plan 65 dB DNL exterior noise level standard for single-family residential uses.

This analysis also concludes that standard residential construction (i.e., stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof) would be adequate to reduce future traffic noise levels within all floors of all residences in this subdivision to 45 dB DNL or less, which would satisfy the applicable San Joaquin County General Plan 45 dB DNL interior noise level standard for residential uses. Nonetheless, mechanical ventilation (air conditioning) is required for all residences within this development to allow the occupants to close doors and windows as desired for additional acoustical isolation.

These conclusions are based on the results from the BAC ambient noise level survey, the provided project site plan shown in Figure 2, and on noise reduction data for standard residential dwellings and for typical STC rated window data. Deviations from the above-mentioned resources could cause future traffic noise levels to differ from those predicted in this assessment. In addition, Bollard Acoustical Consultants, Inc. is not responsible for degradation in acoustic performance of the residential construction due to poor construction practices, failure to comply with applicable building code requirements, or for failure to adhere to the minimum building practices cited in this report.

This concludes our environmental noise assessment for the Kautz Lockeford Subdivision in San Joaquin County, California. Please contact BAC at (530) 537-2328 or paulb@bacnoise.com with comments or questions regarding this assessment.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Legend

- A — Site LT-1 Facing North Towards Highway 88
- B — Site LT-2 Facing Southeast Along N Tully Road
- C — Site LT-2 Close-up of Noise Measurement Equipment

Kautz Lockeford Subdivision

San Joaquin County, California

Noise Survey Photographs

Appendix B

BOLLARD Acoustical Consultants

Appendix C-1
Long-Term Ambient Noise Monitoring Results, LT-1
Kautz Lockeford Residential Development - San Joaquin County, California
Tuesday, July 16, 2024

Hour	Leq	Lmax	L50	L90
12:00 AM	45	74	38	29
1:00 AM	44	62	35	29
2:00 AM	44	57	36	29
3:00 AM	46	61	41	34
4:00 AM	50	60	47	38
5:00 AM	50	58	49	44
6:00 AM	51	62	50	45
7:00 AM	51	60	50	45
8:00 AM	49	63	48	44
9:00 AM	47	60	46	42
10:00 AM	46	64	45	41
11:00 AM	45	56	44	40
12:00 PM	46	65	45	41
1:00 PM	46	57	44	41
2:00 PM	45	57	44	40
3:00 PM	46	67	44	40
4:00 PM	47	57	46	42
5:00 PM	49	59	48	43
6:00 PM	49	60	48	43
7:00 PM	50	58	49	42
8:00 PM	51	76	49	42
9:00 PM	49	58	47	39
10:00 PM	47	61	44	33
11:00 PM	45	57	39	29

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	51	45	48	51	44	48
Lmax (Maximum)	76	56	61	74	57	61
L50 (Median)	50	44	46	50	35	42
L90 (Background)	45	39	42	45	29	34

Computed DNL, dB	54
% Daytime Energy	65%
% Nighttime Energy	35%

GPS Coordinates
38°10'3.72"N
121° 8'18.86"W

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Appendix C-2
Long-Term Ambient Noise Monitoring Results, LT-1
Kautz Lockeford Residential Development - San Joaquin County, California
Wednesday, July 17, 2024

Hour	Leq	Lmax	L50	L90
12:00 AM	44	57	39	27
1:00 AM	48	72	39	28
2:00 AM	47	62	40	29
3:00 AM	48	59	44	35
4:00 AM	54	75	51	44
5:00 AM	55	70	55	49
6:00 AM	54	63	53	47
7:00 AM	51	60	50	44
8:00 AM	48	57	47	42
9:00 AM	47	64	45	41
10:00 AM	45	54	44	39
11:00 AM	44	60	44	39
12:00 PM	44	57	43	39
1:00 PM	44	66	43	39
2:00 PM	46	61	45	40
3:00 PM	46	69	45	40
4:00 PM	46	57	45	41
5:00 PM	45	62	44	40
6:00 PM	46	65	44	38
7:00 PM	47	58	45	37
8:00 PM	51	60	50	42
9:00 PM	51	67	49	41
10:00 PM	49	62	46	38
11:00 PM	49	64	45	36

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	51	44	47	55	44	51
Lmax (Maximum)	69	54	61	75	57	65
L50 (Median)	50	43	45	55	39	46
L90 (Background)	44	37	40	49	27	37

Computed DNL, dB	57
% Daytime Energy	41%
% Nighttime Energy	59%

GPS Coordinates
38°10'3.72"N
121° 8'18.86"W

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Appendix C-3
Long-Term Ambient Noise Monitoring Results, LT-2
Kautz Lockeford Residential Development - San Joaquin County, California
Tuesday, July 16, 2024

Hour	Leq	Lmax	L50	L90
12:00 AM	56	83	36	32
1:00 AM	54	80	34	31
2:00 AM	49	79	33	31
3:00 AM	53	79	38	36
4:00 AM	54	73	39	37
5:00 AM	59	81	41	38
6:00 AM	59	77	45	40
7:00 AM	61	83	45	40
8:00 AM	59	77	45	39
9:00 AM	60	77	45	39
10:00 AM	59	76	44	38
11:00 AM	61	82	46	38
12:00 PM	60	79	45	37
1:00 PM	61	81	44	38
2:00 PM	62	86	47	39
3:00 PM	61	82	46	38
4:00 PM	61	85	47	39
5:00 PM	61	84	45	38
6:00 PM	60	78	44	38
7:00 PM	58	80	42	37
8:00 PM	58	76	42	39
9:00 PM	57	74	42	38
10:00 PM	56	85	38	34
11:00 PM	50	74	35	32

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	62	57	60	59	49	56
Lmax (Maximum)	86	74	80	85	73	79
L50 (Median)	47	42	45	45	33	37
L90 (Background)	40	37	38	40	31	34

Computed DNL, dB	63
% Daytime Energy	82%
% Nighttime Energy	18%

GPS Coordinates
38° 9'32.40"N
121° 8'41.75"W

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Appendix C-4
Long-Term Ambient Noise Monitoring Results, LT-2
Kautz Lockeford Residential Development - San Joaquin County, California
Wednesday, July 17, 2024

Hour	Leq	Lmax	L50	L90
12:00 AM	46	73	33	31
1:00 AM	45	70	34	31
2:00 AM	50	75	35	32
3:00 AM	57	84	38	35
4:00 AM	55	74	40	38
5:00 AM	59	78	43	40
6:00 AM	60	77	46	42
7:00 AM	60	78	44	40
8:00 AM	59	75	43	38
9:00 AM	59	77	44	38
10:00 AM	60	76	49	40
11:00 AM	60	83	42	37
12:00 PM	60	77	44	37
1:00 PM	61	78	44	36
2:00 PM	60	78	51	39
3:00 PM	61	80	46	38
4:00 PM	61	82	46	37
5:00 PM	60	78	44	36
6:00 PM	60	79	43	37
7:00 PM	59	84	41	37
8:00 PM	57	75	44	39
9:00 PM	59	83	43	39
10:00 PM	56	79	41	38
11:00 PM	48	71	37	35

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	61	57	60	60	45	55
Lmax (Maximum)	84	75	79	84	70	76
L50 (Median)	51	41	45	46	33	38
L90 (Background)	40	36	38	42	31	36

Computed DNL, dB	63
% Daytime Energy	82%
% Nighttime Energy	18%

GPS Coordinates
38° 9'32.40"N
121° 8'41.75"W

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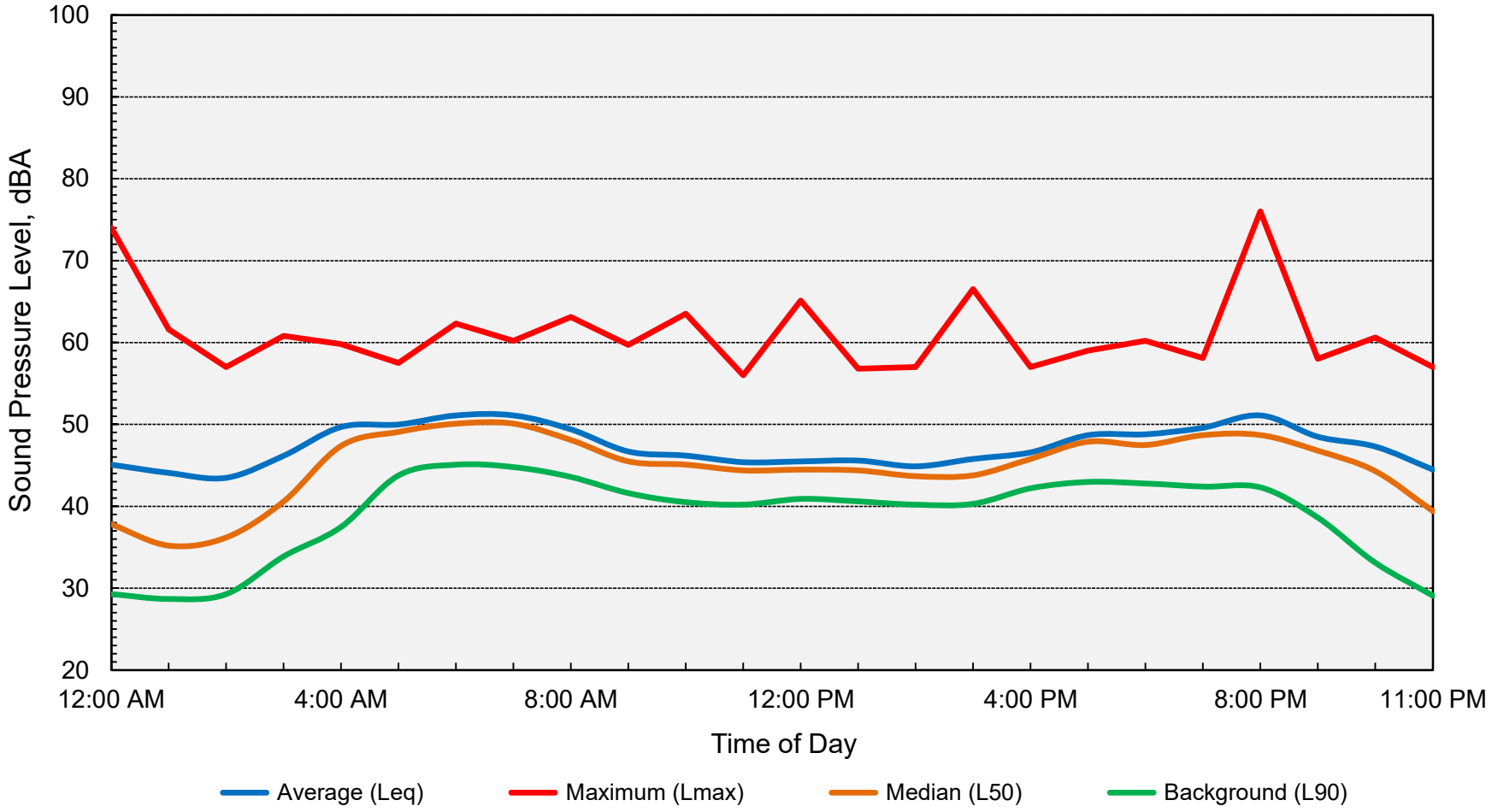
Appendix D-1
Long-Term Ambient Noise Monitoring Results, LT-1
Kautz Lockeford Residential Development - San Joaquin County, California
Tuesday, July 16, 2024



Computed DNL = 54 dB

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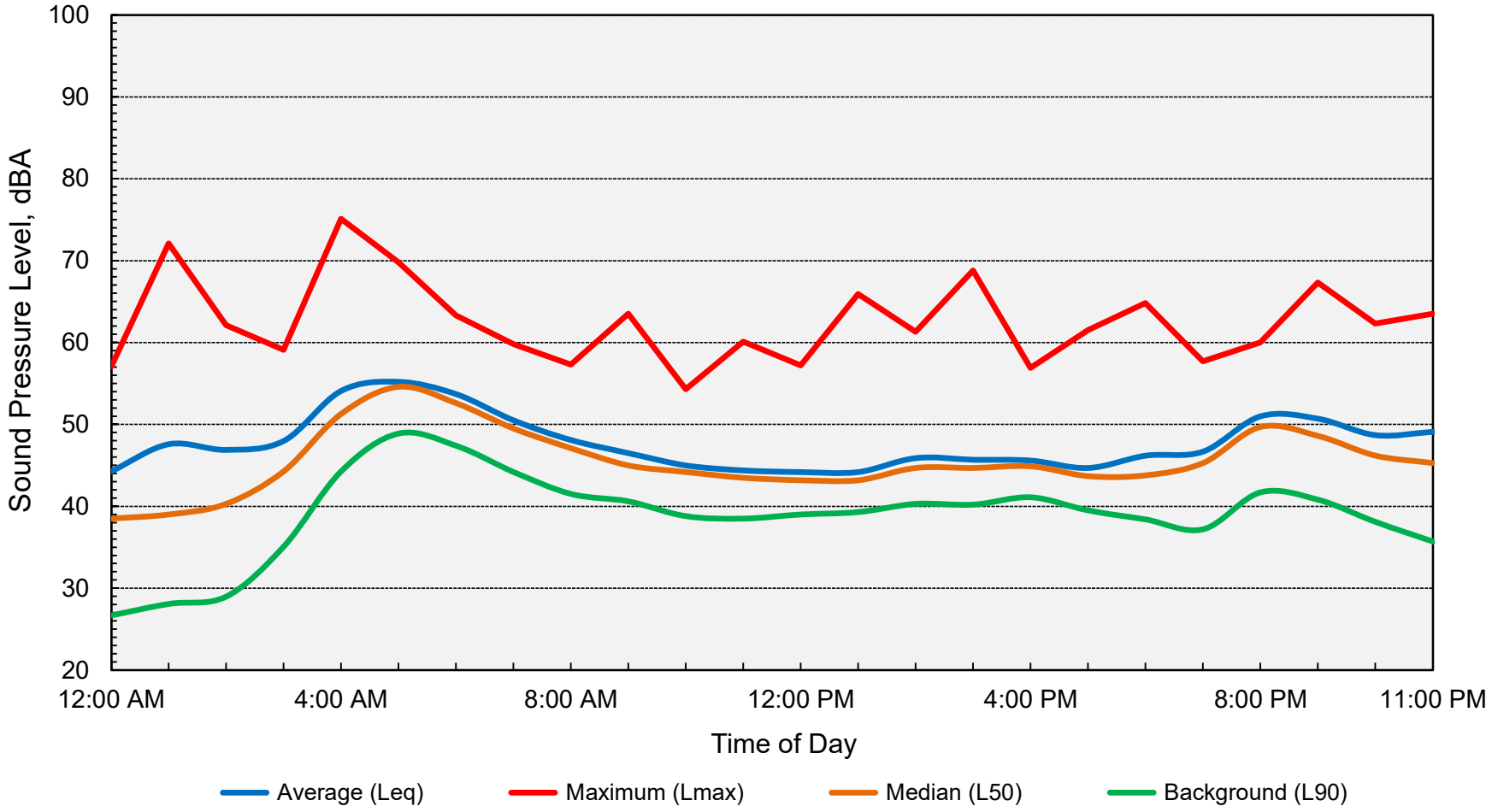
Appendix D-2
Long-Term Ambient Noise Monitoring Results, LT-1
Kautz Lockeford Residential Development - San Joaquin County, California
Wednesday, July 17, 2024



Computed DNL = 57 dB

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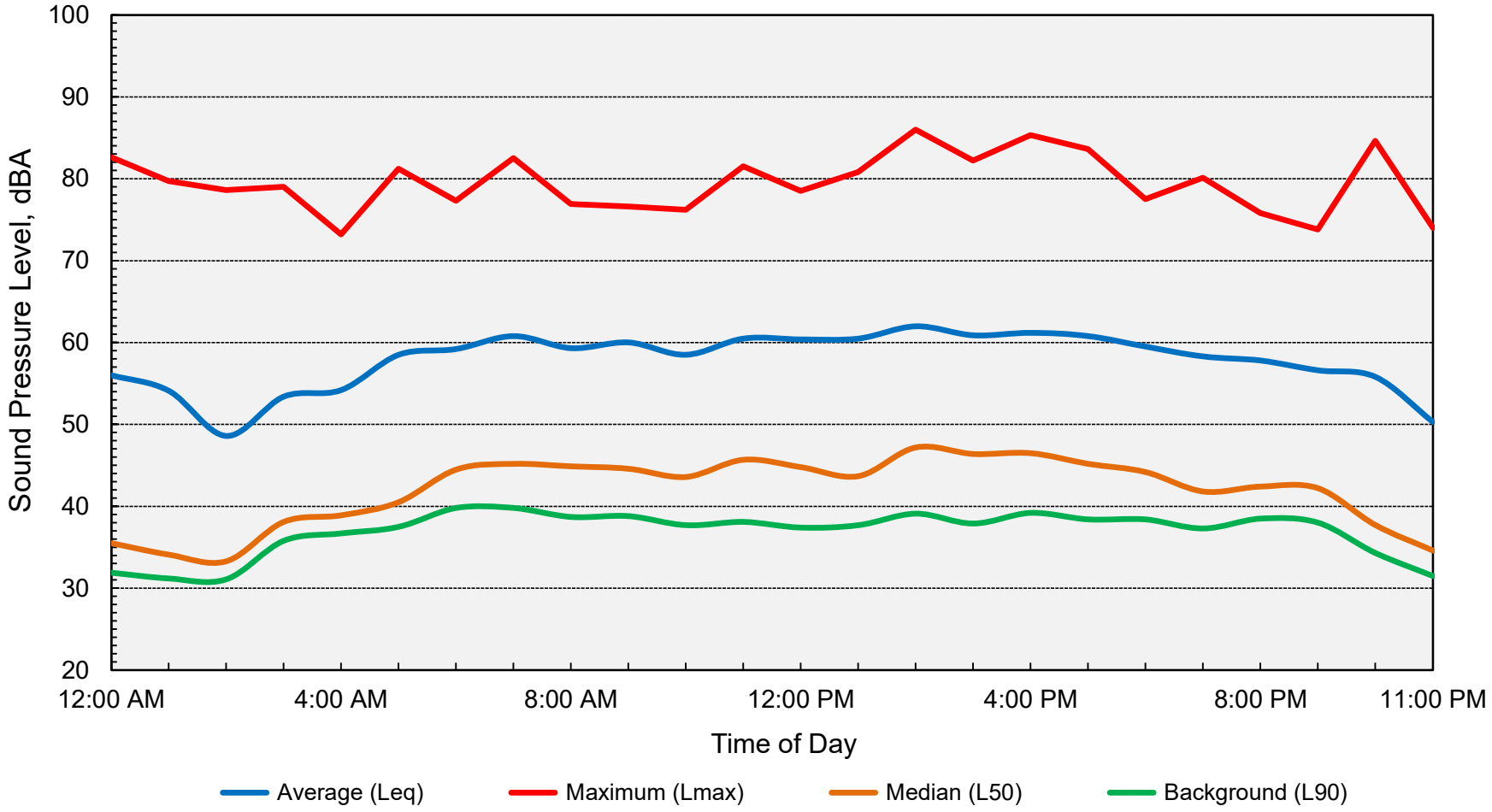
Appendix D-3
Long-Term Ambient Noise Monitoring Results, LT-2
Kautz Lockeford Residential Development - San Joaquin County, California
Tuesday, July 16, 2024



Computed DNL = 63 dB

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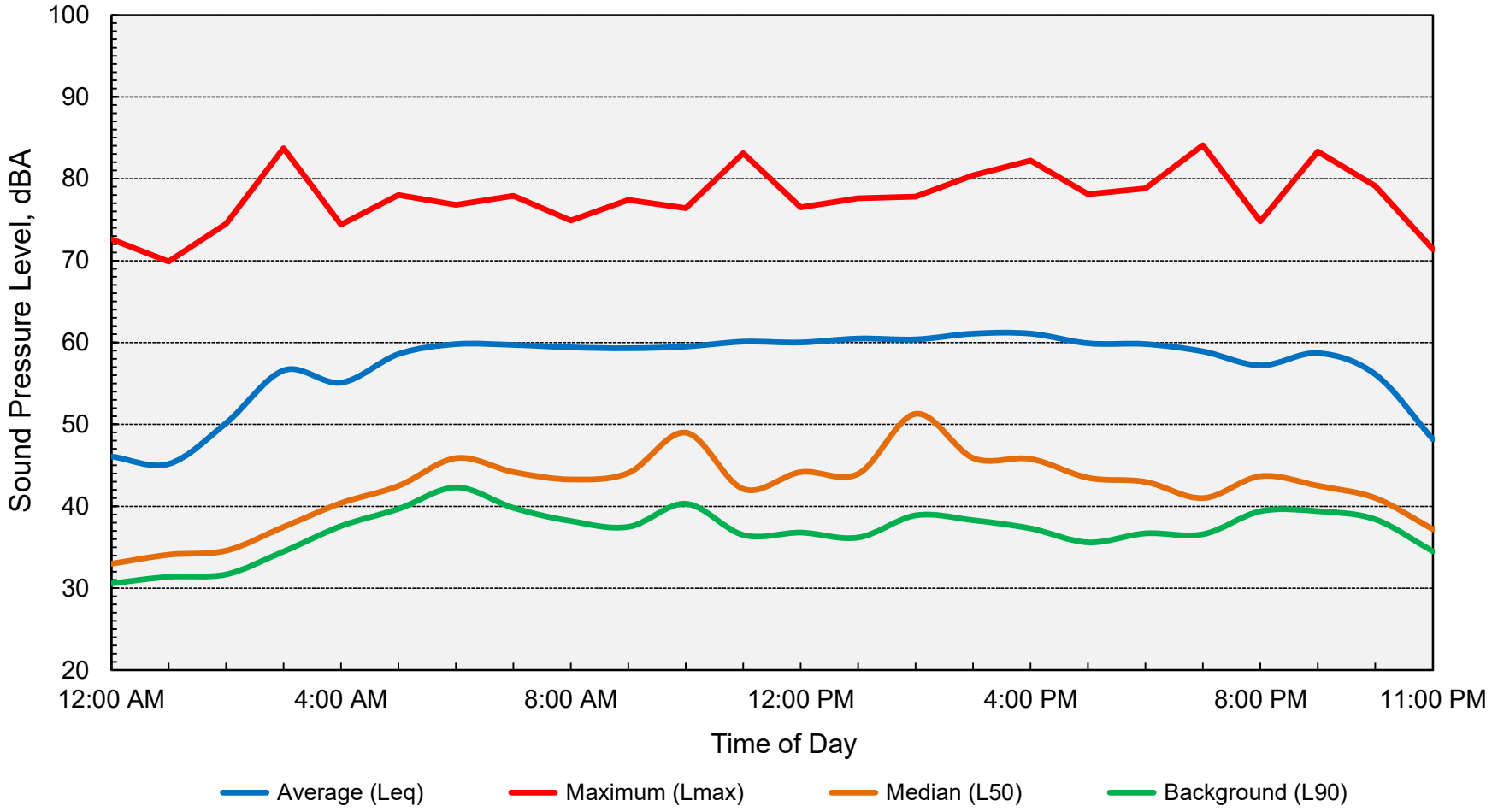
Appendix D-4
Long-Term Ambient Noise Monitoring Results, LT-2
Kautz Lockeford Residential Development - San Joaquin County, California
Wednesday, July 17, 2024



Computed DNL = 63 dB

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APPENDIX G
TRANSPORTATION IMPACT STUDY

Transportation Impact and Vehicle Miles Traveled Report

Kautz Lockeford Subdivision

County of San Joaquin

April 29, 2025

Final Report

→ The Power of Commitment

Executive Summary

The County of San Joaquin (County) retained GHD to perform Transportation Impact Study (TIS) and Vehicle Miles Travelled (VMT) analyses for the proposed Kautz Lockeford Subdivision project would consist of 296 single-family dwelling units on existing agricultural parcels located immediately east of N. Tully Road and south of State Route (SR) 12/SR 88. With the parcel(s) zoned for agricultural development, a General Plan Amendment (GPA) would be required to change the zoning designation to Residential-Low (R-L). The proposed site plan includes one driveway access to N. Tully Road and four internal driveway access points to east-west Malbec Drive (future road). Malbec Drive will connect to N. Tully Road providing another project access driveway. Malbec Drive will also provide access to future development parcels (Lockeford Vistas) and will allow access to SR 12 88 via a new roadway connection to Sierra Drive. **Figure 1.1** presents the vicinity area map and project location.

The proposed site plan includes one driveway access to N. Tully Road and four internal driveway access points to Malbec Drive (new street). **Figure 5.1** presents the site plan for the proposed development. Project access scenarios will differ based on the amount of development proposed under both Existing plus Project Conditions and Near-Term (EPAP) plus Project Conditions and Cumulative plus Project Conditions as follows:

Existing plus Project Conditions: There will be two project access points at N. N. Tully Road; 1) a primary project street located approximately 300-325 feet northwest of Sharon Drive. 2) a secondary access (future street) will be provided by Malbec Drive that will extend in a southwest-northeast direction along the project site's western border. Four internal project streets will connect to Malbec Drive with the roadway connecting to N. Tully Road directly opposite the Lockeford Elementary School parking lot under Existing plus Project Conditions.

Near-Term (EPAP) plus Project & Cumulative plus Project Conditions. There will be three project access points; two project access points to N. Tully Road (listed above) and a third project access connection at the N. Sierra Drive/SR 12 88 intersection. The third access connection to the N. Sierra Drive/SR 12 88 intersection will be provided by the approved Lockeford Vistas residential project.

The proposed project site would generate approximately 207 weekday AM peak hour trips and 278 weekday PM peak hour trips.

The traffic analysis considered traffic operations (selected in coordination with San Joaquin County) along the following corridors:

- N. Tully Road-Elliot Road (between Brandt Road and SR 12 88)
- SR 12 88 (between Brandt Road and N. Sierra Drive)
- Jack Tone Road-Hammond Street (between Brandt Road and N. Tully Road)

Consistent with the San Joaquin County Traffic Impact Study Guidelines (2008), the following traffic scenarios were analyzed as a part of this TIAR:

- Existing 2024 Conditions (No Project)
- Near-Term Conditions (EPAP--No Project)
- Cumulative 2045 (No Project)
- Existing 2024 Plus Project
- Near-Term (EPAP) Plus Project
- Cumulative 2045 Plus Project

The following is a summary of the proposed project's recommended traffic circulation improvements and VMT mitigation for significant impacts:

Existing Plus Project Conditions:

Intersections:

Based on proposed project trips adding to an existing, deficient condition at the Brandt Road/SR 12 88 intersection, the following circulation improvements are recommended to improve overall vehicle delays and operations:

> **Brandt Road/SR 12 88 Intersection:** Install a signal at the intersection to improve vehicle delays and reduce overall vehicle queuing during the AM and PM peak hours. Under Existing plus Project conditions, the minor street stop-control intersection meets the peak hour volume warrant (Warrant #3). Since unacceptable intersection LOS and vehicle delay is an existing deficient condition, it is recommended that the proposed project contribute a 100% share of the costs for construction to improve the intersection consistent with San Joaquin County guidelines. Separate left-turn lanes (and phasing) are provided on SR 12 88 as part of overall intersection and signal design. With signalization, the Brandt Road/SR 12 88 intersection would be operating at LOS A during both the AM and PM peak hours.

Roadway Segments:

With proposed project trips, the highway segments of SR 12 88 both east and west of the Elliot Road/N. Tully Road intersection would continue to operate at LOS E conditions. N.Tully Road south of Hammond Street and Jack Tone Road-Hammond Road west of N. Tully Road would continue to operate at acceptable levels (LOS C or better) The following VMT mitigation measures recommended to help reduce overall vehicle delays and operations:

VMT:

The vehicle miles traveled (VMT) analysis conducted for the project development indicates an overall VMT per capita of 28.5. While the calculated project VMT falls below the County average of 29.6, it does not meet the 16% below threshold of 24.9 that would preclude mitigation from proposed project uses. For the proposed project to satisfy the County's VMT criteria, overall project-generated VMT would have to be reduced by 14.4% (28.5 project VMT / 24.9 County threshold = 1.1445 or 14.4%).

Based on a review of the CAPCOA Handbook[1] and Caltrans Mitigation Playbook[2], specific mitigation strategies for low-density residential housing projects for VMT reduction are somewhat limited. Factors that contribute to this condition include the rural location of the project site, lack of transit providers, discontinuous pedestrian and bicycle facilities, and limited regional access routes. However, after a review of potential VMT reduction measures, the following mitigation is recommended as part of project development to reduce overall VMT and improve pedestrian/bicycle/transit access:

Local VMT-ATP Mitigation:

Provide Continuous Pedestrian Sidewalk Connection Along North Tully Road:

The planned pedestrian sidewalk along the proposed project site's frontage of N. Tully Road should be extended northwest to connect to Hammond Street and/or the planned sidewalk improvements associated with the Caltrans State Route 88 Pavement Anchor Project. Due to existing physical impediments just northwest of Malbec Drive on N. Tully Road, it is recommended that the pedestrian sidewalk be extended on the west side of the roadway opposite Malbec Drive. Caltrans indicates that, "Most transportation-related use of AT (active transportation) facilities is for short trips – less than 20 minutes, or about a mile walking or 3 miles cycling."[2] Providing improved pedestrian connection to the Lockeford downtown commercial areas can help to reduce the need for short vehicle trips. Residents from the proposed project could walk or bike safely to the downtown areas without the need for vehicle

[1] California Air Pollution Control Officers Association (CAPCOA), *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, October 2024. Available: **https://www.caleemod.com/handbook/index.html**
[2] California Department of Transportation, *Caltrans SB 743 Program Mitigation Playbook*, Draft, July 2024.

travel. Based on the CAPCOA Handbook, active transportation planning (ATP) (including pedestrian network improvements) would typically reduce the overall proposed project VMT by 6.4%.[3]

Limit the Malbec Drive/N. Tully Road Intersection to Right-Turns-Only Inbound/Outbound Vehicles:

The Malbec Drive/N. Tully Road intersection should be limited to right-turns-only for inbound/outbound vehicles due to the proximity of the Lockeford Elementary School and its associated parking lot driveways on the southwest side of the street. A raised median can be installed on N. Tully Road that would prevent left-turn movement at the intersection while still allowing adequate access to school driveways. The preclusion of left-turn movements at this intersection will improve pedestrian/bicycle safety and comfort, while reducing potential conflicts with vehicular activity to/from the Lockeford Elementary School driveways. While ostensibly a pedestrian safety improvement in reducing pedestrian/vehicle conflicts; limiting vehicle access at Malbec Drive and N. Tully Road could encourage more walking by providing a safer environment between the proposed project site and Lockeford Elementary School consistent with ATP traffic calming improvements.

Install East-West Pedestrian Crosswalk on N. Tully Road at the Malbec Drive/N. Tully Road Intersection:

In conjunction with the recommended raised median on N. Tully Road, install a raised east-west pedestrian crosswalk on N. Tully Road to provide access between the proposed project site and Lockeford Elementary School. The closest east-west pedestrian crosswalk on N. Tully Road is currently located at Hammond Street 375-feet northwest of Malbec Drive. A raised east-west pedestrian crosswalk at the south side of the Malbec Drive/N. Tully Road intersection in conjunction with a Rectangular Rapid Flashing Beacon (RRFB) will provide a safer crossing at N. Tully Road. As with the recommended pedestrian sidewalk improvements, installation of a raised crosswalk would encourage more walking and reduce overall proposed project VMT by 6.4% based on the CAPCOA Handbook. Both recommended sidewalk and crosswalk improvements would be considered combined and not additive for VMT reduction purposes.

Install Class I Shared Use Path:

Install a Class I shared use path along the southwest frontage of the project site east side of N. Tully Road) extending from the project site's southeast border to Malbec Drive. This would be in place of just a sidewalk. The separated shared use path would provide a buffer from vehicle travel for both walking and biking along N. Tully Road. Based on the CAPCOA Handbook, the estimated reduction in project-related VMT would be estimated at 0.8%.[4]

Total VMT Reduction: Local Mode Shift for Short Walking Trips Within Lockeford

The recommended VMT-ATP project-related measures listed above would complement the proposed project's school-related trips and help reduce overall VMT. No reduction in overall proposed project trip generation related to local school trips was assumed as part of this analysis. However, based on research using Replica (Big Data), school-related vehicle trips in Lockeford account for approximately 8% of residential vehicle trips. Additionally, Replica shows that shopping-related and errand vehicle trips in Lockeford account for approximately 20% of residential vehicle trips. With the proposed project site being located on N. Tully Road directly across from the Lockeford Elementary School and within walking or biking distance to nearby stores, restaurants, and other activity centers, a significant reduction in vehicle trips could be gained through incorporation of recommended ATP measures through a mode shift to walking, bicycling, and/or carpooling as indicated for each measure. For trips less than 2 miles in Lockeford (short trips), 50% of those trips are shopping, errand, recreation, or other trips (non-work, and non-school trips). Based on the Replica data, of these local non-work and non-school trips, 41% currently walk or bike. Therefore, one could expect a maximum 20% reduction in vehicular trips with sidewalk and shared-use path access to downtown destinations.[5]

[3] CAPCOA, op. cit., Measure T-18 Provide Pedestrian Network Improvement. Available: **https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-18.pdf**
[4] CAPCOA, op. cit., Measure T-19A Construct or Improve Bike Facility. Available: **https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-19-a.pdf**
[5] Replica Big Data, Lockeford school and short walking/biking trips within 2 miles, 2024.

Regional VMT Mitigation:

Park and Ride Lot

The project applicant should investigate the potential for a park and ride (PNR) lot to serve new and existing residents of Lockeford. This improvement could be done in collaboration with the approved Lockeford Vistas project and/or other property along the SR 12 88 corridor in Lockeford. The park and ride lot would reduce overall VMT by removing commute trips from the highway.

It is noted that San Joaquin County has conducted previous VMT analyses for park and ride mitigation potential.[6] Typically, park and ride facilities located near transit hubs and/or dense urban areas do not reduce overall VMT. Conversely, it was found that park and ride facilities located 8-10 miles outside of a heavy dense transit/downtown area could potentially reduce VMT. However, the County noted that VMT reduction for PNR projects are not yet fully justified based on a lack of applicable case studies and examples for developing quantifiable VMT assumptions.

Provide Express Bus/Transit

The project applicant should consider subsidizing an express bus through San Joaquin County Transit between Lockeford and destinations to the west (Lodi, Stockton, Tracy). Again, this would have the effect of reducing commute trips on SR 12 88. Based on the same study for PNR facilities, examples for developing quantifiable VMT assumptions for bus route extensions and additions is based on CAPCOA methods.

Provide Electrical Charging Station(s)

The project applicant could provide electrical charging stations to encourage cleaner use vehicles (EV) in coordination with the park and ride lot. Provide incentives for electrical charging stations within residential dwelling units.

Near-Term Plus Project Conditions:

Same recommendations as Existing Plus Project Conditions

Cumulative Year 2045 Plus Project Conditions

Same recommendations as Existing Plus Project Conditions

[6] Rincon Consultants, Inc., San Joaquin County Vehicle Miles Traveled Transit and Park and Ride Mitigation, Memorandum to Todd Tregenza (GHD), April 21, 2021.

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Appendices

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Appendix D	Signal Warrants

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1. Introduction

The County of San Joaquin (County) retained GHD to perform Transportation Impact Study (TIS) and Vehicle Miles Travelled (VMT) analyses for the proposed Kautz Lockeford Subdivision project (referred to herein as the "Project") located in Lockeford, CA. The proposed project would consist of the following residential land uses:

Main Development Parcels:

- Residential Subdivision: 296 single-family home units

The development proposes 296 single-family dwelling units on existing agricultural parcels located immediately east of N. Tully Road and south of State Route (SR) 12/SR 88. With the parcel(s) zoned for agricultural development, a General Plan Amendment (GPA) would be required to change the zoning designation to Residential-Low (R-L). The proposed site plan includes one driveway access to N. Tully Road and three driveway access points to Malbec Drive (future road) which will access N. Tully Road. Malbec Drive will provide access to future development parcels (Lockeford Vistas) that allow access to SR 12 88 via a new roadway connection to Sierra Drive. **Figure 1.1** presents the vicinity area map and project location.

Included in this TIS are analyses and discussions of the following items.

- Technical parameters and assumptions, Level of Service (LOS) methodologies, data collection, and Existing Conditions
- Approved/Pending (Near-Term) development, trip generation, and associated access to SR 12 88, and Near-Term Conditions.
- The projected Cumulative (Year 2045) weekday AM and PM peak hour intersection operations without the development of the proposed project based on SJCOG transportation model and historical volumes from SR 12 88 AM and PM peak hour projections;
- Quantification of proposed project trip generation is based on accepted Single-Family Detached trip rates found in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition).
- The trip distribution was estimated using existing intersection counts adjacent to the project site and detailed demographic analyses on the City of Lockeford work trips from Big Data United States Census Bureau (OntheMap);
- Resulting proposed project operations on existing weekday AM and PM peak hour intersection operations along Tull Road, Brandt Road, and SR 12 88 study intersections;
- VMT analysis related to CEQA transportation impacts pursuant to SB 743 and the trip characteristics of the proposed project associated with location, size, and County's threshold criteria;
- Planned project circulation improvements and project-related mitigation measures that, if necessary, alleviate unacceptable traffic operations as well as pedestrian/bicycle and/or potential transit improvements consistent with Agency goals.

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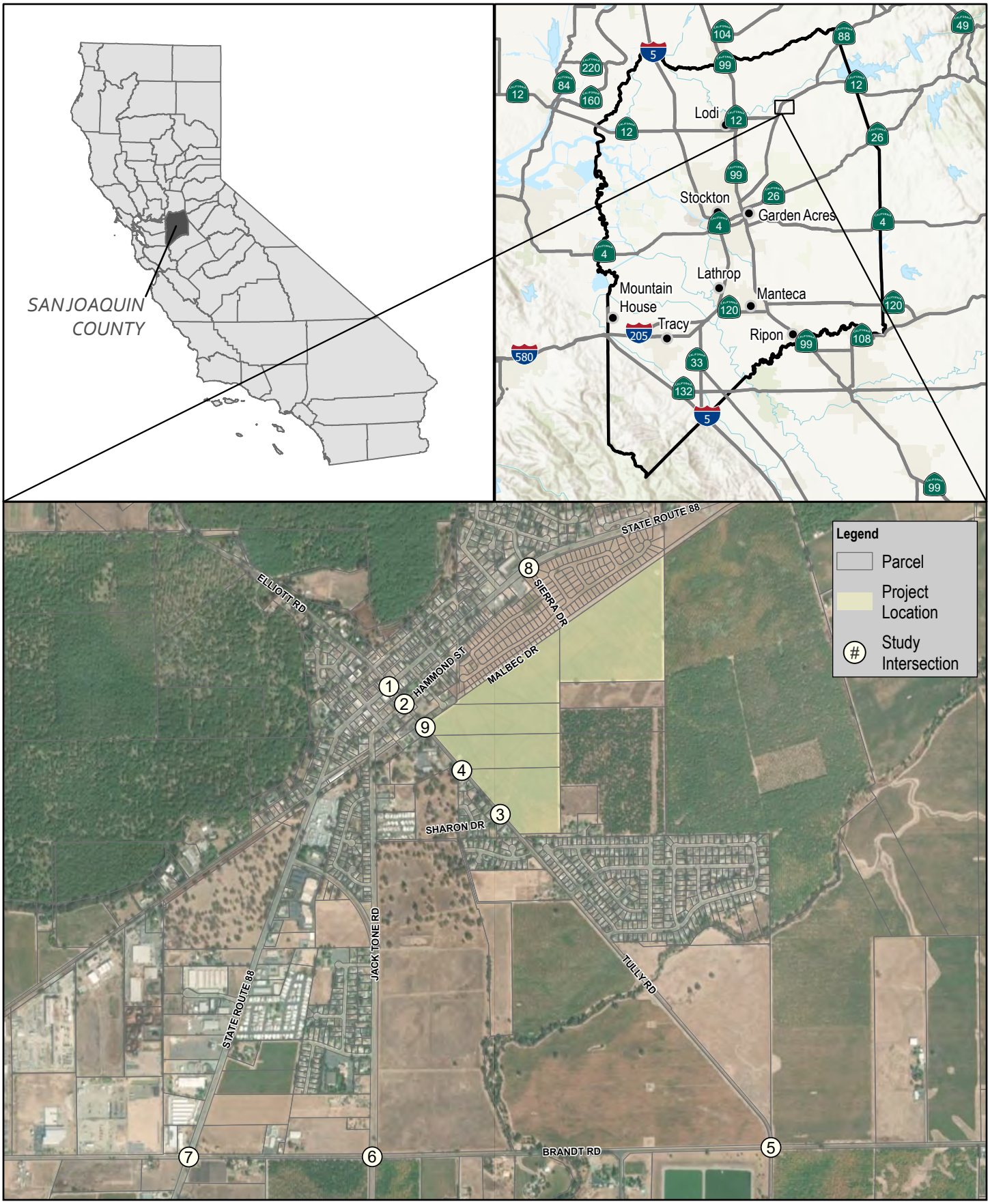

Paper Size ANSI A

0 750 1,500

US Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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GHD

County of San Joaquin
Kautz Lockeford Subdivision

Vicinity Map

Project No. **12645561**
Revision No. **-**
Date **9/5/2024**

FIGURE 1

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Data source: World Topographic Map - labelless: San Joaquin County GIS/Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS; World Imagery: Maxar; World Hillshade: Esri, CGIAR, USGS; Streets, City Limits: Stanislaus County Open Data, 2023. Created by: edarke

2. Technical Analysis Parameters & Methodologies

The following section outlines the analysis parameters and methodologies that are used in the transportation impact study to quantify potential project impacts for the analysis scenarios.

2.1 Vehicle Miles Travelled (VMT)

Senate Bill (SB) 743 was signed into law in 2013, with the intent to better align CEQA practices with statewide sustainability goals related to efficient land use, greater multimodal choices, and greenhouse gas reductions. The provisions of SB 743 became effective Statewide on July 1, 2020. Under SB 743, automobile delay, traditionally measured as the LOS, is no longer considered an environmental impact under CEQA. Instead, impacts are determined by changes to VMT. VMT measures the number and length of vehicle trips made on a daily basis. VMT is a useful indicator of overall land use and transportation efficiency, where the most efficient system is one that minimizes VMT by encouraging shorter vehicle trip lengths, more walking and biking, or increased carpooling and transit. In recognition that the character of communities, availability of travel modes options and geographic areas all differ throughout the State, each jurisdiction, from regional agency, to County, to City, has been given the opportunity to establish their own VMT thresholds consistent with the State's guidelines and regulatory framework. For this analysis, VMT was analyzed to determine compliance under CEQA.

2.1.1 VMT Thresholds

San Joaquin County is in the process of developing their *CEQA Transportation Analysis Guidelines* and the *VMT Thresholds Study* which are used to issue guidance on the assessment of VMT impacts for new developments within the County. Per the County's direction, GHD utilized the methodologies and screening criteria being considered for the County in their Draft guidelines. The County's Draft VMT Guidelines state that either the SJCOG model or other methods approved by the County can be utilized. As the lead agency, the County has discretion in the selection of both the baseline and reduction target, subject to the need to support the selection with substantial evidence.

The VMT analysis consists of two components. The first component is the baseline VMT metric, which is the average VMT per capita in the geographic area selected by the County. The County has selected the unincorporated countywide area for estimating the average baseline VMT per capita. The SJCOG model (version 2022, revised by GHD in March 2024, and excluding the City of Mountain House) was utilized to develop baseline VMT metrics for the unincorporated countywide area. The second component is the percent reduction from the baseline expected from future developments, as the target threshold for evaluating impacts on transportation. The County has selected a 16% draft threshold below the current baseline, based on the current regional reduction target for greenhouse gas emission reductions for San Joaquin County Council of Governments (SJCOG) adopted by the California Air Resources Board (CARB)[7]. **Table 2.1** presents the County's baseline VMT per capita and threshold value, which is used in determining transportation impacts.

Table 2.1 San Joaquin County VMT Metrics

VMT Parameter	VMT Value
Baseline (average unincorporated countywide) VMT per capita	29.6
Threshold (16% below baseline)	24.9

[7] **SB 375 Regional Targets | California Air Resources Board**, **March 2018**.

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2.2 Level of Service Methodologies

In addition to VMT, traffic operations were quantified through the determination of LOS. LOS is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection, or roadway segment, representing progressively worsening traffic conditions. LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. Levels of Service is calculated for all intersection control types using the methods documented in the Transportation Research Board's publication *Highway Capacity Manual, Sixth Edition, A Guide for Multimodal Mobility Analysis, 2016 (HCM 6)*.

2.2.1 Traffic Operations

The Synchro 11 (Trafficware) software program was used to implement the HCM 6 analysis methodologies. Synchro 11 has the capability to produce results based on HCM 2000, HCM 2010, HCM 6, or Synchro methodologies, and takes into account intersection signal timing and queuing constraints when calculating delay, the corresponding delay, and queue lengths. Intersection LOS is calculated for all control types using the methods documented in HCM 6. For signalized or all-way stop-controlled (AWSC) intersections, a LOS determination is based on the calculated averaged delay for all approaches and movements. For two-way or side-street stop-controlled (TWSC) intersections, a LOS determination is based upon the calculated average delay for all movements of the worst performing approach. The vehicular-based LOS criteria for different types of intersection controls are presented in **Table 2.2**. Vehicle-based LOS criteria for different types of roadway segments are presented in **Table 2.3** and **Table 2.4**. Roadway segment LOS is based on the proportion of traffic occurring during the peak hour (K-factor) and proportion of traffic occurring in the peak direction (D-factor).

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Table 2.2 Level of Service (LOS) Criteria for Intersections

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay per Vehicle	
				Signalized	Un-signalized
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	≤10.0	≤10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and ≤20.0	>10.0 and ≤15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and ≤35.0	>15.0 and ≤25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and ≤55.0	>25.0 and ≤35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and ≤80.0	>35.0 and ≤50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	>80.0	>50.0

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Table 2.3 Level of Service (LOS) Criteria for Roadway Segments

K-Factor	D-Factor	Class I Highway - Level				Class I Highway - Rolling				Class II Highway - Rolling			
		LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E
0.09	50%	5,500	9,300	16,500	31,200	4,200	8,400	15,700	30,300	5,000	9,800	18,200	31,200
	55%	4,900	8,700	14,900	30,200	3,700	7,900	14,000	29,200	4,100	8,700	16,000	30,200
	60%	4,400	8,100	13,900	27,600	3,700	6,200	12,800	26,800	3,700	7,900	14,600	27,600
	65%	4,100	7,900	12,900	25,500	3,400	5,900	11,400	24,700	3,300	5,900	13,200	25,500
0.10	50%	5,000	8,400	14,800	28,000	3,800	7,600	14,200	27,200	4,400	8,800	16,300	28,000
	55%	4,400	7,900	13,400	27,100	3,300	7,100	12,600	26,300	3,700	7,900	14,400	27,100
	60%	4,000	7,300	12,500	24,900	3,300	5,600	11,500	24,100	3,300	7,100	13,100	24,900
	65%	3,700	7,100	11,600	23,000	3,000	5,300	10,300	22,300	3,000	5,300	11,900	2,300
0.12	50%	4,100	7,000	12,400	23,400	3,100	6,300	11,800	22,700	3,700	7,400	13,600	23,400
	55%	3,700	6,500	11,200	22,600	2,800	5,900	10,500	21,900	3,100	6,500	12,000	22,600
	60%	3,300	6,100	10,400	20,700	2,700	4,700	9,600	20,100	2,700	5,900	10,900	20,700
	65%	3,100	5,900	9,600	19,100	2,500	4,400	8,500	18,500	2,400	4,400	9,900	19,100
0.14	50%	3,500	6,000	10,600	20,000	2,700	5,400	10,100	19,400	3,200	6,300	11,700	20,000
	55%	3,100	5,600	9,600	19,400	2,400	5,100	9,000	18,800	2,600	5,600	10,300	19,400
	60%	2,800	5,200	8,900	17,700	2,300	4,000	8,200	17,200	2,300	5,100	9,400	17,700
	65%	2,600	5,100	8,200	16,400	2,100	3,800	7,300	15,900	2,100	3,800	8,500	16,400

K-Factor is the proportion of traffic occurring in the peak-hour for the study segment; D-Factor is the proportion of traffic occuring in the peak direction for the study segment.

Class I Highway - Level is a roadway on flat terrain on which motorists expect to travel at relatively high speeds. It can be a major intercity route, primary arterial connecting major traffic generators, daily commuter route, or primary link in state or national highway networks.

Class I Highway - Rolling is similar in use to Class I Level but motorists may need to travel at lower speeds than a Class I Level due to the horizontal or vertical changes in the terrain.

Class II Highway - Rolling is a highway on which motorists expected to travel at moderate speeds. It can be highway serving as access routes to Class I facilities, serving as scenic or recreational routes, or passing through rugged terrain.

Source: Highway Capacity Manual (HCM), Transportation Research Board, Washington, DC, 2010, Chapter 15 (Two-Lane Highways), Exhibit 15-30.

Source: San Joaquin County, General Plan, Transportation and Mobility, Table 4-4, December 2016.

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Table 2.4 Level of Service (LOS) Criteria for Roadway Segments (Continued)

K-Factor	D-Factor	Two-Lane Streets				Four-Lane Streets				Six-Lane Streets			
		LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E
Posted Speed - 30 mi/h													
0.09	0.55	NA	5,900	15,400	19,900	NA	11,300	31,400	37,900	NA	16,300	46,400	54,300
	0.60	NA	5,400	14,100	18,300	NA	10,300	28,800	34,800	NA	15,000	42,500	49,800
0.10	0.55	NA	5,300	13,800	17,900	NA	10,100	28,200	34,100	NA	14,700	41,800	48,900
	0.60	NA	4,800	12,700	16,400	NA	9,300	25,900	31,300	NA	13,500	38,300	44,800
0.11	0.55	NA	4,800	12,600	16,300	NA	9,200	25,700	31,000	NA	13,400	38,000	44,500
	0.60	NA	4,400	11,500	14,900	NA	8,400	23,500	28,400	NA	12,200	34,800	40,800
Posted Speed - 45 mi/h													
0.09	0.55	NA	10,300	18600.0	19,900	NA	21,400	37,200	37,900	NA	31,900	54,000	54,300
	0.60	NA	9,400	17100.0	18,300	NA	19,600	34,100	34,800	NA	29,200	49,500	49,800
0.10	0.55	NA	9,300	16800.0	17,900	NA	19,300	33,500	34,100	NA	28,700	48,600	48,900
	0.60	NA	8,500	15400.0	16,400	NA	17,700	30,700	31,300	NA	26,300	44,500	44,800
0.11	0.55	NA	8,400	15300.0	16,300	NA	17,500	30,500	31,000	NA	26,100	44,200	44,500
	0.60	NA	7,700	14000.0	14,900	NA	16,100	27,900	28,400	NA	23,900	40,500	40,800

Notes: NA = not applicable; LOS cannot be achieved with the stated assumptions.
General assumptions include no roundabouts or all-way STOP-controlled intersections along the facility; coordinated, semi-actuated traffic signals; arrival type 4; 120-s cycle time; protected left-turn phases; 0.45 weighted average g/C ratio; exclusive left-turn lanes with adequate queue storage provided at traffic signals; no exclusive right-turn lanes provided; no restrictive median; 2-mi facility length; 10% of traffic turns left and 10% turns right at each traffic signal; peak hour factor = 0.92; and base saturation flow rate = 1,900 pc/h/ln.
Additional assumptions for 30-mi/h facilities: signal spacing = 1,050 ft and 20 access points/mi.
Additional assumptions for 45-mi/h facilities: signal spacing = 1,500 ft and 10 access points/mi.

Source: San Joaquin County, General Plan, Transportation and Mobility, Table 4-4, December 2016.

2.2.2 Level of Service Policies

The San Joaquin County General Plan Public Facilities and Service Element, 2016, specifies the following policy pertaining to the LOS standards for County-maintained roadways:

TM-3.1 Roadway Provision

The County shall maintain Level of Service (LOS) standards consistent with the San Joaquin Council of Governments (SJCOG) Congestion Management Program (CMP) for State highways and designated County roadways and intersections of regional significance. Per the CMP, all designated CMP roadways and intersections shall operate at an LOS D or better except for roadways with "grandfathered" LOS. LOS for State highways shall be maintained in cooperation with Caltrans. The County LOS standard for intersections is LOS "D" or better on Minor Arterials and roadways of higher classification and LOS "C" or better on all other non-CMP designated County roadways and intersections. The County shall also maintain the following:

- *on State highways, LOS D or Caltrans standards whichever is stricter.*
- *Within a city's sphere of influence, LOS D, or the city planned standards for that level of service.*
- *On Mountain House Gateways, as defined in the Master Plan, LOS D, on all other Mountain House roads, LOS C.*

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For State highways are designated as part of SJCOG's CMP, both the Caltrans and CMP LOS standards shall apply. Where roadways are designated as part of SJCOG's CMP, both the County and CMP LOS standards shall apply.

Intersection LOS threshold criteria are used to determine if the proposed project's traffic creates an adverse effect on operations and if capacity, safety, or operational improvements are warranted. *It is noted that Caltrans no longer maintains intersection LOS standards as part of CEQA threshold requirements and has instead adopted VMT thresholds consistent with State and OPR guidelines.* However, for the purpose of this study and consistent with SJCOG's CMP, LOS D or better is applied to all signalized intersections to determine substantial adverse effects. For non-signalized intersections that are operating at LOS E or F and do not meet signal warrants; should the intersection continue to operate at LOS E-F with all reasonable circulation improvements, then further mitigation is not necessary. In these cases where non-signalized intersections are operating below the LOS D threshold and do not meet signal warrants, overall volumes are usually low and poor LOS applies to minor-street volumes. Until the non-signalized intersection reaches the minimum volumes for signalization, stop control would be adequate. The exception to this criterion would be if the non-signalized intersection is experiencing a collision and/or safety problem. Should the non-signalized intersection experience a collision rate higher than the State average for a similar facility, then reasonable capacity improvements are required to correct identified deficiencies.

2.2.3 Caltrans Safety Guidance

In addition to intersection/roadway operation threshold guidance provided by SJCOG's CMP, Caltrans provides additional direction of vehicle miles traveled (VMT) impacts through their SB 743 Program. Specifically, the Caltrans SB 743 Program Mitigation Playbook suggests various measures for VMT impacts to reduce overall trip lengths and drive-alone modes.[8] Suggested measures can include, telecommuting, road diets, lane management, and park and ride lots (to name a few). In addition, Caltrans has teamed with other public and private agencies to develop strategies for reducing greenhouse gas emissions, climate vulnerabilities, and health and equity.[9] The handbook contains specific strategies and quantification for reducing greenhouse gas emissions associated with transportation associated with land use, trip reduction programs, parking or road pricing/management, neighborhood design, transit, and clean air vehicles.

2.2.4 Technical Analysis Parameters

Table 2.5 presents the technical parameters that are utilized for the evaluation of the study intersections and ramp segments for the analysis scenarios. All parameters not listed should be assumed as default values or calculated based on the parameters listed.

Table 2.5 Technical Parameter Assumptions

	Technical Parameter	Assumption
1	Intersection Peak Hour Factor (PHF)	For existing scenarios, PHF has been based on intersection field data from traffic counts. In addition, a minimum PHF of 0.70 or greater has been used at all intersections. For future scenarios, 0.92 PHF has been assumed.
2	Intersection Heavy Vehicle Percent	Based on intersection heavy vehicle percentage from traffic counts, with a minimum of 2%. Should the intersection experience a heavy vehicle percentage of 10 percent or greater, all heavy vehicles are converted to passenger car equivalents (PCE's) for intersection LOS calculations.
3	Approach Speed	Based on speed limits displayed on Google Streetview, as of August 1, 2024. For future roadways and roadways where no speed limit was found, assumed a 25 miles per hour approach speed on residential roadways and a 55 miles per hour approach speed on rural roadways.

[8] Caltrans, SB 743 Program, Mitigation Playbook, Draft, July 2022.
[9] California Air Pollution Control Officers Association (CAPCOA), Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, Final Draft, December 2021.

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To determine whether “significance” should be associated with unsignalized intersection operations, a supplemental traffic signal “warrant” analysis is be completed. The term “signal warrants” refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an otherwise unsignalized intersection. This study employs the signal warrant criteria presented in the latest edition of California’s Manual on Uniform Traffic Control Devices (CA MUTCD) for specific study intersections impacted by proposed project traffic. The signal warrant criteria are based upon several factors including volume of vehicular and pedestrian traffic, frequency of accidents, location of school areas etc. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. The ultimate decision to signalize an intersection should be determined after careful analysis of all intersection and area characteristics. As an initial evaluation, the “peak hour” volume warrant (Warrant #3) has been used for this analysis to screen unsignalized study intersections operating below San Joaquin County LOS thresholds for signalization.

3. Setting

The following sections describe the roadway network, study intersections, study roadways, and multi-modal pedestrian/transit facilities.

3.1.1 Study Area Roadway Network

North Tully Road is oriented in a northwest-southeast direction between SR 12 88 and Brandt Road and would provide direct access to the proposed project site. In the project study area, N. Tully Road is a two-lane roadway that provides access primarily to residential and agricultural areas in Lockeford south of SR 12 88. In addition, the roadway also provides access to the Lockeford Elementary School located on the west side of facility approximately 550 feet south of SR 12-88. The vehicle speed limit is 25 mph between the SR 12 88 to the end of the school property (School Zone) and increases to 35 mph past the elementary school in the southbound direction. There are no curb, gutters, and sidewalks on North Tully Road. However, the exception would be on the block between Hammond Street and SR 12 88 as well as between Moody Lane and E. Juniper Avenue south of the proposed project site.

Elliot Road extends in a northwest direction from the N. Tully Road and SR 12 88 intersection forming the fourth of leg of the signalized intersection. North of SR 12 88, Elliot Road is a two-lane roadway that provides access to commercial uses near the State Highway then transitions to residential areas as it extends northwest. The speed limit is 25 mph in these areas and increases to 45 mph as it transitions to agricultural areas past Laird Street. Curb, gutter, and sidewalk are located on the south side of the roadway between Church Street past Laird Street. It is noted that Elliot Road is a popular route for motorists travelling west and north of Lockeford to access

Hammond Street extends in a northeast-southwest direction between Oak Street and Jack Tone Road. Located just northwest of the proposed project site, Hammond Street provides access primarily to the residential and institutional areas and intersects N. Tully Road southeast of SR 12 88. A two-lane roadway, Hammond Street provides an alternative route to southwest Lockeford and SR 12-88.

Jack Tone Road (North) is oriented in a north-south direction between Hammond Street and Brandt Road west of the proposed project site. A two-lane roadway, Jack Tone Road provides access to residential and institutional areas in Lockeford east of SR 12 88. Between N. Tully Road and E. Jack Tone Road the speed limit is 25 mph. Curb, gutter, and sidewalks exist on the west side of Jack Tone Road where residential development exists. In addition, a wide parking-buffer lane (32-feet) extends for approximately 1,500-feet along this residential frontage. South of E. Jack Tone Road the speed limit is 45 mph.

Sharon Drive is located directly opposite the proposed project site extending west from N. Tully Road. A long 550-foot cul-de-sac, Sharon Drive provides access to residential areas and is a wide two-lane street with parking on both sides.

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Brandt Road is located south of the project site and extends in an east-west direction between SR 12 88 and Skaggs Ranch Road. In the project study area, the roadway has two travel lanes with a speed limit of 55 mph and provides access to agricultural areas.

North Sierra Drive is located off SR 12 88 northeast of the project site and extends into residential areas. A two-lane residential street with curb, gutter, and sidewalks, N. Sierra Drive is situated east of N. Tully Road.

State Route 12/SR 88 (SR 12 88) provides regional as well as local access to the Lockeford area extending in a northwest-southeast direction in the study area. On a regional basis, the highway splits southwest of Lockeford with SR 12 extending east-west to Lodi (via Victor Road) and SR 88 continuing south connecting to SR 99 further south in Lodi. Northeast of Lockeford, SR 12 88 extends to Clements where (again) it divides into two facilities. SR 88 continues east to Jackson and Pine Grove continuing all the way to SR 395 and the California-Nevada border. SR 12 continues east to Valley Springs eventually connecting to SR 49 in San Andreas. Focusing on the Lockeford area, SR 12 88 is a three-lane facility starting at Brandt Road and extending northeast through the entire downtown area including two travel lanes, a two-way-left-turn-lane, and left-turn pockets at more major intersections. The speed limit is 50 mph extending northeast from Brandt Road and reduces to 35 mph near Riverview Aly as it enters the commercial areas of Lockeford. At N. Tully Road, SR 12 88 has curb, gutter, and sidewalks within the half-block area surrounding the intersection. Continuing northeast through Lockeford, vehicle speed limits increase back to 50 mph just past N. Sierra Drive.

3.1.2 Study Locations

For this study, seven existing intersections and two future intersections were identified for study under AM and PM peak hour conditions and three roadway segments have been identified for daily counts. These intersections have been evaluated for average weekday AM and PM peak hour operations under all analysis scenarios. Existing geometry including lane usage and storage capacity at the study locations are determined based on field observations.

3.1.2.1 Study Intersections

The study intersections are listed below. Peak hour turning movement counts were collected at these intersections on August 20, 2024. All local schools were in session during data collection periods.

1.	Tully Rd/Elliott Rd & SR 12 88	Signalized
2.	Tully Rd & Hammond St	Stop-Sign (Hammond Street)
3.	Tully Rd & Sharon Dr	Stop-Sign (Sharon Drive)
4.	Tully Rd & Main Project Dwy (Future)	Stop-Sign (Project Driveway)
5.	Tully Rd & Brandt Rd	All-Way-Stop-Control
6.	Jack Tone Rd & Brandt Rd	All-Way-Stop-Control
7.	SR 12 88 & Brandt Rd	Stop-Sign (Brandt Road)
8.	N Sierra Dr & SR 12 88	Stop-Sign (N. Sierra Drive)
9.	Tully Rd & Malbec Dr (Future)	Stop-Sign (Malbec Drive)

3.1.2.2 Study Roadways

The study roadways are listed below. Daily roadway counts were collected at these segments on August 20, 2024.

- SR 12 88, west of southwest of Brandt Road
- Tully Road, south of Hammond Street
- Jack Tone Road/Hammond Street, west of N. Tully Road

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3.1.3 Multi-Modal Pedestrian/Bicycle/Transit Facilities

The San Joaquin County Master Bicycle Plan defines bicycle facilities consistent with Caltrans classifications associated with Class 1 (Multimodal Off-Street Path), Class II (Bike Lane), Class III (Bike Route) facilities.[10] Bicycle facilities in the project study area are few due to the primarily rural nature of roadways, agriculture uses, and lack of roadway frontage improvements. Where more recent development has occurred, frontage improvements along N. Tully Road-Elliot Road, Jack Tone Road, Hammond Street, Sierra Drive, and SR 12 88 (in the downtown area) have provided sidewalks and limited striped shoulder lanes. However, these striped lanes are not designated as Class II bike facilities. In addition, commercial and residential development along SR 12 88 and N. Tully Road is discontinuous and not linked. The County's General Plan indicates that gaps in the pedestrian/bicycle network should be eliminated in the rural network. As noted, where newer developments have occurred, limited improvements have been installed (curb, gutter, and sidewalks). Currently, pedestrian crosswalks are found at the N. Tully Road-Elliot Road/SR 12 88 intersection and the Lambert Way/N. Jack Tone Road intersection (south of Hammond Street).

Transit options for the Lockeford area are very limited (if any). A review of the South County Transit and San Joaquin Regional Transit District websites and system maps indicate no bus service/routes currently serving the Lockeford area.

3.2 Data Collection

For the purposes of proposed project analysis, new intersection turning movement counts for the four existing intersections were collected on Tuesday August 20, 2024 during the weekday AM peak and PM peak periods based on County direction. The traffic data collection was conducted to capture peak commute traffic when schools were in session during the weekday conditions. The AM peak hour is defined as the one continuous hour of peak traffic flow counted between 7:00 AM and 9:00 AM, and the PM peak hour is defined as the one continuous hour of peak traffic flow counted between 4:00 PM and 6:00 PM under typical weekday conditions (see Turning Movement Count Data—Appendix A).

State Route 12/SR 88, Jack Tone Road, and Elliot Road are classified as major arterial roadways in the County's Circulation Element. The remaining project study roadways are collector streets and/or local residential streets. As noted, field observations indicate that the N. Tully Road-Elliot Road/SR 12 88 and Brandt Road/SR 12 88 intersections can experience vehicle queuing during peak hour operations. Vehicle queuing is related to higher north-south traffic volumes on SR 12 88.

3.3 Collision Analysis

A collision analysis was conducted for the study area to determine any trends or patterns that may indicate a safety issue at adjacent intersections and roadways in the study area. The most current five years of collision data, from January 1, 2019, through December 31, 2023, was collected from the SWITRS database and analyzed for the purpose of this report.

As shown in **Table 3.1**, the locations with the highest number of collisions are the intersection of N. Tully Road/Elliott Road and SR 12 88 and the intersection of Jack Tone Road and Brandt Road. Around two thirds of the collisions at study intersections resulted in property damage only. There were no fatal or severe injury collisions at any of the study intersections. It is noted that, of the collisions associated with the Jack Tone Road/Brandt Road intersection,11 involved "broadside" collision. "Broadside" collisions can be typical of minor-street, stop-sign controlled intersections with the major street free-flow. These conditions existed at the Jack Tone Road/Brandt Road intersection into 2022 with only Brandt Road as the minor street stop-controlled movement. However, overall intersection control was modified to all-way-stop-control in 2023, with no additional broadside collisions to-date.

[10] San Joaquin County, Master Bicycle Plan, November 2020.

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Table 3.1 Collisions at Study Intersections between 2019 and 2023

Intersection ID	Intersection	By Severity					By Type							By Year					Bicycle Involved Collisions	Pedestrian Involved Collisions	Total Collisions (2019-2023)	24-Hr Entering Volume (assuming K=0.10 applied to PM Peak Hour volumes)	Collision Rate (Per Million Entering Vehicles)	CA Average Collision Rate (Per Million Entering Vehicles)
		Fatal	Severe Injury	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Head-On	Sideswipe	Rear End	Broadside	Hit Object	Vehicle/Pedestrian	Other	2019	2020	2021	2022	2023						
1	Tully Rd/Elliott Rd & SR 12/SR 88	0	0	1	2	11	1	1	8	2	2	0	0	4	2	3	3	2	0	0	14	14990	0.51	0.55
2	Tully Rd & Hammond St	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2740	0.00	0.36
3	Tully Rd & Sharon Dr	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1780	**0.31**	0.22
4	Tully Rd & Main Project Dwy (Future)																							
5	Tully Rd & Brandt Rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1760	0.00	0.59
6	Jack Tone Rd & Brandt Rd	0	0	4	1	8	0	0	0	11	2	0	0	2	4	5	1	1	0	0	13	3080	2.31	0.59
7	SR 12/SR 88 & Brandt Rd	0	0	1	1	2	0	0	1	3	0	0	0	0	2	2	0	0	0	0	4	14660	0.15	0.29
8	N Sierra Dr & SR 12/SR 88	0	0	0	1	1	0	0	0	0	1	1	0	1	0	1	0	0	0	0	2	11080	0.10	0.22
9	Tully Rd & Malbec Dr (Future)																							

3.4 Near-Term (Approved/Pending) Projects

Based on discussions with San Joaquin County staff, there are two (2) approved/pending projects that would be assumed for short-term development purposes. These include the Lockeford Vistas Residential project and a commercial-retail convenience store/gas station/restaurant project. The two approved/pending projects are described in detail in the following sections.

3.4.1 Lockeford Vistas

The proposed project would consist of 165 single family residential lots on 37 acres immediately north of the proposed project site and south of SR 12 88. The project would be accessible via two street connections to SR 12 88: one access point at the Sierra Drive intersection and another access driveway approximately 1,300-feet to the east.

For the purpose of approved/pending project analysis, the existing traffic analysis for the Lockeford Vistas project and all conditions of approval (COA's) associated with the Lockeford Vistas project are assumed for short-term development conditions. For the purposed of this analysis, the following circulation improvements are assumed based on approved/pending conditions:

1. SR 12/88 & Sierra Drive access intersection:
    - Install left-turn lanes (and separate phasing) at the eastbound and westbound SR 12/88 approaches. Assumed 100' turn pocket with 75' taper.

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- Install a deceleration right-turn lane on the SR 12/88 eastbound approach. This improvement could be made within the existing right of way. When SR 12/88 is ultimately widened to four lanes, a separate right turn lane will no longer be needed. Assumed 100' turn pocket with 75' taper.

Trip generation and trip assignment for the Lockeford Vistas project has been taken directly from the traffic analysis performed for the development by Dowling Associates, Inc.

3.4.2 PA-2300250 (C); Convenience Store/Gas Station/Restaurant

Phase 1 includes the construction of a new 2,695- square-foot convenience store with off-premises liquor sales, a tunnel car wash with (4) vacuum stations, and a fuel canopy with (6) multiple fuel dispensers. Phase 2 includes the construction of a new 1,991-square-foot quick serve restaurant; located on the project site is on the eastside of State Route 88, 1,250 feet south of Jack Tone Bypass Road, Lockeford. **Figure 3.1** shows the project site plan.

Daily and peak hour trip generation for the convenience store/gas station/restaurant approved/pending project is based on standard ITE trip rates for proposed uses. The commercial-retail nature of the project allows for pass-by trips (ITE research) as well as a small internal trip reduction. The assumed trip generation for this project is displayed in **Table 3.2.**

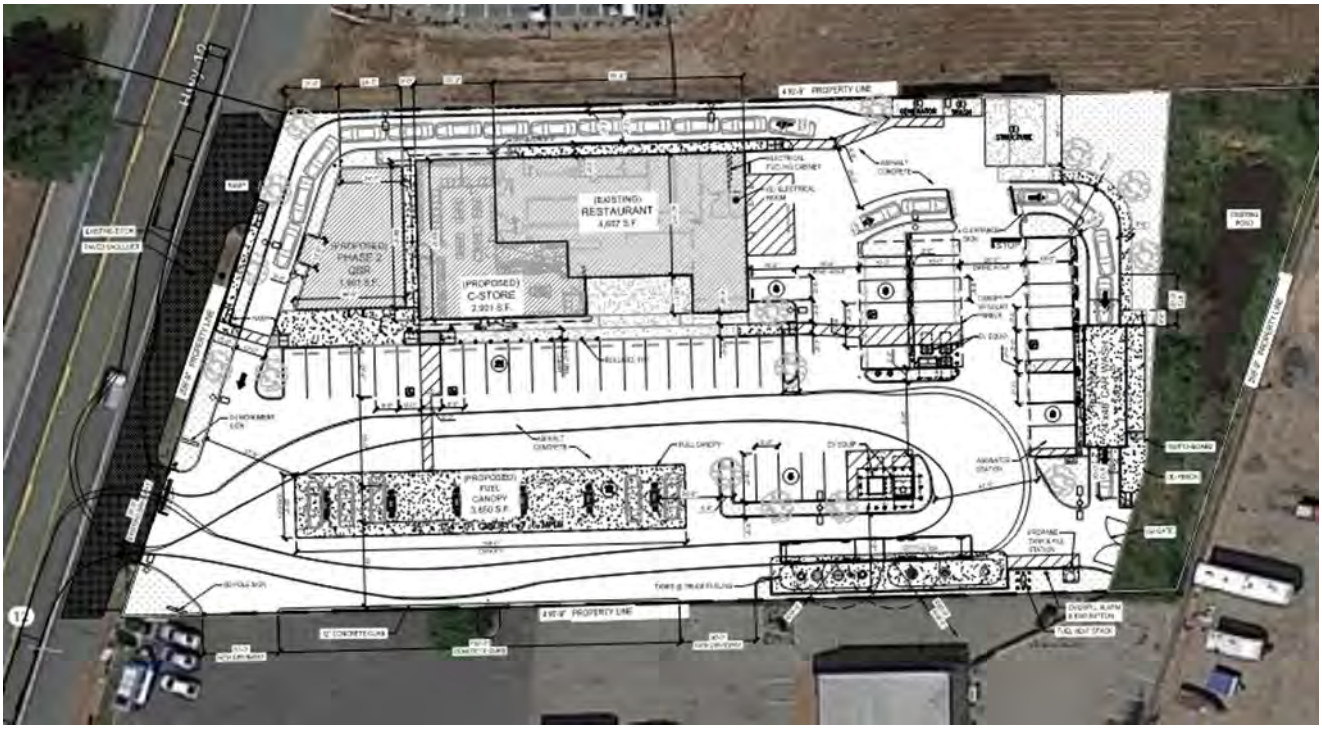

Figure 3.1 Convenience Store/Gas Station/Restaurant Site Plan

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Table 3.2 Convenience Store/Gas Station/Restaurant Trip Generation

Land Use Category (ITE Code)	Unit[1]	Daily Trip Rate/Unit[2]	AM Peak Hour Trip Rate/Unit			PM Peak Hour Trip Rate/Unit		
			Total	In %	Out %	Total	In %	Out %
Fast-Food Restaurant with Drive-Through Window (93	KSF	467.48	44.61	51%	49%	33.03	52%	48%
Convenience Store with Gasoline Station (945)[4]	KSF	700.43	56.52	50%	50%	54.52	50%	50%
Description	**Quantity (Units)**	**Daily Trips**	**AM Peak Hour Trips**			**PM Peak Hour**		
			Total	**In**	**Out**	**Total**	**In**	**Out**
Project Trips								
Drive-Thru Quick Service Restaurant	1.99	931	89	45	44	66	34	32
Convenience Store with Gasoline Station[5]	2.90	2,032	164	82	82	158	79	79
Total Project Trips		**2,963**	**253**	**127**	**126**	**224**	**113**	**111**
Internal Capture Reduction								
AM Peak Hour	13%		32	16	16	-	-	-
PM Peak Hour	20%		-	-	-	44	22	22
Total Internal Capture Reduction			**32**	**16**	**16**	**44**	**22**	**22**
Net External Project Trips		**2,963**	**221**	**111**	**110**	**180**	**91**	**89**
Pass-By Trip Reduction								
Drive-Thru Quick Service Restaurant			44	22	22	33	17	16
Convenience Store with Gasoline Station			102	51	51	88	44	44
Total Pass-By Trip Reduction			**145**	**73**	**72**	**121**	**61**	**60**
Net New Project Trips		**2,963**	**76**	**38**	**38**	**59**	**30**	**29**

Source: Institute of Transportation Engineers (ITE), Trip Generation, 11th Edition, March 2022.

The assumed distribution for the net new project trips is 40% to the west of the project driveway and 60% to the east of the project driveway based on overall commute patterns and local traffic sources within Lockeford.

3.4.3 Combined Near-Term Project Trips

Near-Term (EPAP) project trips were calculated by adding the project trips from the Lockeford Vistas project to the calculated project trips for the commercial-retail convenience store/gas station/Restaurant project. These trips, along with the geometric assumptions, are displayed in **Figure 3.2**. Peak hour EPAP project trips were added to existing traffic volumes to create Near-Term (No Project) conditions.

3.5 Cumulative Volume Forecasting

Cumulative (No Project) conditions reflect future traffic conditions that represent local and regional growth in the study area of approximately 20 years. Cumulative conditions represent a scenario that considers the projected 20-Year development forecast, including the currently planned and approved developments, but without the proposed project. Based on discussions with County staff and consistent with Caltrans guidelines, the Cumulative (No Project) horizon year is 2045.

Future volume forecasts for the Year 2045 have been estimated based on historical traffic growth along SR 12-88 just east of Lockeford in the form of a yearly growth rate (percentage). The historical growth rate for the SR 12-88 highway in the project study area was based on yearly Caltrans volumes at the Lockeford Junction Route 88 location. Based on historical ADT volumes between the years 2013 and 2022, overall growth in highway volumes equaled approximately 0.18% per year. For a conservative growth estimate, this rate was rounded up to 0.50% per year. It is noted that both Caltrans ADT volumes listed for both SR 12 and SR 88 were reviewed for historical yearly growth estimates. This historical traffic growth rate was used because the SJCOG regional travel demand model does not accurately reflect existing conditions in the project vicinity at this time. The yearly growth rate was applied to existing traffic volumes for

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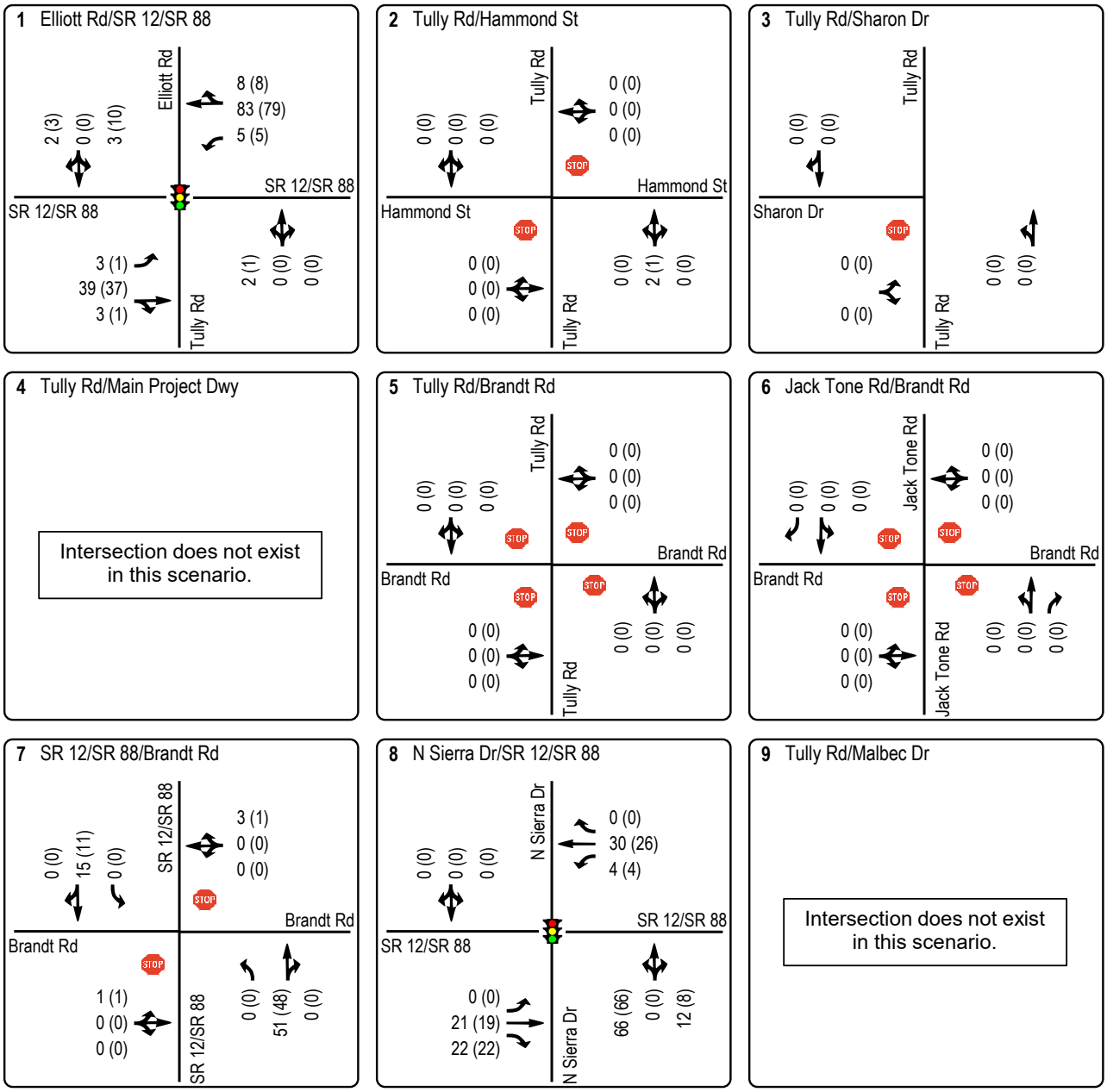

Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Traffic Signal

Stop Sign

Roundabout

GHD

County of San Joaquin
Kautz Lockeford Subdivision TIA

Planned/Approved Project Volumes

Project No. **12645561**
Report No. **001**
Date **11/24/24**

FIGURE 3.2

a 20-year period for background growth purposes.[11] Approved/pending volumes are then added to the future volume forecasts to provide a Cumulative Year 2045 (No Project) scenario.

The Cumulative (Year 2045) Plus Project condition is the analysis scenario in which traffic impacts associated with the proposed development are investigated in comparison to the Cumulative Year 2045 (No Project) condition. LOS and 95th percentile queues are calculated for the study locations under Cumulative Year 2045 conditions.

3.6 Planned Circulation Improvements

3.6.1 Caltrans State Route 88 Improvement Anchor Project

A planned State Route circulation improvement project in the Lockeford area includes the Caltrans State Route 88 Pavement Anchor Project. As discussed with County staff and described on the Caltrans website, the overall project would be described as follows:[12]

> Caltrans proposes to repair the roadway pavement, comply with Americans with Disabilities Act requirements for pedestrians, improve highway operations and transportation management systems, and replace sign panels on State Route 88 in San Joaquin County from post miles 5.1 to 16.4 to address the deteriorating pavement and other multi-objective assets. The project will also add bike lanes and sidewalks for Complete Streets elements.
>
> The purpose of the project is to repair the roadway pavement, comply with Americans with Disabilities Act requirements, and address nonstandard features.
>
> The 2015 Pavement Condition Survey Report identified the need to repair deteriorated pavement along State Route 88 within the project limits. Additionally, there is a need to address Americans with Disabilities Act deficiencies along the route in Lockeford; several of the pedestrian crossings do not meet current standards. There is also a need to address nonstandard features within the project limits, such as transportation management system elements and updated signs that no longer meet current Caltrans standards.

Should the proposed Kautz Lockeford Subdivision project result in impacting local intersection/roadway circulation and/or SR 12 88 operations, complementary mitigation could be suggested as part of the SR 88 Anchor Project to tie into planned improvements along N. Tully Road and at the N. Tully Road/Elliot Road/SR 12 88 intersection. GHD will coordinate with County and Caltrans staff to facilitate these suggested circulation improvements as part of potential VMT mitigation. The construction schedule for this Caltrans project indicates that it has been initiated with a completion date of Summer 2028.

3.7 Project Scenarios

The following scenarios have been analyzed:.

- Existing 2024 Conditions (No Project)
- Near-Term Conditions (EPAP--No Project)
- Cumulative 2045 (No Project)
- Existing 2024 Plus Project
- Near-Term Plus Project
- Cumulative 2045 Plus Project

[11] Caltrans, Average Daily Traffic Volumes, SR 12 88 East Lockeford, 2013-2022.
[12] Caltrans, State Route 88 Anchor Project, Project Description, District 10 Current Projects, 2024.

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4. No Project Analysis

4.1 Existing Conditions

The Existing scenario represents existing transportation facilities serving the project site and establishes the traffic conditions which currently exist for those facilities. Existing conditions intersection operations are presented in the following tables. Existing intersection peak hour turning movement volumes are presented in **Figure 4.1**.

4.1.1 Level of Service

Existing conditions for weekday AM and PM peak hour intersection operations were quantified utilizing the existing traffic volumes and intersection lane geometrics and control. **Table 4.1** provides the delay (in sec/veh) and resulting LOS for the nine study intersections under Existing conditions.

Table 4.1 Existing Conditions Level of Service

ID	Intersection	Target LOS	Peak Hour	Existing		
				Control	Delay	LOS
1	Tully Rd/Elliott Rd & SR 12/SR 88	D	AM	Signal	11.7	B
			PM		11.0	B
2	Tully Rd & Hammond St	D	AM	TWSC	13.8	B
			PM		9.9	A
3	Tully Rd & Sharon Dr	D	AM	TWSC	10.2	B
			PM		9.5	A
4	Tully Rd & Main Project Dwy (Future)	D	AM	TWSC	Future Scenario	
			PM			
5	Tully Rd & Brandt Rd	D	AM	AWSC	7.7	A
			PM		7.5	A
6	Jack Tone Rd & Brandt Rd	D	AM	AWSC	8.8	A
			PM		8.2	A
7	SR 12/SR 88 & Brandt Rd	D	AM	TWSC	**48.4**	**E**
			PM		**49.1**	**E**
8	N Sierra Dr & SR 12/SR 88	D	AM	TWSC	13.8	B
			PM		13.4	B
9	Tully Rd & Malbec Dr (Future)	D	AM	TWSC	Future Scenario	
			PM			

BOLD Indicate LOS of E or worse

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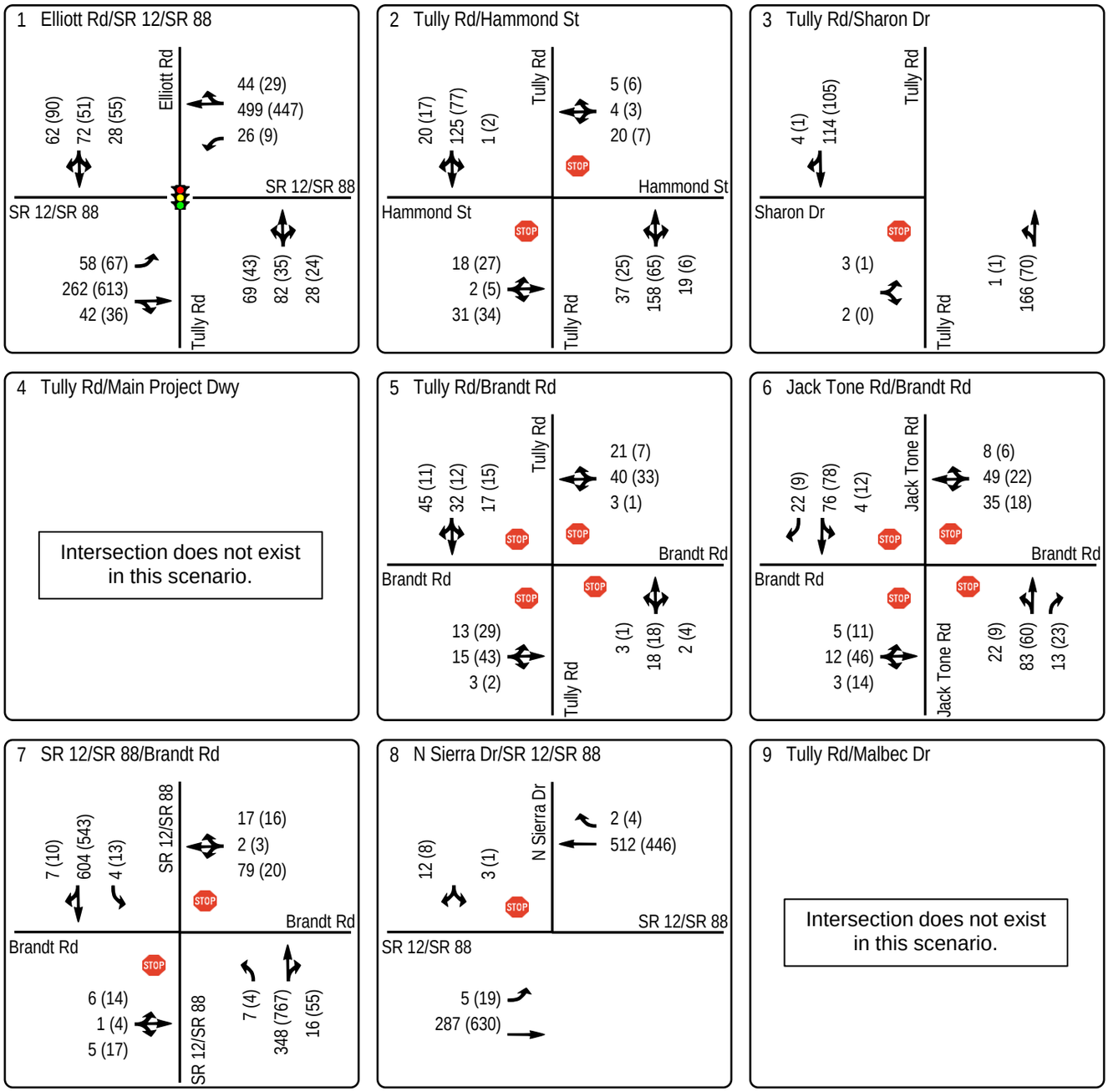

Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Traffic Signal

Stop Sign

Roundabout

GHD

County of San Joaquin
Kautz Lockeford Subdivision TIA

Existing Conditions
Peak Hour Traffic Volumes,
Lane Geometries & Traffic Control

Project No. 12645561
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FIGURE 4.1

As presented in **Table 4.1**, the majority of the study intersections operate above the target LOS of D during the AM and PM peak hours. However, the stop-sign controlled intersection of SR 12 88/Brandt Road is operating at LOS E (48-49 seconds of delay) during both the AM and PM peak hours. Stated LOS at the Brandt Road/SR 12 88 intersection refers to the east-west stop-sign controlled movements from Brandt Road onto SR 12 88. In addition, the N. Tully Road-Elliot Road/SR 12 88 intersection is calculated to operate at LOS B (11-12 seconds of delay) during the AM and PM peak hours. It is likely that stated LOS conditions at the intersection may be worse due to vehicle queuing the occurs on SR 12 88 northeast-southwest flow and westbound N. Tully Road. Often when vehicle queuing exists on the major street, traffic volume flow (progression) is reduced at the intersection and can yield a better LOS due to less vehicles traveling through the intersection at lower speeds. However, based on review of video intersection progression during peak hour operations this phenomenon does not appear to be occurring. Northeast-southwest vehicle queues on SR 12 88 at N. Tully Road-Elliot Road averaged approximately 10-12 cars which is consistent with calculated vehicle queues (below) However, the intersection can experience additional delays during school-related events and/or peak summer travel.

Warrant 3 (Peak Hour) from the California MUTCD was evaluated for the intersection of SR 12 88 and Brandt Road to determine if the projected traffic volumes warrant a signal. Based on this evaluation, the peak hour warrants are met in Existing conditions at this intersection using the 70% condition (see Appendices for details).

Highway and roadway segment LOS along SR 12 88, N. Tully Road, and Jack Tone Road/Hammond Street were calculated based on the County's local arterial LOS criteria. County LOS criteria are based on ADT volumes as well as peak hour directional volumes for K and D factors.[13] As calculated, the highway segments of SR 12 88 east and west of the Elliot Road/N. Tully Road intersection are currently functioning at LOS E based on 13,500-15,600 ADT. Jack Tone Road/Hammond Street and Tully Road are currently operating at LOS B based on ADT volumes of approximately 3,030 or less. Existing (No Project) roadway segment ADT and LOS are shown in **Table 8.2**.

4.1.2 Queuing

Queue lengths for the Existing scenario were analyzed using SimTraffic (TrafficWare) software. **Table 4.2** presents the 95th percentile queue lengths for each lane under Existing conditions.

As presented in **Table 4.2**, the following queues exceed the available storage lengths for the associated movements:

– **N. Tully Road & Elliot Road/SR 12 88**
  - Eastbound Left – exceeds by 15' in the PM peak hour
  - Westbound Left – exceeds by 15' in the AM peak hour

– **Jack Tone Road & Brandt Road**
  - Northbound Right – exceeds by 5' in the AM and 15' in the PM peak hour
  - Southbound Right – exceeds by 5' in the AM peak hour

[13] San Joaquin County, General Plan, Transportation and Mobility, Level of Service Criteria for Roadway Segments (Table 4-4), 2016.

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Table 4.2 Existing Conditions 95th Percentile Queues

Int. #	Intersection/Approach	Control Type	Existing 95th Percentile Queue (ft)		Available Storage
			AM Peak Hour	PM Peak Hour	
1	***Tully Rd/Elliott Rd & SR 12/SR 88***				
	Eastbound Left	Signal	70	**90**	75
	Eastbound Thru/Right		140	210	315
	Westbound Left		**70**	25	55
	Westbound Thru/Right		215	180	295
	Northbound Left/Thru/Right		115	80	245
	Southbound Left/Thru/Right		105	110	240
2	***Tully Rd & Hammond St***				
	Eastbound Left/Thru/Right	TWSC	55	55	320
	Westbound Left/Thru/Right		45	35	300
	Northbound Left/Thru/Right		30	15	1805
	Southbound Left/Thru/Right		0	5	245
3	***Tully Rd & Sharon Dr***				
	Eastbound Left/Right	TWSC	30	10	350
	Northbound Left/Thru		0	5	600
4	***Tully Rd & Main Project Dwy (Future)***				
5	***Tully Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	40	45	1845
	Westbound Left/Thru/Right		50	45	3260
	Northbound Left/Thru/Right		40	45	5280
	Southbound Left/Thru/Right		75	55	3395
6	***Jack Tone Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	25	35	2270
	Westbound Left/Thru/Right		40	30	3105
	Northbound Left/Thru		45	40	2680
	Northbound Right		**30**	**35**	20
	Southbound Left/Thru		50	45	1230
	Southbound Right		**35**	25	30
7	***SR 12/SR 88 & Brandt Rd***				
	Eastbound Left/Thru/Right	TWSC	20	60	4920
	Westbound Left/Thru/Right		125	65	2270
	Northbound Left		10	10	100
	Southbound Left		5	20	150
8	***N Sierra Dr & SR 12/SR 88***				
	Eastbound Left	TWSC	10	25	100
	Southbound Left/Thru/Right		45	35	430
9	***Tully Rd & Malbec Dr (Future)***				

Note: **Bold** text indicates queues that exceed available storage

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4.2 Near-Term (EPAP) Conditions

The EPAP scenario represents existing transportation facilities serving the project site plus trips from Planned/Approved projects. Near-Term conditions for weekday AM and PM peak hour intersection operations were quantified utilizing the EPAP traffic volumes and intersection lane geometrics and control shown in **Figure 4.2.**

4.2.1 Level of Service

Table 4.3 provides the delay (in sec/veh) and resulting LOS for the nine study intersections under near-term conditions.

Table 4.3 Near-Term Conditions Level of Service

ID	Intersection	Target LOS	Peak Hour	EPAP		
				Control	Delay	LOS
1	Tully Rd/Elliott Rd & SR 12/SR 88	D	AM	Signal	12.9	B
			PM		12.0	B
2	Tully Rd & Hammond St	D	AM	TWSC	13.8	B
			PM		9.9	A
3	Tully Rd & Sharon Dr	D	AM	TWSC	10.2	B
			PM		9.5	A
4	Tully Rd & Main Project Dwy (Future)	D	AM	TWSC	Future Scenario	
			PM			
5	Tully Rd & Brandt Rd	D	AM	AWSC	7.7	A
			PM		7.5	A
6	Jack Tone Rd & Brandt Rd	D	AM	AWSC	8.8	A
			PM		8.2	A
7	SR 12/SR 88 & Brandt Rd	D	AM	TWSC	**61.9**	**F**
			PM		**56.5**	**F**
8	N Sierra Dr & SR 12/SR 88	D	AM	Signal	8.2	A
			PM		8.6	A
9	Tully Rd & Malbec Dr (Future)	D	AM	TWSC	Future Scenario	
			PM			

BOLD Indicate LOS of E or worse

As presented in **Table 4.3**, the majority of the study intersections operate above the target LOS of D during the AM and PM peak hours. However, the stop-sign controlled intersection of SR 12 88/Brandt Road is operating at LOS F (56.5 and 61.9 seconds of delay) during both the AM and PM peak hours. The stated LOS at this intersection refers to the stop-controlled movements. In addition, the N. Tully Road-Elliot Road/SR 12 88 intersection is operating at LOS B (12 and 13 seconds of delay) during the AM and PM peak hours.

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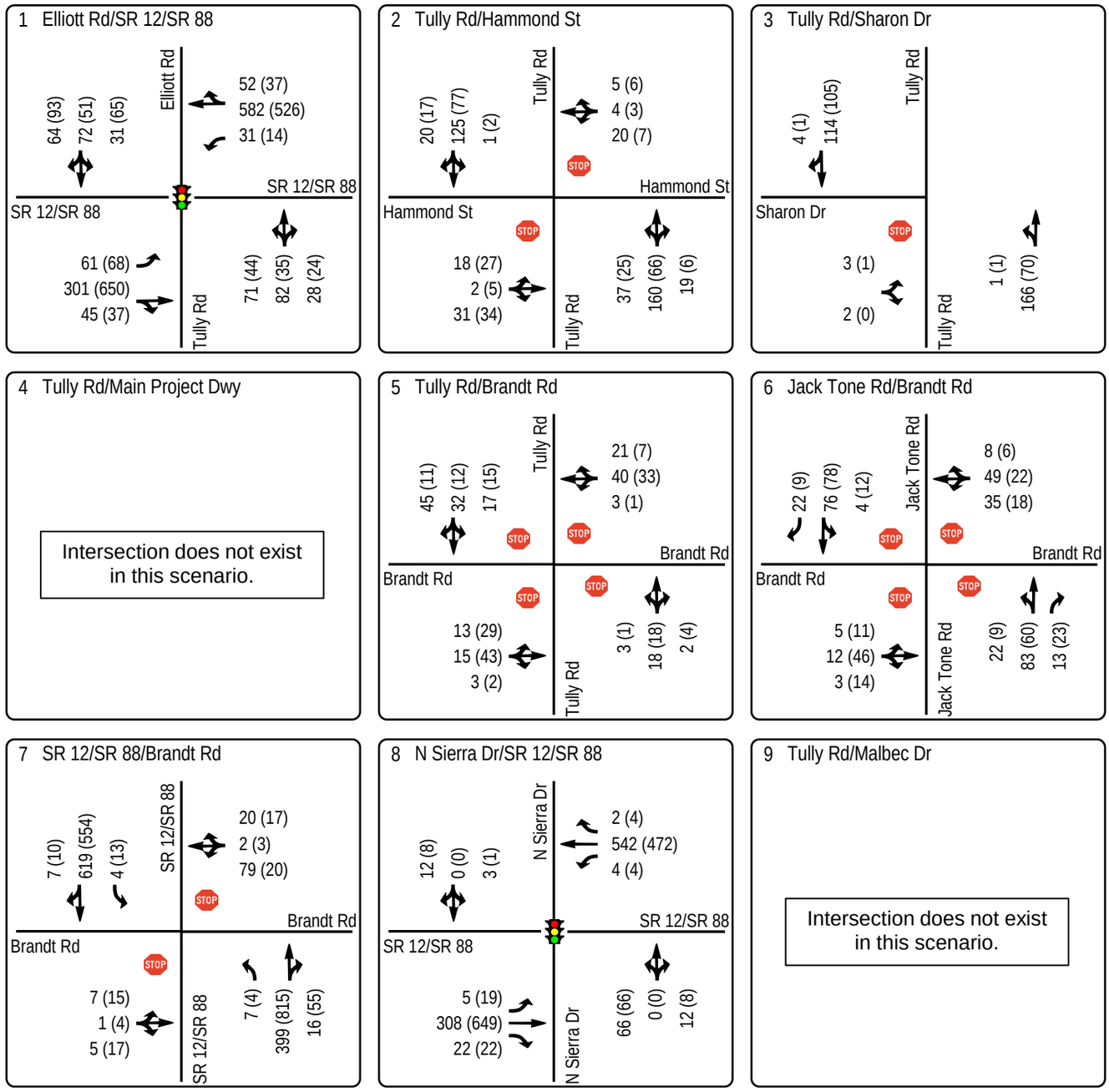

Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Traffic Signal

Stop Sign

Roundabout

County of San Joaquin
Kautz Lockeford Subdivision TIA

EPAP
Peak Hour Traffic Volumes,
Lane Geometries & Traffic Control

Project No. 12645561
Report No. 001
Date 11/24/24

FIGURE 4.2

Roadway segments east and west of the Elliot Road/N. Tully Road intersection for SR 12 88 under Near-Term (No Project) conditions would continue to operate at LOS E. Near-Term projects are estimated to contribute 1,350 ADT (adjusted) to the SR 12 88 corridor based on both residential and commercial-retail daily trips. Jack Tone Road-Hammond Street and N. Tully Road south of Hammond Street would continue to operate at LOS B or better with EPAP daily volumes as shown in **Table 8.2**

4.2.2 Queuing

Queue lengths for the Near-Term scenario were analyzed using SimTraffic (TrafficWare) software. **Table 4.4** presents the 95th percentile queue lengths for each lane under EPAP conditions.

As presented in **Table 4.4**, the following queues exceed the available storage lengths for the associated movements:

– **N. Tully Road & Elliot Road/SR 12 88**
  - Eastbound Left – exceeds by 25’ in the AM and 25’ in the PM peak hour
  - Westbound Left – exceeds by 20’ in the AM peak hour
  - Westbound Thru/Right - exceeds by 10’ in the AM peak hour

– **Jack Tone Road & Brandt Road**
  - Northbound Right – exceeds by 10’ in the AM and 15’ in the PM peak hour
  - Southbound Right – exceeds by 5’ in the AM peak hour

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Table 4.4 Near-Term Conditions 95th Percentile Queues

Int. #	Intersection/Approach	Control Type	EPAP 95th Percentile Queue (ft)		Available Storage
			AM Peak Hour	PM Peak Hour	
1	***Tully Rd/Elliott Rd & SR 12/SR 88***				
	Eastbound Left	Signal	***100***	***100***	75
	Eastbound Thru/Right		165	250	315
	Westbound Left		***75***	50	55
	Westbound Thru/Right		***305***	220	295
	Northbound Left/Thru/Right		130	80	245
	Southbound Left/Thru/Right		115	120	240
2	***Tully Rd & Hammond St***				
	Eastbound Left/Thru/Right	TWSC	55	60	320
	Westbound Left/Thru/Right		45	40	300
	Northbound Left/Thru/Right		35	25	1805
	Southbound Left/Thru/Right		0	0	245
3	***Tully Rd & Sharon Dr***				
	Eastbound Left/Right	TWSC	30	10	350
	Northbound Left/Thru		10	5	600
4	***Tully Rd & Main Project Dwy (Future)***				
5	***Tully Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	40	45	1845
	Westbound Left/Thru/Right		50	45	3260
	Northbound Left/Thru/Right		40	45	5280
	Southbound Left/Thru/Right		75	55	3395
6	***Jack Tone Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	25	30	2270
	Westbound Left/Thru/Right		45	35	3105
	Northbound Left/Thru		45	45	2680
	Northbound Right		***30***	***35***	20
	Southbound Left/Thru		45	50	1230
	Southbound Right		***35***	25	30
7	***SR 12/SR 88 & Brandt Rd***				
	Eastbound Left/Thru/Right	TWSC	35	60	4920
	Westbound Left/Thru/Right		140	80	2270
	Northbound Left		15	5	100
	Northbound Thru/Right		5	0	2400
	Southbound Left		0	20	150
8	***N Sierra Dr & SR 12/SR 88***				
	Eastbound Left	Signal	20	45	100
	Eastbound Thru		95	160	1260
	Eastbound Right		25	15	100
	Westbound Left		15	10	100
	Westbound Thru		125	105	400
	Westbound Right		0	5	100
	Northbound Left/Thru/Right		65	65	775
	Southbound Left/Thru Right		30	20	430
9	***Tully Rd & Malbec Dr (Future)***				

Note: **Bold** text indicates queues that exceed available storage

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4.3 Cumulative Year 2045 Conditions

The Cumulative Year 2045 scenario represents estimated future traffic volumes on planned transportation facilities in 2045, including trips from the Planned/Approved Projects. Intersection operations for this scenario are presented in the following tables. Cumulative Year 2045 conditions for weekday AM and PM peak hour intersection operations were quantified utilizing the cumulative traffic volumes and intersection lane geometrics and control as shown in **Figure 4.3**.

4.3.1 Level of Service

Table 4.5 provides the delay (in sec/veh) and resulting LOS for the nine study intersections under Cumulative Year 2045 conditions.

As presented in **Table 4.5**, over half of the study intersections operate above the target LOS of D during the AM and PM peak hours. However, the stop-sign controlled intersection of SR 12 88/Brandt Road is operating at LOS F (91.4 and 93.0 seconds of delay) during both the AM and PM peak hours. In addition, the N. Tully Road-Elliot Road/SR 12 88 intersection is operating at LOS B (14-15 seconds of delay) during the AM peak and PM peak hours.

Table 4.5 Cumulative Conditions Level of Service

ID	Intersection	Target LOS	Peak Hour	Cumulative[1]		
				Control	Delay	LOS
1	Tully Rd/Elliott Rd & SR 12/SR 88	D	AM	Signal	14.8	B
			PM		14.5	B
2	Tully Rd & Hammond St	D	AM	TWSC	12.9	B
			PM		10.4	B
3	Tully Rd & Sharon Dr	D	AM	TWSC	9.9	A
			PM		9.8	A
4	Tully Rd & Main Project Dwy (Future)	D	AM	TWSC	Future Scenario	
			PM			
5	Tully Rd & Brandt Rd	D	AM	AWSC	7.6	A
			PM		7.6	A
6	Jack Tone Rd & Brandt Rd	D	AM	AWSC	8.5	A
			PM		8.3	A
7	SR 12/SR 88 & Brandt Rd	D	AM	TWSC	**91.4**	**F**
			PM		**93.0**	**F**
8	N Sierra Dr & SR 12/SR 88	D	AM	Signal	8.5	A
			PM		9.7	A
9	Tully Rd & Malbec Dr (Future)	D	AM	TWSC	Future Scenario	
			PM			

BOLD Indicate LOS of E or worse

1 PHF of 0.92 was assumed for all intersections

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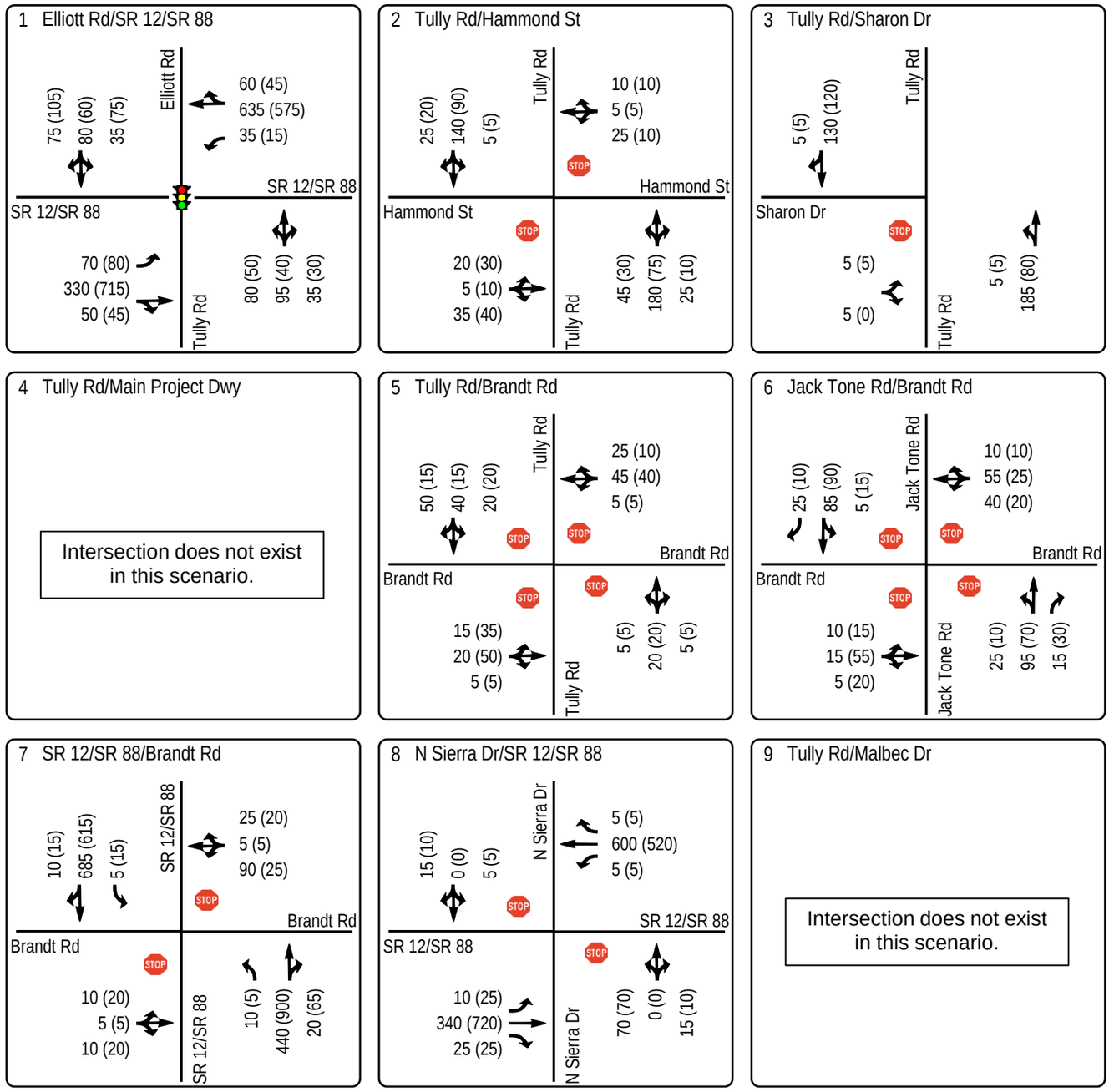

Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Traffic Signal

Stop Sign

Roundabout

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County of San Joaquin
Kautz Lockeford Subdivision TIA

Cumulative
Peak Hour Traffic Volumes,
Lane Geometries & Traffic Control

Project No. 12645561
Report No. 001
Date 11/24/24

FIGURE 4.3

With Cumulative Year 2045 volumes, roadway segments east and west of the Elliot Road/N. Tully Road intersection for SR 12 88 would continue to operate under LOS E conditions. Based on a yearly growth rate of 0.5% per year (10% total), existing volumes would increase proportionately to the Year 2045. Jack Tone Road-Hammond Street and N. Tully Road south of Hammond Street would continue to operate at LOS B or better with Cumulative daily volumes as shown in **Table 8.2**

4.3.2 Queuing

Queue lengths for the Cumulative Year 2045 scenario were analyzed using SimTraffic (TrafficWare) software. **Table 4.6** presents the 95th percentile queue lengths for each lane under Cumulative Year 2045 conditions.

As presented in **Table 4.6**, the following queues exceed the available storage lengths for the associated movements:

– **N. Tully Road & Elliot Road/SR 12 88**
  - Eastbound Left – exceeds by 30’ in the AM and 65’ in the PM peak hour
  - Eastbound Thru/Right – exceeds by 40’ in the PM peak hour
  - Westbound Left – exceeds by 35’ in the AM and 5’ in the PM peak hour
  - Westbound Thru/Right – exceeds by 80’ in the AM peak hour

– **Jack Tone Road & Brandt Road**
  - Northbound Right – exceeds by 10’ in the AM and 20’ in the PM peak hour
  - Southbound Right – exceeds by 5’ in the AM peak hour

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Table 4.6 Cumulative Year 2045 Conditions 95th Percentile Queues

Int. #	Intersection/Approach	Control Type	Cumulative 95th Percentile Queue (ft)		Available Storage
			AM Peak Hour	PM Peak Hour	
1	***Tully Rd/Elliott Rd & SR 12/SR 88***				
	Eastbound Left	Signal	***105***	***120***	75
	Eastbound Thru/Right		195	***355***	315
	Westbound Left		***90***	***60***	55
	Westbound Thru/Right		***375***	285	295
	Northbound Left/Thru/Right		170	90	245
	Southbound Left/Thru/Right		125	140	240
2	***Tully Rd & Hammond St***				
	Eastbound Left/Thru/Right	TWSC	55	60	320
	Westbound Left/Thru/Right		45	40	300
	Northbound Left/Thru/Right		35	20	1805
	Southbound Left/Thru/Right		10	5	245
3	***Tully Rd & Sharon Dr***				
	Eastbound Left/Right	TWSC	30	20	350
	Northbound Left/Thru		10	5	600
4	***Tully Rd & Main Project Dwy (Future)***				
5	***Tully Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	40	45	1845
	Westbound Left/Thru/Right		45	50	3260
	Northbound Left/Thru/Right		50	45	5280
	Southbound Left/Thru/Right		70	55	3395
6	***Jack Tone Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	25	45	2270
	Westbound Left/Thru/Right		40	40	3105
	Northbound Left/Thru		50	45	2680
	Northbound Right		***30***	***40***	20
	Southbound Left/Thru		50	50	1230
	Southbound Right		***35***	25	30
7	***SR 12/SR 88 & Brandt Rd***				
	Eastbound Left/Thru/Right	TWSC	45	115	4920
	Westbound Left/Thru/Right		205	195	2270
	Northbound Left		20	10	100
	Southbound Left		10	25	150
8	***N Sierra Dr & SR 12/SR 88***				
	Eastbound Left	Signal	30	45	100
	Eastbound Thru		110	160	1260
	Eastbound Right		20	40	100
	Westbound Left		20	15	100
	Westbound Thru		140	125	400
	Westbound Right		5	5	100
	Northbound Left/Thru/Right		65	65	775
	Southbound Left/Thru Right		30	25	430
9	***Tully Rd & Malbec Dr (Future)***				

Note: **Bold** text indicates queues that exceed available storage

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5. Project Description

5.1 Project Description

The Kautz Lockeford Subdivision project proposes 296 single-family dwelling units on existing agricultural parcels located immediately east of N. Tully Road and south of SR12/SR 88. With the parcel(s) zoned for agricultural development, a General Plan Amendment (GPA) would be required to change the zoning designation to Residential-Low (R-L).

The proposed site plan includes one driveway access to N. Tully Road and four internal driveway access points to Malbec Drive (new street). **Figure 5.1** presents the site plan for the proposed development. Project access scenarios differ based on the amount of development proposed under both Existing plus Project Conditions and Near-Term (EPAP) plus Project Conditions as follows:

Existing plus Project Conditions: There will be two project access points at N. N. Tully Road; 1) a primary project street located approximately 300-325 feet northwest of Sharon Drive. 2) a secondary access (future street) will be provided by Malbec Drive that will extend in a southwest-northeast direction along the project site's western border. Four internal project streets will connect to Malbec Drive with the roadway connecting to N. Tully Road directly opposite the Lockeford Elementary School parking lot under Existing plus Project Conditions.

Near-Term (EPAP) plus Project & Cumulative plus Project Conditions. There will be three project access points; two project access points to N. Tully Road (listed above) and a third project access connection at the N. Sierra Drive/SR 12 88 intersection. The third access connection to the N. Sierra Drive/SR 12 88 intersection will be provided by the approved Lockeford Vistas residential project.

5.2 Trip Generation

Project site trip generation for the project was estimated using accepted Institute of Transportation Engineers (ITE) industry practice standards. Specifically, daily and peak hour estimations were achieved by utilizing the Institute of Transportation Engineers (ITE) publication *Trip Generation Manual (11th Ed.)*. ITE trip rates for "Single-Family Detached Housing" were utilized for the proposed residential project development.

Table 5.1 presents the project trip generation for Plus Project conditions.

As presented in **Table 5.1**, the project is anticipated to generate an estimated 207 vehicle trips during the AM peak hour and 278 vehicle trips during the PM peak hour.

Using ITE trip generation methodology yields a conservative estimate of proposed project trips. However, the methodology tends to favor suburban trip patterns and characteristics not always reflected in more rural areas where there are usually less (but longer) vehicle trips to/from residential uses.

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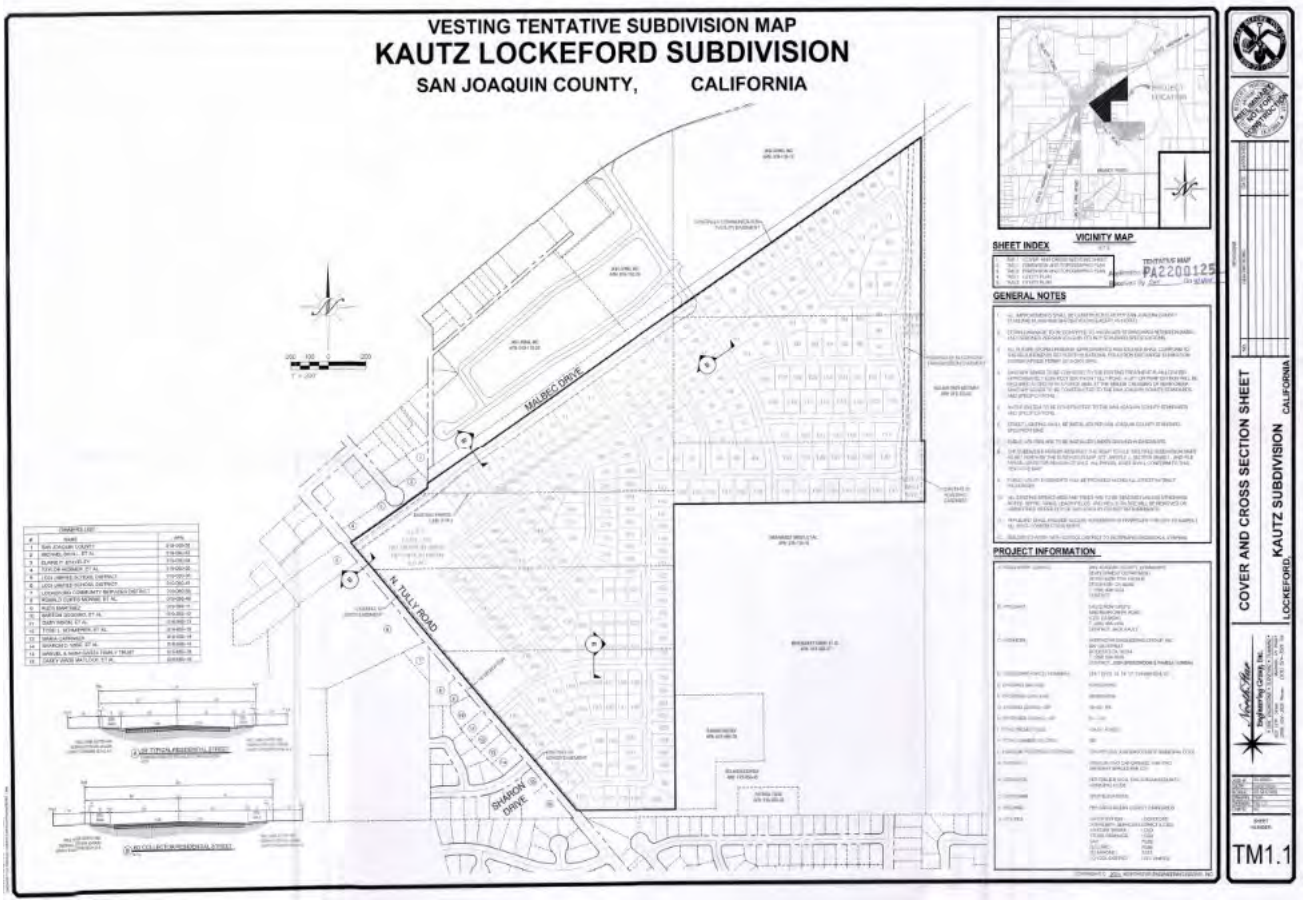

Figure 5.1 Project Site Plan

Table 5.1 Project Trip Generation

Land Use Category (ITE Code)	Unit[1]	Daily Trip Rate/Unit[2]	AM Peak Hour Trip Rate/Unit			PM Peak Hour Trip Rate/Unit		
			Total	In %	Out %	Total	In %	Out %
Single-Family Detached Housing (210)	DU	9.43	0.70	25%	75%	0.94	63%	37%
Description	**Quantity (Units)**	**Daily Trips**	**AM Peak Hour Trips**			**PM Peak Hour Trips**		
			Total	**In**	**Out**	**Total**	**In**	**Out**
Residential (Single Family)	296	2,791	207	52	155	278	175	103
Total Project Trips		**2,791**	**207**	**52**	**155**	**278**	**175**	**103**

Notes:
1. DU = Dwelling Units
2. Trip rates based on ITE Trip Generation Manual 11th edition average rates
3. Internal Capture and Pass-By

5.3 Trip Distribution and Assignment

Proposed project trip assignment has been based on existing traffic count data, previous transportation studies conducted for adjacent residential development, and demographic job travel from Big Data using “Onthemap” and/or “Replica.” In addition, two project trip assignment patterns were generated based on project access to/from N. Tully Road and to/from SR 12 88. As noted in the Project Description, vehicle access to the project site would differ depending on the analyzed scenario due to adjacent near-term (EPAP) development (or lack thereof). With different

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driveway access points, overall project assignment would be as follows for Existing plus Project Conditions and Near-Term (EPAP) plus Project Conditions:

Existing Plus Project Conditions:

N. Tully Road to/from the northwest: 60%

10% to/from the south via Hammond Street-Jack Tone Road
30% to/from the southwest via SR 12 88
5% to/from the northeast on SR 12 88
15% to/from the northwest on Elliot Road

N. Tully Road to/from the southeast: 40%

5% to/from N. Tully Road (south of Brandt Road)
35% to/from the west on Brandt Road
5% to/from the south via Jack Tone Road
30% to/from the southwest via SR 12 88

Near-Term (EPAP) Plus Project Conditions:

N. Tully Road to/from the northwest: 40%

10% to/from the south via Hammond Street-Jack Tone Road
20% to/from the southwest via SR 12 88
10% to/from the northwest on Elliot Road

N. Tully Road to/from the southeast: 35%

5% to/from N. Tully Road (south of Brandt Road)
30% to/from the west on Brandt Road
5% to/from the south via Jack Tone Road
25% to/from the southwest via SR 12 88

N. Sierra Drive to/from the north: 25%

20% to/from the southwest via SR 12 88
5% to/from northeast via SR 12 88

Based on the project site plan and planned driveway connections, the majority of the site's traffic volumes will use N. Tully Road, Malbec Road, and Sierra Drive to/from the project site. Detailed micro-distributions of proposed project AM and PM peak hour trips for project driveways and study intersections have been generated.

Figure 5.2 presents the distribution of Project-generated vehicle trips under Existing Plus Project conditions.

Figure 5.3 presents the distribution of Project-generated vehicle trips under Near-Term (EPAP) Plus Project conditions.

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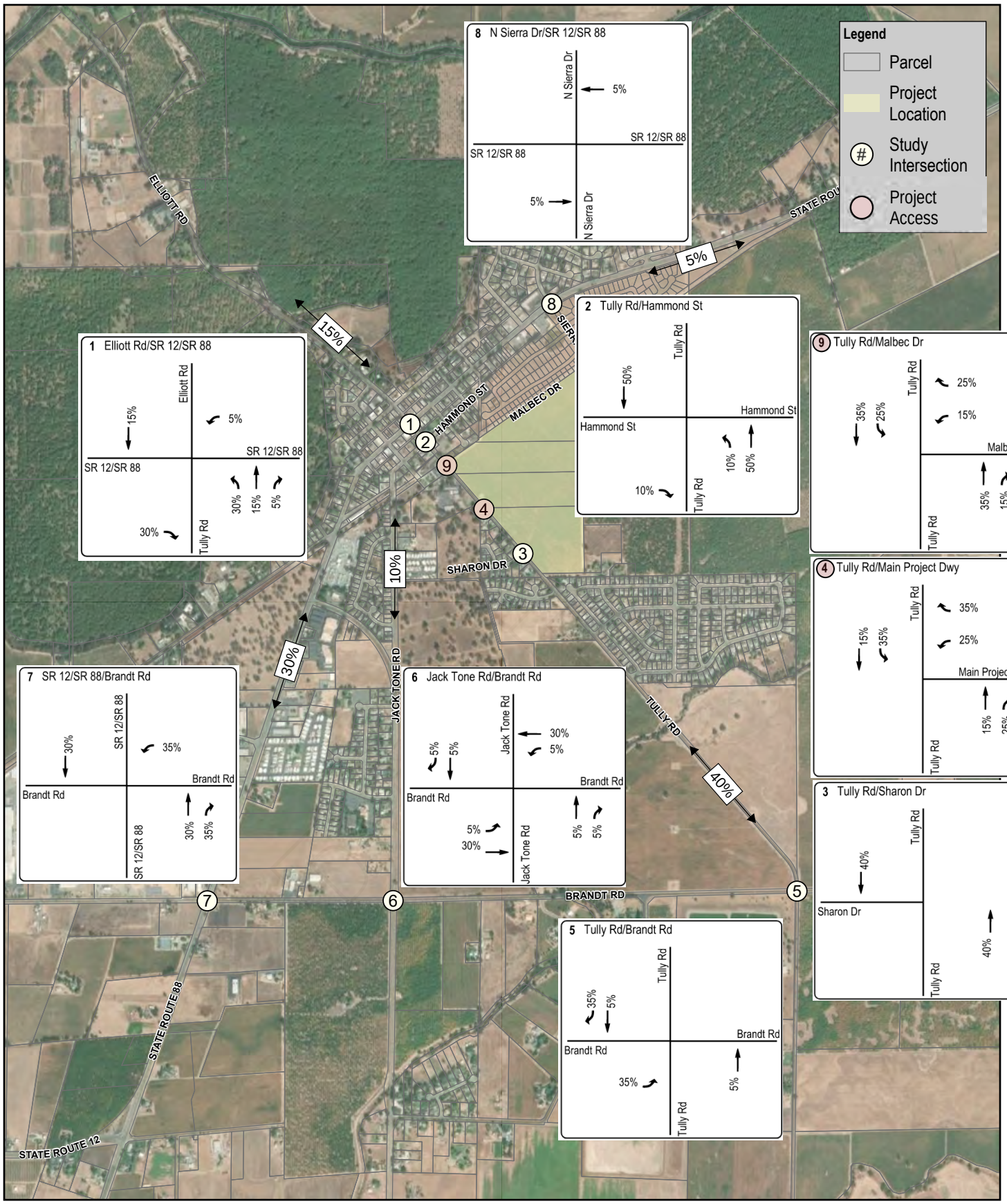

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0 750 1,500

US Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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County of San Joaquin
Kautz Lockeford Subdivision

Near Term
Trip Distribution

Project No. **12645561**
Revision No. **-**
Date **9/5/2024**

FIGURE 5.2

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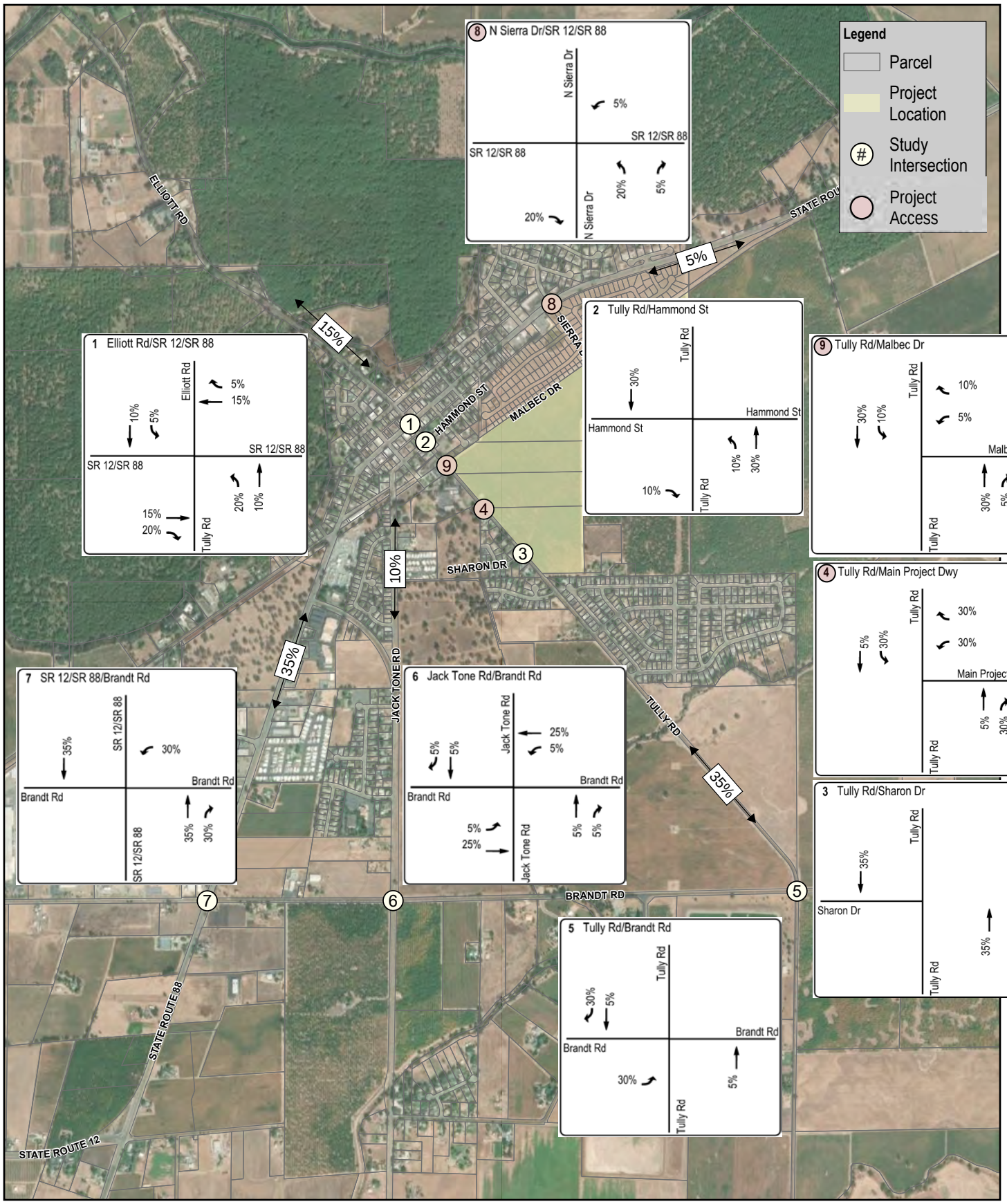

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0 750 1,500

US Feet

Map Projection: Lambert Conformal Conic
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Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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GHD

County of San Joaquin
Kautz Lockeford Subdivision

Ultimate
Trip Distribution

Project No. **12645561**
Revision No. **-**
Date **9/5/2024**

FIGURE 5.3

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6. Plus Project Analysis

6.1 Existing Plus Project Conditions

The Existing Plus Project scenario represents existing transportation facilities serving the project site plus near-term project trips. The intersection operations for this scenario are presented in the following tables. Existing intersection peak hour turning movement volumes are displayed in **Figure 6.1**.

6.1.1 Level of Service

Existing Plus Project conditions for weekday AM and PM peak hour intersection operations were quantified utilizing the existing plus project traffic volumes and intersection lane geometrics and control. **Table 6.1** provides the delay (in sec/veh) and resulting LOS for the nine study intersections under Existing Plus Project conditions.

Table 6.1 Existing Plus Project Conditions Level of Service

ID	Intersection	Target LOS	Peak Hour	Existing			Existing Plus Project		
				Control	Delay	LOS	Control	Delay	LOS
1	Tully Rd/Elliott Rd & SR 12/SR 88	D	AM	Signal	11.7	B	Signal	13.6	B
			PM		11.0	B		12.1	B
2	Tully Rd & Hammond St	D	AM	TWSC	13.8	B	TWSC	17.3	C
			PM		9.9	A		11.3	B
3	Tully Rd & Sharon Dr	D	AM	TWSC	10.2	B	TWSC	11.0	B
			PM		9.5	A		10.3	B
4	Tully Rd & Main Project Dwy (Future)	D	AM	TWSC	Future Scenario		TWSC	12.1	B
			PM					10.5	B
5	Tully Rd & Brandt Rd	D	AM	AWSC	7.7	A	AWSC	8.2	A
			PM		7.5	A		8.0	A
6	Jack Tone Rd & Brandt Rd	D	AM	AWSC	8.8	A	AWSC	9.4	A
			PM		8.2	A		8.8	A
7	SR 12/SR 88 & Brandt Rd	D	AM	TWSC	**48.4**	**E**	TWSC	**139.5**	**F**
			PM		**49.1**	**E**		**220.1**	**F**
8	N Sierra Dr & SR 12/SR 88	D	AM	TWSC	13.8	B	TWSC	13.9	B
			PM		13.4	B		13.5	B
9	Tully Rd & Malbec Dr (Future)	D	AM	TWSC	Future Scenario		TWSC	12.9	B
			PM					10.4	B
BOLD Indicate LOS of E or worse									

1 PHF of 0.92 was assumed for all intersections

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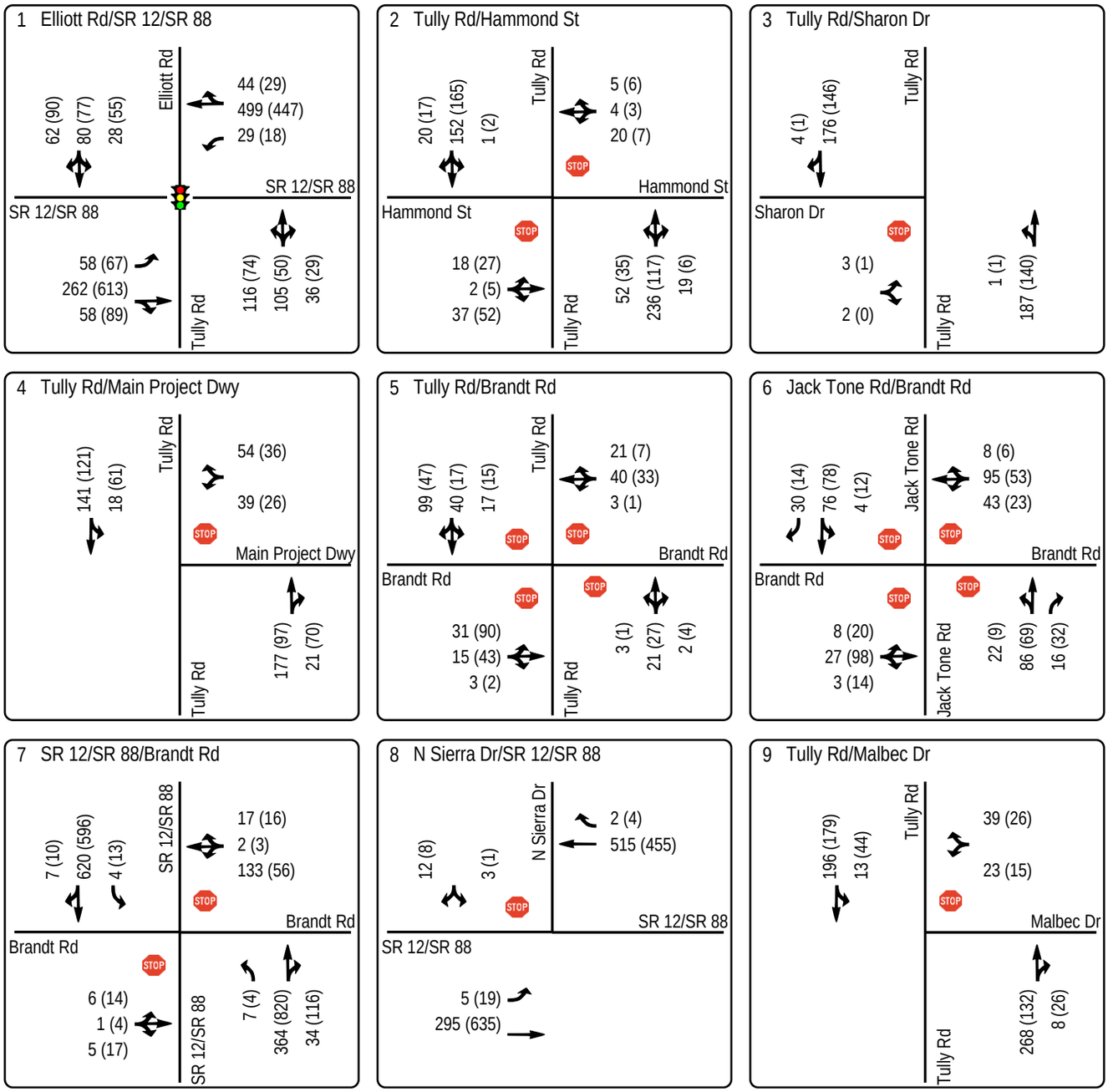

Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Traffic Signal

Stop Sign

Roundabout

GHD

County of San Joaquin
Kautz Lockeford Subdivision TIA

Existing Plus Project Conditions
Peak Hour Traffic Volumes,
Lane Geometries & Traffic Control

Project No. 12645561
Report No. 001
Date 11/24/24

FIGURE 6.1

As presented in **Table 6.1**, most of the study intersections operate above the target LOS of D during the AM and PM peak hours. The N. Tully Road-Elliot Road/SR 12 88 intersection is operating at LOS B (12-13 seconds of delay) during the AM and PM peak hours. In addition, the stop-sign controlled intersection of SR 12 88/Brandt Road is operating at LOS F (139.5 and 220.1 seconds of delay) during both the AM and PM peak hours.

Based on proposed project trips adding to an existing, deficient conditions at the Brandt Road/SR 12 88 intersection, the following mitigation measures are recommended to improve overall vehicle delays and operations:

- **Brandt Road/SR 12 88 Intersection:** Install a signal at the intersection to improve vehicle delays and reduce overall vehicle queuing during the AM and PM peak hours. Under Existing plus Project conditions, the minor street stop-control intersection meets the peak hour warrant (Warrant #3). Since unacceptable intersection LOS and vehicle delay is an existing deficient condition, it is recommended that the proposed project contribute a 100% share of the costs for construction to improve the intersection consistent with San Joaquin County guidelines.

With Existing plus Project volumes, highway segments east and west of the Elliot Road/N. Tully Road intersection for SR 12 88 would continue to operate at LOS E. Jack Tone Road-Hammond Street would continue to operate at LOS B while N. Tully Road south of Hammond Street would change from LOS B to LOS C with proposed project traffic daily volumes as shown in **Table 8.2** Mitigation has been recommended as part of overall project VMT impacts to help reduce roadway segment impacts (see Section 8.3 VMT Impacts & Mitigation Strategies).

6.1.2 Queuing

Queue lengths for the Existing Plus Project scenario were analyzed using SimTraffic (TrafficWare) software. **Table 6.2** presents the 95th percentile queue lengths for each lane under Existing Plus Project conditions.

As presented in **Table 6.2**, the following queues exceed the available storage lengths for the associated movements:

– **N. Tully Road & Elliot Road/SR 12 88**
  - Eastbound Left – exceeds by 20’ in the AM peak and 35’ in the PM peak hour
  - Westbound Left – exceeds by 15’ in the AM peak hour

– **Jack Tone Road & Brandt Rd**
  - Northbound Right – exceeds by 10’ in the AM and 25’ in the PM peak hour
  - Southbound Right – exceeds by 10’ in the AM peak hour

6.2 Project Site Access and Circulation

Consistent with the proposed project description, the project would have two (2) primary access driveways along N. Tully Road as shown in **Figure 5.1** The first driveway would be located approximately 350-feet northwest of Sharon Drive on the east side of the roadway. The second project access point on N. Tully Road would be at Malbec Drive (a future roadway). Malbec Drive would access N. Tully Road approximately 375-feet southeast of Hammond Street and connect to the roadway directly between the Lockeford Elementary School parking lot driveways. Finally, a third access point would become available with future approved/pending development through the Lockeford Vista’s residential project via N. Sierra Drive at SR 12 88. All internal project roadways would have two-travel lanes, sidewalks, and rolled curb and gutter consistent with San Joaquin County Standard detail r-6 (50’ typical residential street). However, other (more major) access streets would reflect the County’s standard detail r-6 (60’ collector residential street). These include the primary project access streets to/from N. Tully Drive (north of Sharon Drive & Malbec Drive) as well as N. Sierra Drive into the project site.

All internal project streets would extend in a typical north-south and east-west grid pattern providing access to residential units. Minor residential streets should be stop-sign controlled where they intersect the major collector streets. Relative to emergency vehicle access, there would always be two (2) access points in/out of the project site and ultimately three access points. Based on intersection operations analysis, all three project access intersection

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Table 6.2 Existing Plus Project Conditions 95th Percentile Queues

Int. #	Intersection/Approach	Control Type	Existing Plus Project 95th Percentile Queue (ft)		Available Storage
			AM Peak Hour	PM Peak Hour	
1	***Tully Rd/Elliott Rd & SR 12/SR 88***				
	Eastbound Left	Signal	***95***	***110***	75
	Eastbound Thru/Right		165	315	315
	Westbound Left		***70***	50	55
	Westbound Thru/Right		275	190	295
	Northbound Left/Thru/Right		165	115	245
	Southbound Left/Thru/Right		130	130	240
2	***Tully Rd & Hammond St***				
	Eastbound Left/Thru/Right	TWSC	60	60	320
	Westbound Left/Thru/Right		45	35	300
	Northbound Left/Thru/Right		40	35	1805
	Southbound Left/Thru/Right		5	5	245
3	***Tully Rd & Sharon Dr***				
	Eastbound Left/Right	TWSC	25	10	350
	Northbound Left/Thru		5	10	600
4	***Tully Rd & Main Project Dwy (Future)***				
	Westbound Left/Right	TWSC	55	50	940
	Southbound Left/Thru		15	40	1075
5	***Tully Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	45	45	1845
	Westbound Left/Thru/Right		50	45	3260
	Northbound Left/Thru/Right		45	50	5280
	Southbound Left/Thru/Right		85	60	3395
6	***Jack Tone Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	30	40	2270
	Westbound Left/Thru/Right		50	40	3105
	Northbound Left/Thru		50	45	2680
	Northbound Right		***30***	***45***	20
	Southbound Left/Thru		45	50	1230
	Southbound Right		***40***	30	30
7	***SR 12/SR 88 & Brandt Rd***				
	Eastbound Left/Thru/Right	TWSC	35	90	4920
	Westbound Left/Thru/Right		280	480	2270
	Northbound Left		15	10	100
	Northbound Thru/Right		0	0	3125
	Southbound Left		5	20	150
8	***N Sierra Dr & SR 12/SR 88***				
	Eastbound Left	TWSC	10	25	100
	Southbound Left/Thru/Right		40	30	430
9	***Tully Rd & Malbec Dr (Future)***				
	Westbound Left/Right	TWSC	55	50	2000
	Northbound Left/Thru		0	5	1425
	Southbound Left/Thru		25	35	350

Note: **Bold** text indicates queues that exceed available storage

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would be operating acceptably. However, circulation improvements have been recommended for the Malbec Drive/N. Tully Road intersection consistent with VMT mitigation and pedestrian/bicycle safety (see **Section 8.3.1**)

6.3 Near-Term (EPAP) Plus Project Conditions

The Near-Term (EPAP) Plus Project scenario represents Near-Tern conditions plus ultimate project trips. The intersection operations for this scenario are presented in the following tables. Intersection peak hour turning movement volumes are displayed in **Figure 6.2**.

6.3.1 Level of Service

EPAP Plus Project conditions for weekday AM and PM peak hour intersection operations were quantified utilizing the existing plus planned and approved projects plus project traffic volumes and intersection lane geometrics and control. **Table 6.3** provides the delay (in sec/veh) and resulting LOS for the nine study intersections under EPAP conditions.

Table 6.3 EPAP Plus Project Conditions Level of Service

ID	Intersection	Target LOS	Peak Hour	EPAP			EPAP Plus Project		
				Control	Delay	LOS	Control	Delay	LOS
1	Tully Rd/Elliott Rd & SR 12/SR 88	D	AM	Signal	12.9	B	Signal	15.1	B
			PM		12.0	B		13.0	B
2	Tully Rd & Hammond St	D	AM	TWSC	13.8	B	TWSC	16.3	C
			PM		9.9	A		10.8	B
3	Tully Rd & Sharon Dr	D	AM	TWSC	10.2	B	TWSC	10.9	B
			PM		9.5	A		10.2	B
4	Tully Rd & Main Project Dwy (Future)	D	AM	TWSC	Future Scenario		TWSC	12.0	B
			PM					10.3	B
5	Tully Rd & Brandt Rd	D	AM	AWSC	7.7	A	AWSC	8.1	A
			PM		7.5	A		7.9	A
6	Jack Tone Rd & Brandt Rd	D	AM	AWSC	8.8	A	AWSC	9.4	A
			PM		8.2	A		8.7	A
7	SR 12/SR 88 & Brandt Rd	D	AM	TWSC	**61.9**	**F**	TWSC	**166.4**	**F**
			PM		**56.5**	**F**		**232.3**	**F**
8	N Sierra Dr & SR 12/SR 88	D	AM	Signal	8.2	A	Signal	8.9	A
			PM		8.6	A		9.2	A
9	Tully Rd & Malbec Dr (Future)	D	AM	TWSC	Future Scenario		TWSC	11.7	B
			PM					9.7	A

BOLD Indicate LOS of E or worse

1 PHF of 0.92 was assumed for all intersections

As presented in **Table 6.3**, the majority of the study intersections operate above the target LOS of D during the AM and PM peak hours. However, the stop-sign controlled intersection of SR 12 88/Brandt Road is operating at LOS F (166.4 and 232.2 seconds of delay) during both the AM and PM peak hours. The N. Tully Road-Elliot Road/SR 12 88 intersection is operating at LOS B (15.1 seconds of delay) during the AM and LOS B (13.0 seconds of delay) during the PM peak hour.

Consistent with Existing plus Project Conditions, signalization is recommended for Near-Term (EPAP) plus Project Conditions at the SR 12 88/Brandt Road to improve overall vehicle delays and operations. Intersection operation is projected to be LOS A during both the AM and PM peak hours.

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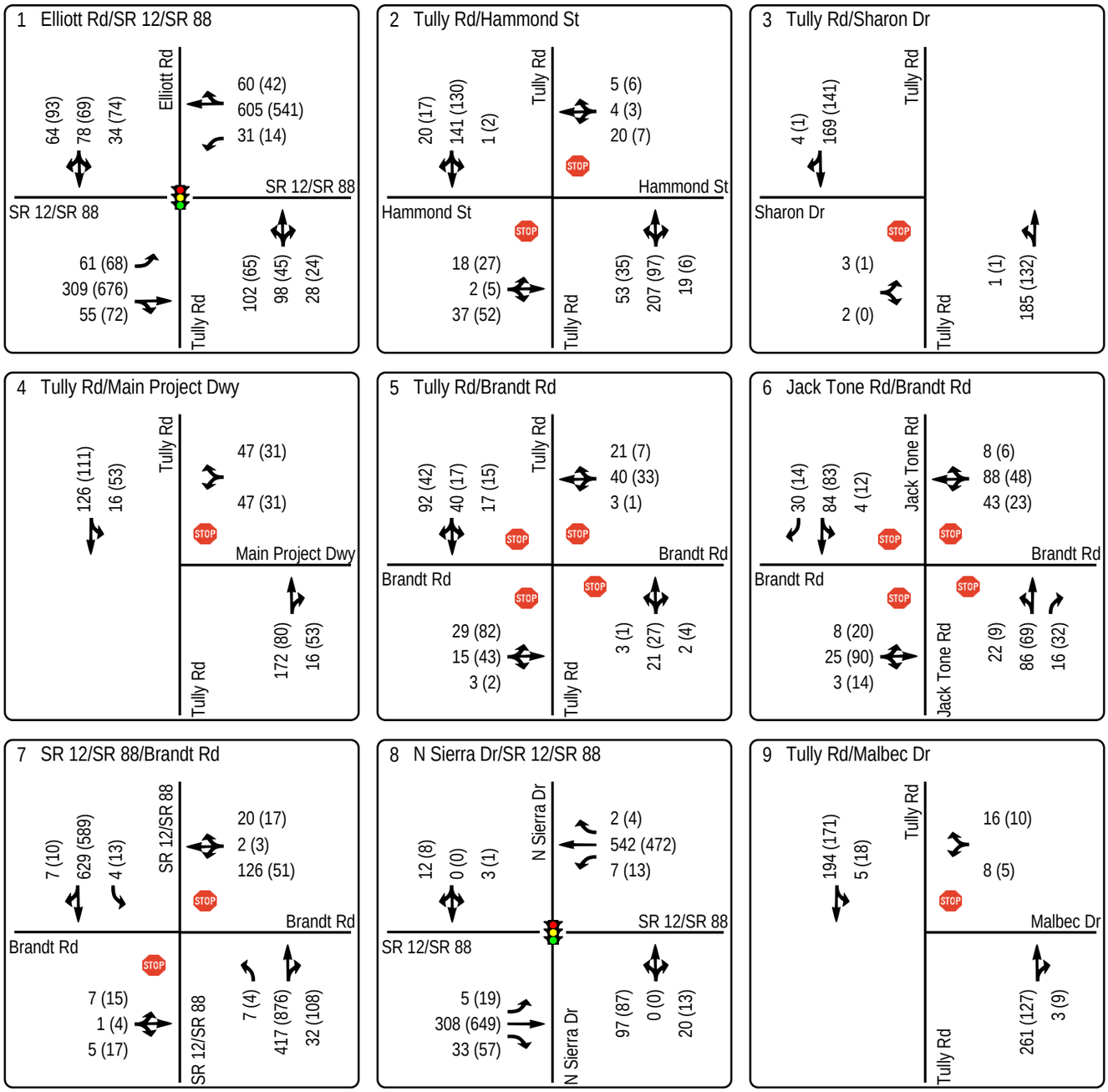

Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Traffic Signal

Stop Sign

Roundabout

GHD

County of San Joaquin
Kautz Lockeford Subdivision TIA

EPAP Plus Project
Peak Hour Traffic Volumes,
Lane Geometries & Traffic Control

Project No. 12645561
Report No. 001
Date 11/24/24

FIGURE 6.2

With Near-Term plus Project volumes, highway segments east and west of the Elliot Road/N. Tully Road intersection for SR 12 88 would continue to operate at LOS E. Jack Tone Road-Hammond Street would continue to operate at LOS B while N. Tully Road south of Hammond Street would change from LOS B to LOS C with proposed project traffic daily volumes as shown in **Table 8.2**

6.3.2 Queuing

Queue lengths for the EPAP scenario were analyzed using SimTraffic (TrafficWare) software. **Table 6.4** presents the 95th percentile queue lengths for each lane under EPAP conditions.

As presented in **Table 6.4**, the following queues exceed the available storage lengths for the associated movements:

– **N. Tully Road & Elliot Road/SR 12 88**
  - Eastbound Left – exceeds by 15’ in the AM and 35’ in the PM peak hour
  - Westbound Left – exceeds by 25’ in the AM peak hour
  - Westbound Thru/Right – exceeds by 20’ in the AM peak hour

– **Jack Tone Road & Brandt Rd**
  - Northbound Right – exceeds by 10’ in the AM and 20’ in the PM peak hour
  - Southbound Right – exceeds by 15’ in the AM and 5’ in the PM peak hour

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Table 6.4 EPAP Plus Project Conditions 95th Percentile Queues

Int. #	Intersection/Approach	Control Type	EPAP Plus Project 95th Percentile Queue (ft)		Available Storage
			AM Peak Hour	PM Peak Hour	
1	***Tully Rd/Elliott Rd & SR 12/SR 88***				
	Eastbound Left	Signal	***90***	***110***	75
	Eastbound Thru/Right		175	290	315
	Westbound Left		***80***	55	55
	Westbound Thru/Right		***315***	250	295
	Northbound Left/Thru/Right		175	120	245
	Southbound Left/Thru/Right		125	155	240
2	***Tully Rd & Hammond St***				
	Eastbound Left/Thru/Right	TWSC	55	30	320
	Westbound Left/Thru/Right		45	35	300
	Northbound Left/Thru/Right		50	30	1805
	Southbound Left/Thru/Right		5	0	245
3	***Tully Rd & Sharon Dr***				
	Eastbound Left/Right	TWSC	25	10	350
	Northbound Left/Thru		0	0	600
4	***Tully Rd & Main Project Dwy (Future)***				
	Westbound Left/Right	TWSC	55	55	940
	Southbound Left/Thru		20	35	1075
5	***Tully Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	45	50	1845
	Westbound Left/Thru/Right		50	45	3260
	Northbound Left/Thru/Right		45	45	5280
	Southbound Left/Thru/Right		85	65	3395
6	***Jack Tone Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	30	40	2270
	Westbound Left/Thru/Right		55	40	3105
	Northbound Left/Thru		50	45	2680
	Northbound Right		***30***	***40***	20
	Southbound Left/Thru		50	50	1230
	Southbound Right		***45***	***35***	30
7	***SR 12/SR 88 & Brandt Rd***				
	Eastbound Left/Thru/Right	TWSC	30	65	4920
	Westbound Left/Thru/Right		360	465	2270
	Northbound Left		10	10	100
	Northbound Thru/Right		0	5	3125
	Southbound Left		10	20	150
	Southbound Thru/Right		0	0	2000
8	***N Sierra Dr & SR 12/SR 88***				
	Eastbound Left	Signal	20	45	100
	Eastbound Thru		100	180	1260
	Eastbound Right		20	65	100
	Westbound Left		25	30	100
	Westbound Thru		140	120	400
	Westbound Right		5	5	100
	Northbound Left/Thru/Right		80	80	775
	Southbound Left/Thru Right		30	20	430
9	***Tully Rd & Malbec Dr (Future)***				
	Westbound Left/Right	TWSC	40	35	2000
	Northbound Left/Thru		0	0	1425
	Southbound Left/Thru		10	20	350

Note: **Bold** text indicates queues that exceed available storage

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6.4 Cumulative Year 2045 Plus Project Conditions

The Cumulative Year 2045 Plus Project scenario represents Cumulative Year 2045 conditions plus ultimate project trips. The intersection operations for this scenario are presented in the following tables. Intersection peak hour turning movement volumes are displayed in **Figure 6.3.**

6.4.1 Level of Service

Cumulative Plus Project conditions for weekday AM and PM peak hour intersection operations were quantified utilizing the cumulative traffic volumes and intersection lane geometrics and control. **Table 6.5** provides the delay (in sec/veh) and resulting LOS for the nine study intersections under Cumulative Plus Project conditions.

Table 6.5 Cumulative Plus Project Conditions Level of Service

ID	Intersection	Target LOS	Peak Hour	Cumulative[1]			Cumulative Plus Project[1]		
				Control	Delay	LOS	Control	Delay	LOS
1	Tully Rd/Elliott Rd & SR 12/SR 88	D	AM	Signal	14.8	B	Signal	20.0	B
			PM		14.5	B		16.1	B
2	Tully Rd & Hammond St	D	AM	TWSC	12.9	B	TWSC	14.8	B
			PM		10.4	B		11.3	B
3	Tully Rd & Sharon Dr	D	AM	TWSC	9.9	A	TWSC	10.4	B
			PM		9.8	A		10.6	B
4	Tully Rd & Main Project Dwy (Future)	D	AM	TWSC	Future Scenario		TWSC	11.4	B
			PM					10.6	B
5	Tully Rd & Brandt Rd	D	AM	AWSC	7.6	A	AWSC	8.0	A
			PM		7.6	A		8.1	A
6	Jack Tone Rd & Brandt Rd	D	AM	AWSC	8.5	A	AWSC	8.9	A
			PM		8.3	A		8.8	A
7	SR 12/SR 88 & Brandt Rd	D	AM	TWSC	**91.4**	**F**	TWSC	**254.1**	**F**
			PM		**93.0**	**F**		**423.8**	**F**
8	N Sierra Dr & SR 12/SR 88	D	AM	Signal	8.5	A	Signal	9.7	A
			PM		9.7	A		10.7	B
9	Tully Rd & Malbec Dr (Future)	D	AM	TWSC	Future Scenario		TWSC	11.1	B
			PM					9.9	A

BOLD Indicate LOS of E or worse

1 PHF of 0.92 was assumed for all intersections

As presented in **Table 6.5**, over half of the study intersections operate above the target LOS of D during the AM and PM peak hours. The intersection of SR 12 88/Brandt Road is operating at LOS F (254.1 and 423.8 seconds of delay) during both the AM and PM peak hours. The N. Tully Road-Elliot Road/SR 12 88 intersection would continue to operate acceptable conditions at LOS B (20.0 seconds of delay) during the AM peak and LOS B (16.1 seconds of delay) in the PM peak hour. The same mitigation measure for the Brandt Road/SR 12 88 intersection as recommended under Existing plus Project Conditions (signalization) is recommended to improve overall vehicle delays and operations under Near-Term (EPAP) plus Project conditions. Overall intersection operations are projected to be LOS A during both the AM and PM peak hours.

With Cumulative plus Project volumes, highway segments east and west of the Elliot Road/N. Tully Road intersection for SR 12 88 would continue to operate at LOS E. Jack Tone Road-Hammond Street would continue to operate at LOS B while N. Tully Road south of Hammond Street would change from LOS B to LOS C with proposed project traffic daily volumes as shown in **Table 8.2**

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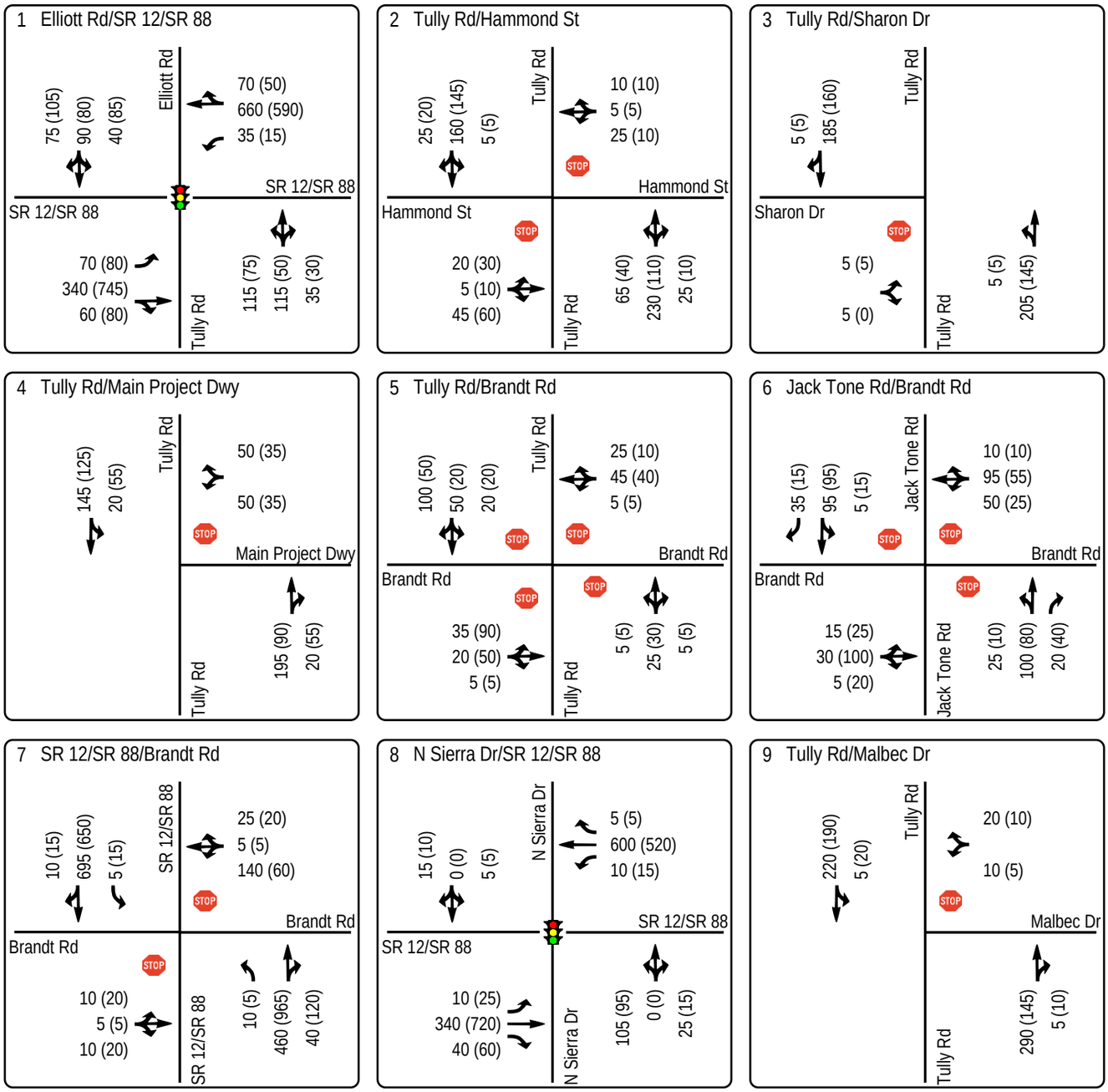

Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Traffic Signal

Stop Sign

Roundabout

GHD

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Kautz Lockeford Subdivision TIA

Cumulative Plus Project
Peak Hour Traffic Volumes,
Lane Geometries & Traffic Control

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FIGURE 6.3

Table 6.6 Cumulative Plus Project Conditions 95th Percentile Queues

Int. #	Intersection/Approach	Control Type	Cumulative Plus Project 95th Percentile Queue (ft)		Available Storage
			AM Peak Hour	PM Peak Hour	
1	***Tully Rd/Elliott Rd & SR 12/SR 88***				
	Eastbound Left	Signal	***110***	***130***	75
	Eastbound Thru/Right		215	***420***	315
	Westbound Left		***90***	50	55
	Westbound Thru/Right		***520***	***325***	295
	Northbound Left/Thru/Right		220	120	245
	Southbound Left/Thru/Right		160	170	240
2	***Tully Rd & Hammond St***				
	Eastbound Left/Thru/Right	TWSC	55	70	320
	Westbound Left/Thru/Right		45	40	300
	Northbound Left/Thru/Right		80	45	1805
	Southbound Left/Thru/Right		20	5	245
3	***Tully Rd & Sharon Dr***				
	Eastbound Left/Right	TWSC	30	20	350
	Northbound Left/Thru		10	15	600
4	***Tully Rd & Main Project Dwy (Future)***				
	Westbound Left/Right	TWSC	50	55	940
	Southbound Left/Thru		20	40	1075
5	***Tully Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	45	50	1845
	Westbound Left/Thru/Right		45	50	3260
	Northbound Left/Thru/Right		55	50	5280
	Southbound Left/Thru/Right		80	70	3395
6	***Jack Tone Rd & Brandt Rd***				
	Eastbound Left/Thru/Right	AWSC	35	50	2270
	Westbound Left/Thru/Right		50	45	3105
	Northbound Left/Thru		45	45	2680
	Northbound Right		***30***	***40***	20
	Southbound Left/Thru		50	55	1230
	Southbound Right		***45***	30	30
7	***SR 12/SR 88 & Brandt Rd***				
	Eastbound Left/Thru/Right	TWSC	55	245	4920
	Westbound Left/Thru/Right		755	1035	2270
	Northbound Left		25	10	100
	Northbound Thru/Right		15	5	3125
	Southbound Left		10	20	150
8	***N Sierra Dr & SR 12/SR 88***				
	Eastbound Left	Signal	30	45	100
	Eastbound Thru		120	195	1260
	Eastbound Right		35	65	100
	Westbound Left		25	30	100
	Westbound Thru		165	130	400
	Westbound Right		10	5	100
	Northbound Left/Thru/Right		90	85	775
	Southbound Left/Thru Right		30	25	430
9	***Tully Rd & Malbec Dr (Future)***				
	Westbound Left/Right	TWSC	45	30	2000
	Southbound Left/Thru		15	25	350

Note: **Bold** text indicates queues that exceed available storage

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6.4.2 Queuing

Queue lengths for the Cumulative Plus Project scenario were analyzed using SimTraffic (TrafficWare) software. **Table 6.6** presents the 95th percentile queue lengths for each lane under Cumulative Plus Project conditions.

As presented in **Table 6.6**, the following queues exceed the available storage lengths for the associated movements:

– **N. Tully Road & Elliot Road/SR 12 88**
  - Eastbound Left – exceeds by 35’ in the AM and 55’ in the PM peak hour
  - Eastbound Thru/Right – exceeds by 105’ in the PM peak hour
  - Westbound Left – exceeds by 35’ in the AM PM peak hour
  - Westbound Thru/Right – exceeds by 225’ in the AM and 30' in the PM peak hour

– **Jack Tone Road & Brandt Road**
  - Northbound Right – exceeds by 10’ in the AM and 20’ in the PM peak hour
  - Southbound Right – exceeds by 15’ in the AM peak hour\

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7. VMT Analysis

Project-generated VMT is estimated using the number of automobile trips attributable to the project, the average trip length estimated for those trips, and average people per household. Since the VMT baseline and threshold values were determined utilizing the SJCOG model, the VMT analysis utilizes the model inputs to estimate VMT associated with the project. This includes the trip rate for residential units of 3.80, the trip length for home-based trips from the traffic analysis zone (TAZ) where the project is located, and the residential persons per household within that TAZ. This methodology was chosen to be consistent with the methodology used to determine the VMT threshold. Table 2.1 presents the VMT analysis and results. As shown, the resulting Project VMT per capita is 28.5, which is higher than the threshold of 24.9, but lower than the countywide baseline (average unincorporated area) of 29.6.

Table 7.1 Project VMT Estimated

Parameter	Value
Project number of dwelling units	296 DUs
Daily number of Project trips (utilizing trip rate from model for consistency)	296 DUs x 3.80 = 1,125 trips
Average Trip Length (from TAZ of project location in SJCOG model)	18.95 miles
Project VMT estimated	(1,125 trips x 18.95 miles) = 21,315 VMT
Countywide persons per household (based on residential data of project TAZ in SJCOG model)	(3,164 people / 1,251 households) = 2.53 persons per household
Project capita estimation	(2.53 persons per household x 296 Dus) = 749 people
Project VMT per capita	(21,315 VMT / 749 people) = **28.5 VMT/capita**

For comparison, the figure below shows the length of weekday trips originating from Lockeford residences in 2023 (from Replica). The SJCOG model is estimating a longer average trip length than the 13.2 miles shown from Replica.

Figure 7.1 Lockeford Average Trip Distances (Replica)

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8. Impact Determination and Mitigation Measures

8.1 Significance Criteria

8.1.1 Traffic Operations

Intersection and roadway LOS criteria are metrics used to assess whether the proposed project traffic presents adverse effects on traffic operations or safety which warrant capacity or infrastructure improvements.

Intersection and roadway LOS are be compared against County operational standards, wherein **LOS D** or better is the acceptable threshold for intersection/roadway operations. The following significance criteria thresholds are taken directly from the San Joaquin County Traffic Impact Study Guidelines:

Mitigation measures are included in this traffic impact study for each of the following conditions:

– The LOS exceeds the County's standards for the three "With Project" conditions including Existing plus Project, Existing plus Approved/Pending plus Project, & Cumulative Year 2045 plus Project Conditions:

If the LOS for these conditions exceed the County's LOS standards, then mitigation measures that would improve the LOS to an acceptable level must be identified. LOS must be expressed in terms of delay in seconds for intersections, and vehicles per hour for roadway segments, in addition to the corresponding letter (A - F) designation. The project applicant is responsible for 100% of improvement construction costs should there be a proposed project impact in the Existing plus Project scenario. For future near-term and cumulative "with project" scenarios, recommended improvements are identified and fair-share calculations are quantified.

95th percentile queue lengths are compared against available storage lengths to determine if vehicle spillback is likely and in compliance with Caltrans safety guidelines.

The Project is considered to have an adverse effect if Project traffic:

– Results in 95th percentile queue lengths that exceed the available storage including ramp spillback under the corresponding Plus Project condition, where the corresponding 95th percentile queue lengths were within available storage under the No Project condition.

At study intersections where the proposed Project creates a substantial adverse effect on vehicle queues, recommended improvements are presented.

Development of the proposed Kautz Lockeford Residential Subdivision *could* result in unacceptable operations at adjacent intersections/roadways under analysis as well as other more localized areas along N. Tully Road and SR 12 88. As a result, intersection and roadway improvements required to mitigate the adverse traffic effects, if necessary, for all "with project" scenarios under existing, approved/pending, and cumulative year 2045 conditions have been documented. These improvements could include but are not limited to sight distance improvements, directional/warning signing, electronic traffic calming devices, signalization, raised medians, roundabouts, pedestrian/bicycle improvements, and/or transit measures to reduce overall vehicle trips.

8.1.2 Vehicle Miles Traveled

The VMT threshold consists of two components. The first component is the baseline average VMT per capita in the geographic area the County has selected, which is the unincorporated countywide average. The second component is the percent reduction from the baseline expected from future developments. As the lead agency, the County has discretion in the selection of both the baseline and the reduction target. This analysis utilizes a 16% below the current baseline as the threshold of significance, confirmed by County staff. The significance threshold for residential uses is **24.9** VMT per capita.

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As part of the overall VMT analysis, the proposed project's connections to pedestrian, bicycle, and public transit modes have been assessed. Any quantifiable benefits to improving travel modes have been identified consistent with the County's TIS policies. In addition to identifying alternative modes of transportation, a quantitative analysis/discussion of potential increases in vehicle miles traveled (VMT) related to proposed project uses are provided (as noted in Section 2.1). The quantitative assessment of VMT focused on the increases in project home and work trips and the specific VMT that could be attributed to these components. Based on residential demographics, an assessment of VMT has been estimated and measures to reduce the Project's impact on VMT have been identified. In addition, mitigation measures identified in the CAPCOA guidelines and Caltrans Mitigation Playbook have been considered.

8.2 Summary of Project Effects on Traffic Operations

The proposed Kautz-Lockeford Subdivision project located off N. Tully Road in the Town of Lockeford would affect both local and off-site intersection operations as well as pedestrian/bicycle/transit access/safety in the Lockeford area. Based on an estimated vehicle trip generation of 207 AM peak hour trips and 278 PM peak hour trips, the proposed project would impact intersection operations along SR 12 88 and N. Tully Road. In addition, the vehicle miles traveled (VMT) analysis conducted for project development indicates an overall VMT per capita of 28.5. While calculated project VMT falls below the County average of 29.6, it does not meet the 16% below threshold of 24.9 that would preclude mitigation from proposed project uses. Therefore, the following mitigation has been recommended for intersection, roadway, and active transportation in the project study area:

8.2.1 Study Intersections/Roadways Recommendations:

Table 8.1 shows the increase in delay and LOS due to the project. As shown in the table, the most significant impact to the study intersections is at the intersection of SR 12 88 and Brandt Road, with increases in delay well exceeding the LOS F threshold. With proposed project development, the stop-sign controlled intersection of SR 12 88/Brandt Road is operating at LOS F (139.5 and 220.1 seconds of delay) during both the AM and PM peak hours.

Existing Plus Project Conditions:

Based on proposed project trips adding to an existing, deficient conditions at the Brandt Road/SR 12 88 intersection, the following mitigation measures are recommended to improve overall vehicle delays and operations:

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Table 8.1 Summary of Adverse Effects on Traffic Operations - Intersections

ID	Intersection	Peak Hour	Project Impacts					
			Existing		EPAP		Cumulative	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
1	Tully Rd/Elliott Rd & SR 12/SR 88	AM	1.9	-	2.2	-	5.2	-
		PM	1.1	-	1.0	-	1.6	-
2	Tully Rd & Hammond St	AM	3.5	B to C	2.5	B to C	1.9	-
		PM	1.4	A to B	0.9	A to B	0.9	-
3	Tully Rd & Sharon Dr	AM	0.8	-	0.7	-	0.5	A to B
		PM	0.8	A to B	0.7	A to B	0.8	A to B
4	Tully Rd & Main Project Dwy (Future)	AM	12.1	n/a	12.0	n/a	11.4	n/a
		PM	10.5	n/a	10.3	n/a	10.6	n/a
5	Tully Rd & Brandt Rd	AM	0.5	-	0.4	-	0.4	-
		PM	0.5	-	0.4	-	0.5	-
6	Jack Tone Rd & Brandt Rd	AM	0.6	-	0.6	-	0.4	-
		PM	0.6	-	0.5	-	0.5	-
7	SR 12/SR 88 & Brandt Rd	AM	91.1	E to F	104.5	-	162.7	-
		PM	171.0	E to F	175.8	-	330.8	-
8	N Sierra Dr & SR 12/SR 88	AM	0.1	-	0.7	-	1.2	-
		PM	0.1	-	0.6	-	1.0	A to B
9	Tully Rd & Malbec Dr (Future)	AM	12.9	n/a	11.7	n/a	11.1	n/a
		PM	10.4	n/a	9.7	n/a	9.9	n/a

- **Brandt Road/SR 12 88 Intersection:** Install a signal at the intersection to improve vehicle delays and reduce overall vehicle queuing during the AM and PM peak hours. Under Existing plus Project conditions, the minor street stop-control intersection meets the peak hour warrant (Warrant #3). Since unacceptable intersection LOS and vehicle delay is an existing deficient condition, it is recommended that the proposed project contribute a 100% share of the costs for construction to improve the intersection consistent with San Joaquin County guidelines. Separate left-turn lanes (and phasing) have been assumed for SR 12 88 as part of overall intersection and signal design. With signalization, the Brandt Road/SR 12 88 intersection would be operating at LOS A during both the AM and PM peak hours.

Table 8.2 summarizes the roadway LOS at the study roadway segments. As shown in the table, N. Tully Road (south of Hammond Street) and Jack Tone Road-Hammond Street (west of N. Tully Road) would be operating at acceptable conditions (LOS B-C) under all "with project" conditions. The highway segments of SR 12 88 east and west of the Elliot Road/N. Tully Road intersection would continue to operate at LOS E conditions with the addition of proposed project traffic.

Table 8.2 Summary of Traffic Operations - Roadways

Tully Road, South of Hammond St

K-factor=0.12, D-Factor=0.50

Scenario	ADT	LOS
Existing	3,029	B
Existing Plus Project	4,704	C
Near Term	3,045	B
Near Term Plus Project	4,720	C
Cumulative	3,330	B
Cumulative Plus Project	4,446	C

Jack Tone Rd/Hammond St, West of Tully Rd

K-factor=0.12, D-Factor=0.60

Scenario	ADT	LOS
Existing	1,102	B
Existing Plus Project	1,381	B
Near Term	1,167	B
Near Term Plus Project	1,446	B
Cumulative	1,210	B
Cumulative Plus Project	1,489	B

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SR 12/SR 88, West of Elliott Road/Tully Road
K-factor=0.09, D-Factor=0.60

Scenario	AADT	LOS
Existing	15,600	E
Existing Plus Project	16,437	E
Near Term	15,735	E
Near Term Plus Project	16,712	E
Cumulative	17,295	E
Cumulative Plus Project	18,272	E

SR 12/SR 88, East of Elliott Road/Tully Road
K-factor=0.10, D-Factor=0.60

Scenario	AADT	LOS
Existing	13,500	E
Existing Plus Project	13,640	E
Near Term	13,640	E
Near Term Plus Project	14,198	E
Cumulative	14,985	E
Cumulative Plus Project	15,543	E

8.3 VMT Impacts and Mitigation Strategies

The project is estimated to result in 28.5 VMT per capita. This is over the County's VMT threshold of 24.9. Therefore, the project presents a significant impact on transportation, and the VMT per capita would need to decrease by 14% to mitigate the impact to less than significant.

As part of the overall VMT analysis, the proposed project's connections to and potential impacts have been assessed on pedestrian, bicycle, and public transit modes. Quantifiable benefits to improving these modes have been suggested consistent with the County's Draft VMT Guidance and Caltrans guidance (TISG). A qualitative analysis of potential mitigation measures identified in the California Air Pollution Control Officers Association's (CAPCOA) "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity" (December 2021) and Caltrans SB 743 Mitigation Playbook (Draft, July 2022) are recommended as follows:

Based on a review of the CAPCOA Handbook and the Caltrans Mitigation Playbook, specific mitigation strategies for low-density residential housing projects for VMT reduction are limited. Factors that contribute to this condition include the rural location of the project site, lack of transit providers, discontinuous pedestrian and bicycle facilities, and limited regional access routes. The following mitigation strategies are recommended as part of project development to reduce overall VMT and improve access for active transportation modes.

8.3.1 Local VMT- Active Transportation Program (ATP) Recommendations

VMT:

The vehicle miles traveled (VMT) analysis conducted for the project development indicates an overall VMT per capita of 28.5. While the calculated project VMT falls below the County average of 29.6, it does not meet the 16% below threshold of 24.9 that would preclude mitigation from proposed project uses. For the proposed project to satisfy the County's VMT criteria, overall project-generated VMT would have to be reduced by 14.4% (28.5 project VMT / 24.9 County threshold = 1.1445 or 14.4%).

Based on a review of the CAPCOA Handbook[14] and Caltrans Mitigation Playbook[15], specific mitigation strategies for low-density residential housing projects for VMT reduction are somewhat limited. Factors that contribute to this condition include the rural location of the project site, lack of transit providers, discontinuous pedestrian and bicycle facilities, and limited regional access routes. However, after a review of potential VMT reduction measures, the following mitigation is recommended as part of project development to reduce overall VMT and improve pedestrian/bicycle/transit access:

[14] California Air Pollution Control Officers Association (CAPCOA), *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, October 2024. Available: **https://www.caleemod.com/handbook/index.html**
[15] California Department of Transportation, *Caltrans SB 743 Program Mitigation Playbook*, Draft, July 2024.

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Local VMT-ATP Mitigation:

Provide Continuous Pedestrian Sidewalk Connection Along North Tully Road:

The planned pedestrian sidewalk along the proposed project site's frontage of N. Tully Road should be extended northwest to connect to Hammond Street and/or the planned sidewalk improvements associated with the Caltrans State Route 88 Pavement Anchor Project. Due to existing physical impediments just northwest of Malbec Drive on N. Tully Road, it is recommended that the pedestrian sidewalk be extended on the west side of the roadway opposite Malbec Drive. Caltrans indicates that, "Most transportation-related use of AT (active transportation) facilities is for short trips – less than 20 minutes, or about a mile walking or 3 miles cycling."[2] Providing improved pedestrian connection to the Lockeford downtown commercial areas can help to reduce the need for short vehicle trips. Residents from the proposed project could walk or bike safely to the downtown areas without the need for vehicle travel. Based on the CAPCOA Handbook, active transportation planning (ATP) (including pedestrian network improvements) would typically reduce the overall proposed project VMT by 6.4%.[16]

Limit the Malbec Drive/N. Tully Road Intersection to Right-Turns-Only Inbound/Outbound Vehicles:

The Malbec Drive/N. Tully Road intersection should be limited to right-turns-only for inbound/outbound vehicles due to the proximity of the Lockeford Elementary School and its associated parking lot driveways on the southwest side of the street. A raised median can be installed on N. Tully Road that would prevent left-turn movement at the intersection while still allowing adequate access to school driveways. The preclusion of left-turn movements at this intersection will improve pedestrian/bicycle safety and comfort, while reducing potential conflicts with vehicular activity to/from the Lockeford Elementary School driveways. While ostensibly a pedestrian safety improvement in reducing pedestrian/vehicle conflicts; limiting vehicle access at Malbec Drive and N. Tully Road could encourage more walking by providing a safer environment between the proposed project site and Lockeford Elementary School consistent with ATP traffic calming improvements.

Install East-West Pedestrian Crosswalk on N. Tully Road at the Malbec Drive/N. Tully Road Intersection:

In conjunction with the recommended raised median on N. Tully Road, install a raised east-west pedestrian crosswalk on N. Tully Road to provide access between the proposed project site and Lockeford Elementary School. The closest east-west pedestrian crosswalk on N. Tully Road is currently located at Hammond Street 375-feet northwest of Malbec Drive. A raised east-west pedestrian crosswalk at the south side of the Malbec Drive/N. Tully Road intersection in conjunction with a Rectangular Rapid Flashing Beacon (RRFB) will provide a safer crossing at N. Tully Road. As with the recommended pedestrian sidewalk improvements, installation of a raised crosswalk would encourage more walking and reduce overall proposed project VMT by 6.4% based on the CAPCOA Handbook. Both recommended sidewalk and crosswalk improvements would be considered combined and not additive for VMT reduction purposes.

Install Class I Shared Use Path:

Install a Class I shared use path along the southwest frontage of the project site east side of N. Tully Road) extending from the project site's southeast border to Malbec Drive. This would be in place of just a sidewalk. The separated shared use path would provide a buffer from vehicle travel for both walking and biking along N. Tully Road. Based on the CAPCOA Handbook, the estimated reduction in project-related VMT would be estimated at 0.8%.[17]

Total VMT Reduction: Local Mode Shift for Short Walking Trips Within Lockeford

The recommended VMT-ATP project-related measures listed above would complement the proposed project's school-related trips and help reduce overall VMT. No reduction in overall proposed project trip generation related to local school trips was assumed as part of this analysis. However, based on research using Replica (Big Data), school-related vehicle trips in Lockeford account for approximately 8% of residential vehicle trips. Additionally, Replica shows

[16] CAPCOA, op. cit., Measure T-18 Provide Pedestrian Network Improvement. Available: **https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-18.pdf**
[17] CAPCOA, op. cit., Measure T-19A Construct or Improve Bike Facility. Available: **https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-19-a.pdf**

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that shopping-related and errand vehicle trips in Lockeford account for approximately 20% of residential vehicle trips. With the proposed project site being located on N. Tully Road directly across from the Lockeford Elementary School and within walking or biking distance to nearby stores, restaurants, and other activity centers, a significant reduction in vehicle trips could be gained through incorporation of recommended ATP measures through a mode shift to walking, bicycling, and/or carpooling as indicated for each measure. For trips less than 2 miles in Lockeford (short trips), 50% of those trips are shopping, errand, recreation, or other trips (non-work, and non-school trips). Based on the Replica data, of these local non-work and non-school trips, 41% currently walk or bike. Therefore, one could expect a maximum 20% reduction in vehicular trips with sidewalk and shared-use path access to downtown destinations.[18]

8.3.2 Regional VMT Recommendations

Park and Ride Lot

The project applicant should investigate the potential for a park and ride (PNR) lot to serve new and existing residents of Lockeford. This improvement could be done in collaboration with the approved Lockeford Vistas project and/or other property along the SR 12 88 corridor in Lockeford. The park and ride lot would reduce overall VMT by removing commute trips from the highway.

It is noted that San Joaquin County has conducted previous VMT analyses for park and ride mitigation potential.[19] Typically, park and ride facilities located near transit hubs and/or dense urban areas do not reduce overall VMT. Conversely, it was found that park and ride facilities located 8-10 miles outside of a heavy dense transit/downtown area could potentially reduce VMT. However, the County noted that VMT reduction for PNR projects are not yet fully justified based on a lack of applicable case studies and examples for developing quantifiable VMT assumptions.

Provide Express Bus/Transit

The project applicant should consider subsidizing an express bus through San Joaquin County Transit between Lockeford and destinations to the west (Lodi, Stockton, Tracy). Again, this would have the effect of reducing commute trips on SR 12 88. Based on the same study for PNR facilities, examples for developing quantifiable VMT assumptions for bus route extensions and additions is based on CAPCOA methods.

Provide Electrical Charging Station(s)

The project applicant could provide electrical charging stations to encourage cleaner use vehicles (EV) in coordination with the park and ride lot. Provide incentives for electrical charging stations within residential dwelling units.

Near-Term Plus Project Conditions:

Same recommendations as Existing Plus Project Conditions

Cumulative Year 2045 Plus Project Conditions

Same recommendations as Existing Plus Project Conditions

[18] Replica Big Data, Lockeford school and short walking/biking trips within 2 miles, 2024.
[19] Rincon Consultants, Inc., San Joaquin County Vehicle Miles Traveled Transit and Park and Ride Mitigation, Memorandum to Todd Tregenza (GHD), April 21, 2021.

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Appendix A

Traffic Counts

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	5	12	23	1	107	8	116	14	6	4	24	11	61	7	79	242
07:15 AM	8	13	16	37	2	127	6	135	8	19	5	32	12	74	12	98	302
07:30 AM	4	21	14	39	7	151	12	170	24	23	7	54	12	65	14	91	354
07:45 AM	9	27	15	51	14	120	11	145	23	21	10	54	17	61	14	92	342
Total	27	66	57	150	24	505	37	566	69	69	26	164	52	261	47	360	1240
08:00 AM	7	11	17	35	3	101	15	119	14	19	6	39	17	62	2	81	274
08:15 AM	6	6	19	31	3	91	7	101	16	10	5	31	12	69	7	88	251
08:30 AM	8	7	12	27	2	117	5	124	12	7	4	23	13	73	4	90	264
08:45 AM	5	8	11	24	2	105	8	115	9	7	3	19	6	67	7	80	238
Total	26	32	59	117	10	414	35	459	51	43	18	112	48	271	20	339	1027
Grand Total	53	98	116	267	34	919	72	1025	120	112	44	276	100	532	67	699	2267
Apprch %	19.9	36.7	43.4		3.3	89.7	7		43.5	40.6	15.9		14.3	76.1	9.6		
Total %	2.3	4.3	5.1	11.8	1.5	40.5	3.2	45.2	5.3	4.9	1.9	12.2	4.4	23.5	3	30.8	
Passenger Vehicles	52	95	109	256	33	862	67	962	118	111	41	270	97	475	65	637	2125
% Passenger Vehicles	98.1	96.9	94	95.9	97.1	93.8	93.1	93.9	98.3	99.1	93.2	97.8	97	89.3	97	91.1	93.7
Large 2 Axle Vehicles	0	0	3	3	1	16	0	17	2	0	2	4	2	16	2	20	44
% Large 2 Axle Vehicles	0	0	2.6	1.1	2.9	1.7	0	1.7	1.7	0	4.5	1.4	2	3	3	2.9	1.9
3 Axle Vehicles	0	1	3	4	0	13	2	15	0	0	1	1	0	11	0	11	31
% 3 Axle Vehicles	0	1	2.6	1.5	0	1.4	2.8	1.5	0	0	2.3	0.4	0	2.1	0	1.6	1.4
4+ Axle Trucks	1	2	1	4	0	28	3	31	0	1	0	1	1	30	0	31	67
% 4+ Axle Trucks	1.9	2	0.9	1.5	0	3	4.2	3	0	0.9	0	0.4	1	5.6	0	4.4	3

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	13	16	37	2	127	6	135	8	19	5	32	12	**74**	12	**98**	302
07:30 AM	4	21	14	39	7	**151**	12	**170**	**24**	**23**	7	**54**	12	65	**14**	91	**354**
07:45 AM	**9**	**27**	15	**51**	**14**	120	11	145	23	21	**10**	54	**17**	61	14	92	342
08:00 AM	7	11	**17**	35	3	101	**15**	119	14	19	6	39	17	62	2	81	274
Total Volume	28	72	62	162	26	499	44	569	69	82	28	179	58	262	42	362	1272
% App. Total	17.3	44.4	38.3		4.6	87.7	7.7		38.5	45.8	15.6		16	72.4	11.6		
PHF	.778	.667	.912	.794	.464	.826	.733	.837	.719	.891	.700	.829	.853	.885	.750	.923	.898

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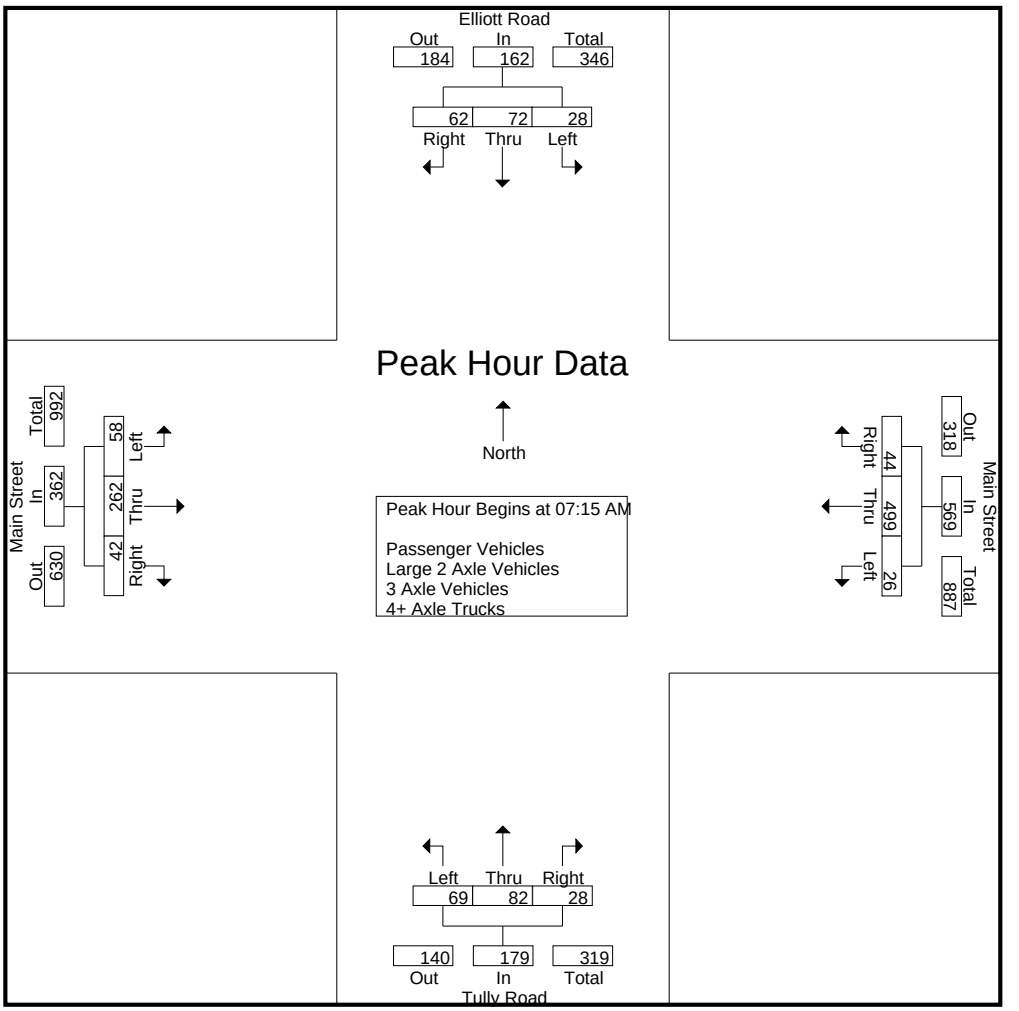
County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	8	13	16	37	2	127	6	135	8	19	5	32	12	**74**	12	**98**
+15 mins.	4	21	14	39	7	**151**	12	**170**	**24**	**23**	7	**54**	12	65	**14**	91
+30 mins.	**9**	**27**	15	**51**	**14**	120	11	145	23	21	**10**	54	**17**	61	14	92
+45 mins.	7	11	**17**	35	3	101	**15**	119	14	19	6	39	17	62	2	81
Total Volume	28	72	62	162	26	499	44	569	69	82	28	179	58	262	42	362
% App. Total	17.3	44.4	38.3		4.6	87.7	7.7		38.5	45.8	15.6		16	72.4	11.6	
PHF	.778	.667	.912	.794	.464	.826	.733	.837	.719	.891	.700	.829	.853	.885	.750	.923

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PO Box 1178
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(951) 268-6268

County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	5	12	23	1	100	7	108	13	6	4	23	11	53	7	71	225
07:15 AM	8	13	15	36	2	123	6	131	8	19	5	32	11	63	12	86	285
07:30 AM	4	20	11	35	6	147	11	164	24	23	7	54	12	56	14	82	335
07:45 AM	9	26	14	49	14	109	11	134	22	21	10	53	16	54	13	83	319
Total	27	64	52	143	23	479	35	537	67	69	26	162	50	226	46	322	1164
08:00 AM	7	11	17	35	3	90	12	105	14	19	6	39	16	58	2	76	255
08:15 AM	6	6	18	30	3	87	7	97	16	10	3	29	12	64	6	82	238
08:30 AM	7	6	11	24	2	109	5	116	12	6	3	21	13	68	4	85	246
08:45 AM	5	8	11	24	2	97	8	107	9	7	3	19	6	59	7	72	222
Total	25	31	57	113	10	383	32	425	51	42	15	108	47	249	19	315	961
Grand Total	52	95	109	256	33	862	67	962	118	111	41	270	97	475	65	637	2125
Apprch %	20.3	37.1	42.6		3.4	89.6	7		43.7	41.1	15.2		15.2	74.6	10.2		
Total %	2.4	4.5	5.1	12	1.6	40.6	3.2	45.3	5.6	5.2	1.9	12.7	4.6	22.4	3.1	30	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	13	15	36	2	123	6	131	8	19	5	32	11	**63**	12	**86**	285
07:30 AM	4	20	11	35	6	**147**	11	**164**	**24**	**23**	7	**54**	12	56	**14**	82	**335**
07:45 AM	**9**	**26**	14	**49**	**14**	109	11	134	22	21	**10**	53	**16**	54	13	83	319
08:00 AM	7	11	**17**	35	3	90	**12**	105	14	19	6	39	16	58	2	76	255
Total Volume	28	70	57	155	25	469	40	534	68	82	28	178	55	231	41	327	1194
% App. Total	18.1	45.2	36.8		4.7	87.8	7.5		38.2	46.1	15.7		16.8	70.6	12.5		
PHF	.778	.673	.838	.791	.446	.798	.833	.814	.708	.891	.700	.824	.859	.917	.732	.951	.891

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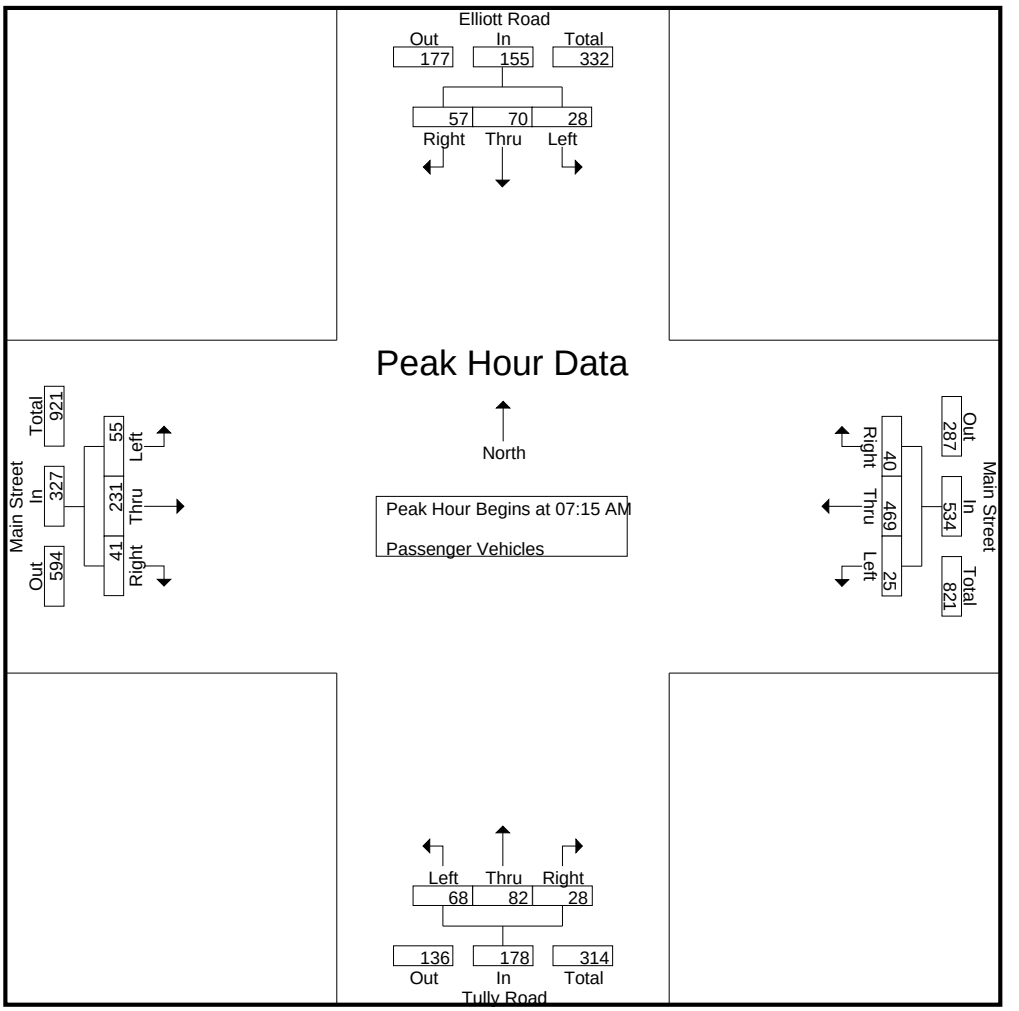
County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	8	13	15	36	2	123	6	131	8	19	5	32	11	**63**	12	**86**
+15 mins.	4	20	11	35	6	**147**	11	**164**	**24**	**23**	7	**54**	12	56	**14**	82
+30 mins.	**9**	**26**	14	**49**	**14**	109	11	134	22	21	**10**	53	**16**	54	13	83
+45 mins.	7	11	**17**	35	3	90	**12**	105	14	19	6	39	16	58	2	76
Total Volume	28	70	57	155	25	469	40	534	68	82	28	178	55	231	41	327
% App. Total	18.1	45.2	36.8		4.7	87.8	7.5		38.2	46.1	15.7		16.8	70.6	12.5	
PHF	.778	.673	.838	.791	.446	.798	.833	.814	.708	.891	.700	.824	.859	.917	.732	.951

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	6	6
07:30 AM	0	0	2	2	1	2	0	3	0	0	0	0	0	4	0	4	9
07:45 AM	0	0	0	0	0	4	0	4	1	0	0	1	0	2	1	3	8
Total	0	0	2	2	1	7	0	8	2	0	0	2	1	11	1	13	25
08:00 AM	0	0	0	0	0	3	0	3	0	0	0	0	1	0	0	1	4
08:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	3	1	4	5
08:30 AM	0	0	1	1	0	1	0	1	0	0	1	1	0	1	0	1	4
08:45 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	1	0	1	6
Total	0	0	1	1	0	9	0	9	0	0	2	2	1	5	1	7	19
Grand Total	0	0	3	3	1	16	0	17	2	0	2	4	2	16	2	20	44
Apprch %	0	0	100		5.9	94.1	0		50	0	50		10	80	10		
Total %	0	0	6.8	6.8	2.3	36.4	0	38.6	4.5	0	4.5	9.1	4.5	36.4	4.5	45.5	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**5**	0	**6**	6
07:30 AM	0	0	**2**	**2**	**1**	2	0	3	0	0	0	0	0	4	0	4	**9**
07:45 AM	0	0	0	0	0	**4**	0	**4**	**1**	0	0	**1**	0	2	**1**	3	8
08:00 AM	0	0	0	0	0	3	0	3	0	0	0	0	1	0	0	1	4
Total Volume	0	0	2	2	1	9	0	10	1	0	0	1	2	11	1	14	27
% App. Total	0	0	100		10	90	0		100	0	0		14.3	78.6	7.1		
PHF	.000	.000	.250	.250	.250	.563	.000	.625	.250	.000	.000	.250	.500	.550	.250	.583	.750

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
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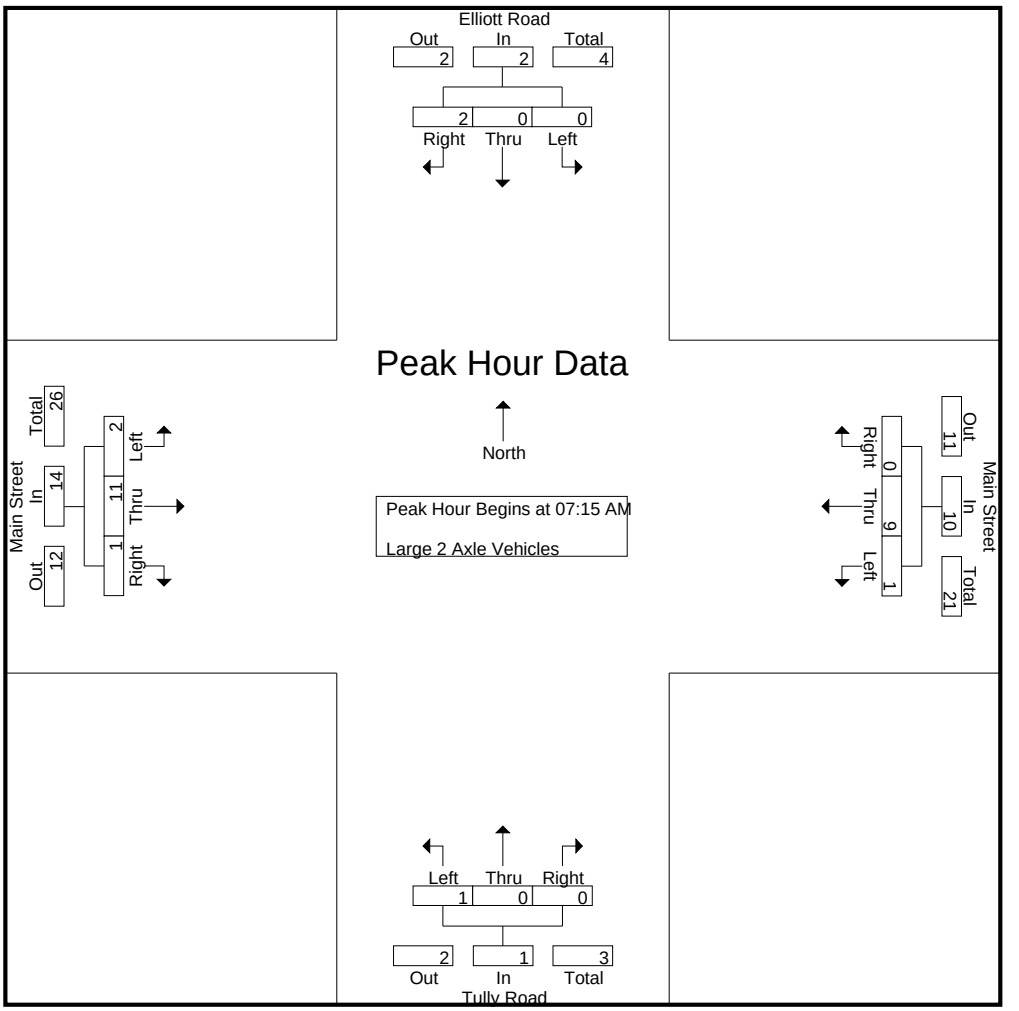

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**5**	0	**6**
+15 mins.	0	0	**2**	**2**	**1**	2	0	3	0	0	0	0	0	4	0	4
+30 mins.	0	0	0	0	0	**4**	0	**4**	**1**	0	0	**1**	0	2	**1**	3
+45 mins.	0	0	0	0	0	3	0	3	0	0	0	0	1	0	0	1
Total Volume	0	0	2	2	1	9	0	10	1	0	0	1	2	11	1	14
% App. Total	0	0	100		10	90	0		100	0	0		14.3	78.6	7.1	
PHF	.000	.000	.250	.250	.250	.563	.000	.625	.250	.000	.000	.250	.500	.550	.250	.583

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County of San Joaquin
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E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
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Groups Printed- 3 Axle Vehicles

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
07:15 AM	0	0	1	1	0	1	0	1	0	0	0	0	0	1	0	1	3
07:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	2	3
07:45 AM	0	0	1	1	0	3	0	3	0	0	0	0	0	4	0	4	8
Total	0	0	2	2	0	5	1	6	0	0	0	0	0	10	0	10	18
08:00 AM	0	0	0	0	0	4	1	5	0	0	0	0	0	0	0	0	5
08:15 AM	0	0	1	1	0	1	0	1	0	0	1	1	0	0	0	0	3
08:30 AM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
08:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total	0	1	1	2	0	8	1	9	0	0	1	1	0	1	0	1	13
Grand Total	0	1	3	4	0	13	2	15	0	0	1	1	0	11	0	11	31
Apprch %	0	25	75		0	86.7	13.3		0	0	100		0	100	0		
Total %	0	3.2	9.7	12.9	0	41.9	6.5	48.4	0	0	3.2	3.2	0	35.5	0	35.5	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**1**	**1**	0	1	0	1	0	0	0	0	0	1	0	1	3
07:30 AM	0	0	0	0	0	0	**1**	1	0	0	0	0	0	2	0	2	3
07:45 AM	0	0	1	1	0	3	0	3	0	0	0	0	0	**4**	0	**4**	**8**
08:00 AM	0	0	0	0	0	**4**	1	**5**	0	0	0	0	0	0	0	0	5
Total Volume	0	0	2	2	0	8	2	10	0	0	0	0	0	7	0	7	19
% App. Total	0	0	100		0	80	20		0	0	0		0	100	0		
PHF	.000	.000	.500	.500	.000	.500	.500	.500	.000	.000	.000	.000	.000	.438	.000	.438	.594

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
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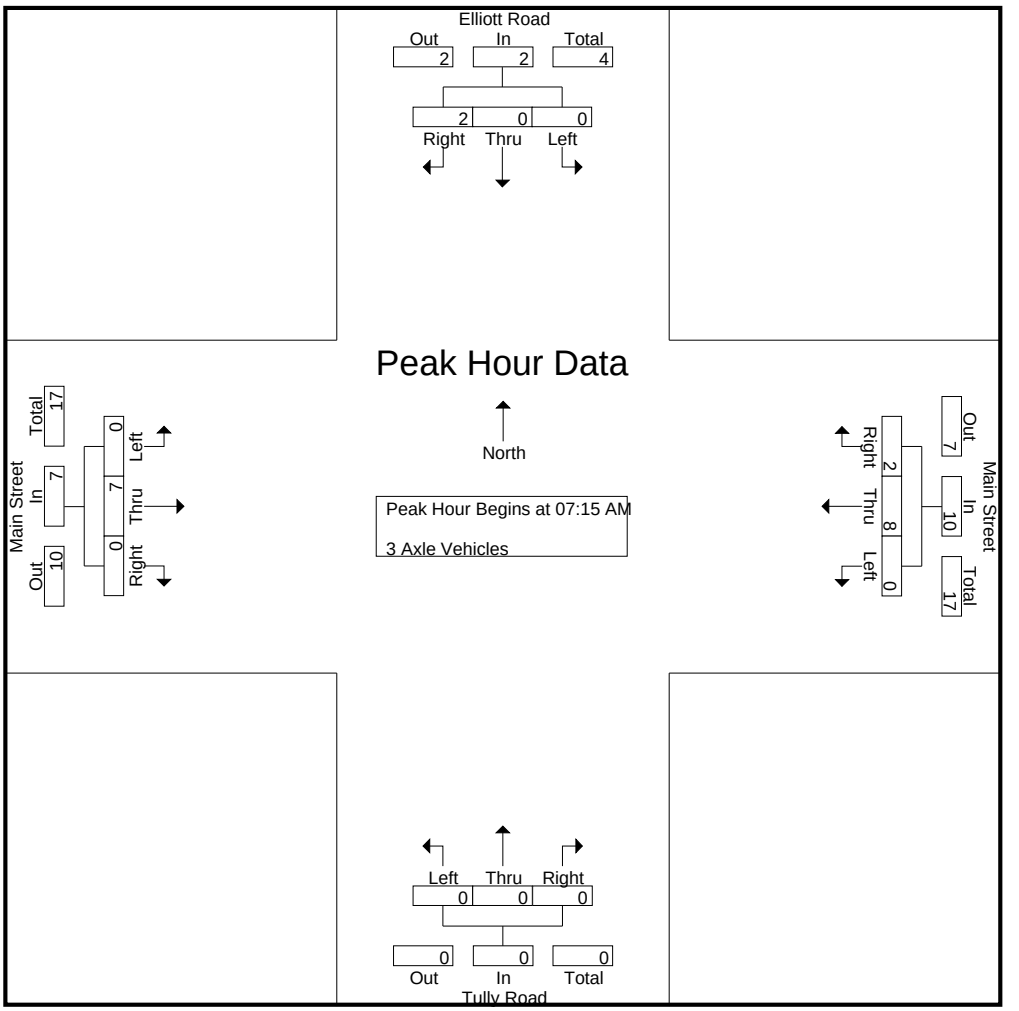

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	**1**	**1**	0	1	0	1	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	**1**	1	0	0	0	0	0	2	0	2
+30 mins.	0	0	1	1	0	3	0	3	0	0	0	0	0	**4**	0	**4**
+45 mins.	0	0	0	0	0	**4**	1	**5**	0	0	0	0	0	0	0	0
Total Volume	0	0	2	2	0	8	2	10	0	0	0	0	0	7	0	7
% App. Total	0	0	100		0	80	20		0	0	0		0	100	0	
PHF	.000	.000	.500	.500	.000	.500	.500	.500	.000	.000	.000	.000	.000	.438	.000	.438

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
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Groups Printed- 4+ Axle Trucks

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	5	1	6	0	0	0	0	0	5	0	5	11
07:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	5	0	5	8
07:30 AM	0	1	1	2	0	2	0	2	0	0	0	0	0	3	0	3	7
07:45 AM	0	1	0	1	0	4	0	4	0	0	0	0	1	1	0	2	7
Total	0	2	1	3	0	14	1	15	0	0	0	0	1	14	0	15	33
08:00 AM	0	0	0	0	0	4	2	6	0	0	0	0	0	4	0	4	10
08:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2	5
08:30 AM	1	0	0	1	0	5	0	5	0	1	0	1	0	4	0	4	11
08:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	6	0	6	8
Total	1	0	0	1	0	14	2	16	0	1	0	1	0	16	0	16	34
Grand Total	1	2	1	4	0	28	3	31	0	1	0	1	1	30	0	31	67
Apprch %	25	50	25		0	90.3	9.7		0	100	0		3.2	96.8	0		
Total %	1.5	3	1.5	6	0	41.8	4.5	46.3	0	1.5	0	1.5	1.5	44.8	0	46.3	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	**5**	0	**5**	8
07:30 AM	0	**1**	**1**	**2**	0	2	0	2	0	0	0	0	0	3	0	3	7
07:45 AM	0	1	0	1	0	**4**	0	4	0	0	0	0	**1**	1	0	2	7
08:00 AM	0	0	0	0	0	4	**2**	**6**	0	0	0	0	0	4	0	4	**10**
Total Volume	0	2	1	3	0	13	2	15	0	0	0	0	1	13	0	14	32
% App. Total	0	66.7	33.3		0	86.7	13.3		0	0	0		7.1	92.9	0		
PHF	.000	.500	.250	.375	.000	.813	.250	.625	.000	.000	.000	.000	.250	.650	.000	.700	.800

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County of San Joaquin
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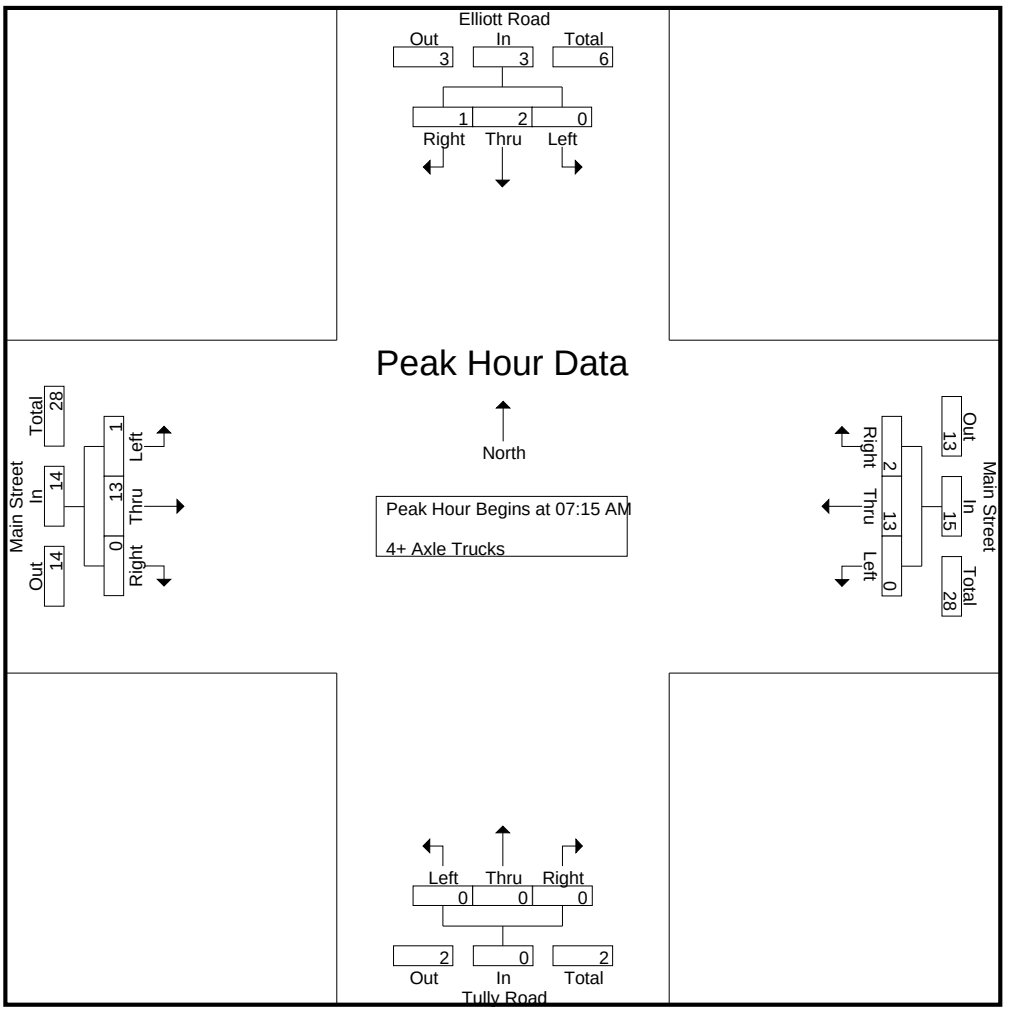

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	**5**	0	**5**
+15 mins.	0	**1**	**1**	**2**	0	2	0	2	0	0	0	0	0	3	0	3
+30 mins.	0	1	0	1	0	**4**	0	4	0	0	0	0	**1**	1	0	2
+45 mins.	0	0	0	0	0	4	**2**	**6**	0	0	0	0	0	4	0	4
Total Volume	0	2	1	3	0	13	2	15	0	0	0	0	1	13	0	14
% App. Total	0	66.7	33.3		0	86.7	13.3		0	0	0		7.1	92.9	0	
PHF	.000	.500	.250	.375	.000	.813	.250	.625	.000	.000	.000	.000	.250	.650	.000	.700

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	9	19	36	5	91	6	102	8	7	7	22	15	135	8	158	318
04:15 PM	19	14	17	50	3	106	9	118	11	10	3	24	21	170	8	199	391
04:30 PM	13	10	21	44	3	112	4	119	14	9	9	32	17	167	6	190	385
04:45 PM	11	14	34	59	0	125	11	136	8	8	4	20	16	133	10	159	374
Total	51	47	91	189	11	434	30	475	41	34	23	98	69	605	32	706	1468
05:00 PM	12	13	18	43	3	104	5	112	10	8	8	26	13	143	12	168	349
05:15 PM	12	11	16	39	7	87	5	99	10	7	6	23	28	147	9	184	345
05:30 PM	15	7	20	42	3	92	11	106	8	10	9	27	29	140	12	181	356
05:45 PM	7	5	9	21	5	66	8	79	5	3	4	12	15	117	6	138	250
Total	46	36	63	145	18	349	29	396	33	28	27	88	85	547	39	671	1300
Grand Total	97	83	154	334	29	783	59	871	74	62	50	186	154	1152	71	1377	2768
Apprch %	29	24.9	46.1		3.3	89.9	6.8		39.8	33.3	26.9		11.2	83.7	5.2		
Total %	3.5	3	5.6	12.1	1	28.3	2.1	31.5	2.7	2.2	1.8	6.7	5.6	41.6	2.6	49.7	
Passenger Vehicles	96	81	150	327	29	742	59	830	70	62	49	181	149	1130	68	1347	2685
% Passenger Vehicles	99	97.6	97.4	97.9	100	94.8	100	95.3	94.6	100	98	97.3	96.8	98.1	95.8	97.8	97
Large 2 Axle Vehicles	0	1	2	3	0	18	0	18	4	0	1	5	1	11	3	15	41
% Large 2 Axle Vehicles	0	1.2	1.3	0.9	0	2.3	0	2.1	5.4	0	2	2.7	0.6	1	4.2	1.1	1.5
3 Axle Vehicles	0	0	1	1	0	4	0	4	0	0	0	0	1	1	0	2	7
% 3 Axle Vehicles	0	0	0.6	0.3	0	0.5	0	0.5	0	0	0	0	0.6	0.1	0	0.1	0.3
4+ Axle Trucks	1	1	1	3	0	19	0	19	0	0	0	0	3	10	0	13	35
% 4+ Axle Trucks	1	1.2	0.6	0.9	0	2.4	0	2.2	0	0	0	0	1.9	0.9	0	0.9	1.3

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**19**	**14**	17	50	**3**	106	9	118	11	**10**	3	24	**21**	**170**	8	**199**	**391**
04:30 PM	13	10	21	44	3	112	4	119	**14**	9	**9**	**32**	17	167	6	190	385
04:45 PM	11	14	**34**	**59**	0	**125**	**11**	**136**	8	8	4	20	16	133	10	159	374
05:00 PM	12	13	18	43	3	104	5	112	10	8	8	26	13	143	**12**	168	349
Total Volume	55	51	90	196	9	447	29	485	43	35	24	102	67	613	36	716	1499
% App. Total	28.1	26	45.9		1.9	92.2	6		42.2	34.3	23.5		9.4	85.6	5		
PHF	.724	.911	.662	.831	.750	.894	.659	.892	.768	.875	.667	.797	.798	.901	.750	.899	.958

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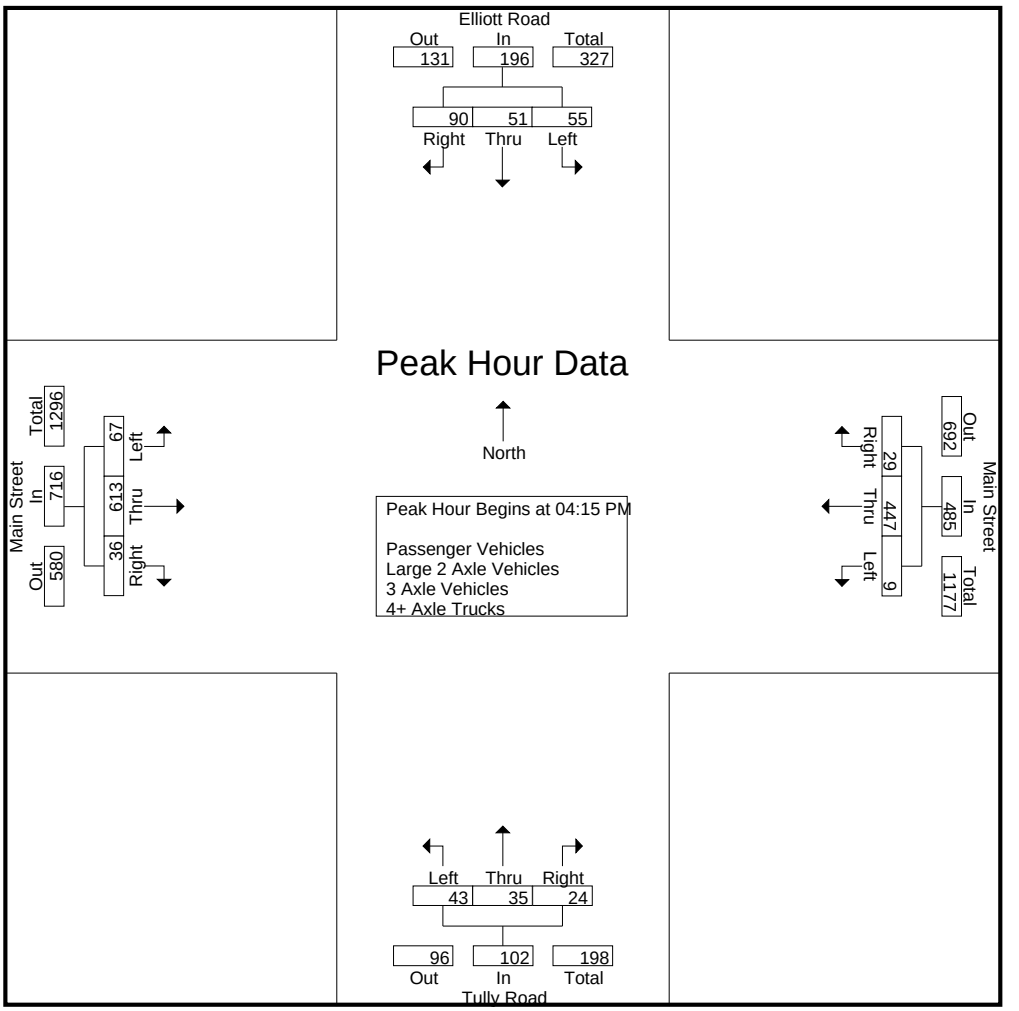
County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	**19**	**14**	17	50	**3**	106	9	118	11	**10**	3	24	**21**	**170**	8	**199**
+15 mins.	13	10	21	44	3	112	4	119	**14**	9	**9**	**32**	17	167	6	190
+30 mins.	11	14	**34**	**59**	0	**125**	**11**	**136**	8	8	4	20	16	133	10	159
+45 mins.	12	13	18	43	3	104	5	112	10	8	8	26	13	143	**12**	168
Total Volume	55	51	90	196	9	447	29	485	43	35	24	102	67	613	36	716
% App. Total	28.1	26	45.9		1.9	92.2	6		42.2	34.3	23.5		9.4	85.6	5	
PHF	.724	.911	.662	.831	.750	.894	.659	.892	.768	.875	.667	.797	.798	.901	.750	.899

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	8	17	33	5	86	6	97	7	7	7	21	15	131	8	154	305
04:15 PM	19	14	17	50	3	96	9	108	10	10	3	23	18	165	6	189	370
04:30 PM	12	10	21	43	3	104	4	111	13	9	9	31	17	166	6	189	374
04:45 PM	11	14	34	59	0	120	11	131	8	8	3	19	16	130	9	155	364
Total	50	46	89	185	11	406	30	447	38	34	22	94	66	592	29	687	1413
05:00 PM	12	13	18	43	3	98	5	106	10	8	8	26	13	143	12	168	343
05:15 PM	12	11	15	38	7	85	5	97	9	7	6	22	27	144	9	180	337
05:30 PM	15	6	19	40	3	89	11	103	8	10	9	27	28	135	12	175	345
05:45 PM	7	5	9	21	5	64	8	77	5	3	4	12	15	116	6	137	247
Total	46	35	61	142	18	336	29	383	32	28	27	87	83	538	39	660	1272
Grand Total	96	81	150	327	29	742	59	830	70	62	49	181	149	1130	68	1347	2685
Apprch %	29.4	24.8	45.9		3.5	89.4	7.1		38.7	34.3	27.1		11.1	83.9	5		
Total %	3.6	3	5.6	12.2	1.1	27.6	2.2	30.9	2.6	2.3	1.8	6.7	5.5	42.1	2.5	50.2	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**19**	**14**	17	50	**3**	96	9	108	10	**10**	3	23	**18**	165	6	**189**	370
04:30 PM	12	10	21	43	3	104	4	111	**13**	9	**9**	**31**	17	**166**	6	189	**374**
04:45 PM	11	14	**34**	**59**	0	**120**	**11**	**131**	8	8	3	19	16	130	9	155	364
05:00 PM	12	13	18	43	3	98	5	106	10	8	8	26	13	143	**12**	168	343
Total Volume	54	51	90	195	9	418	29	456	41	35	23	99	64	604	33	701	1451
% App. Total	27.7	26.2	46.2		2	91.7	6.4		41.4	35.4	23.2		9.1	86.2	4.7		
PHF	.711	.911	.662	.826	.750	.871	.659	.870	.788	.875	.639	.798	.889	.910	.688	.927	.970

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County of San Joaquin
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Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
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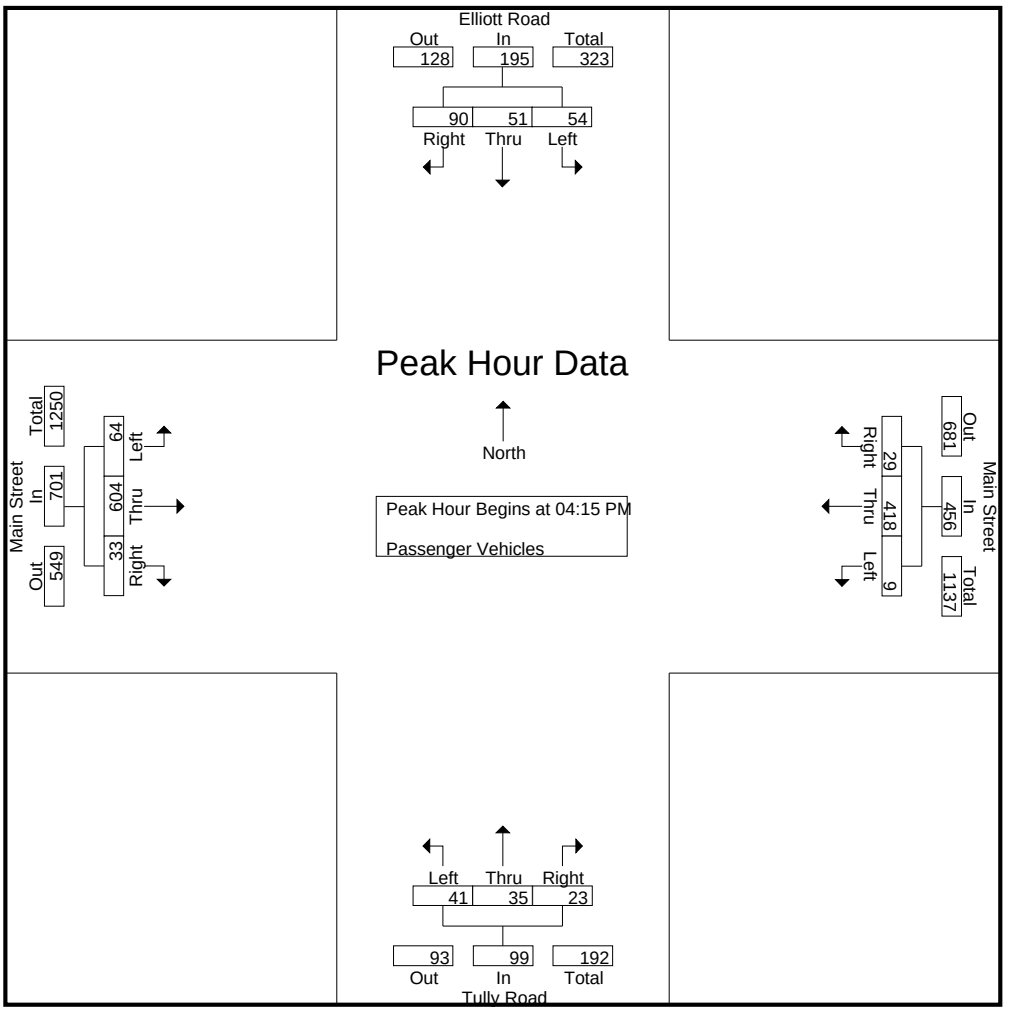

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	**19**	**14**	17	50	**3**	96	9	108	10	**10**	3	23	**18**	165	6	**189**
+15 mins.	12	10	21	43	3	104	4	111	**13**	9	**9**	**31**	17	**166**	6	189
+30 mins.	11	14	**34**	**59**	0	**120**	**11**	**131**	8	8	3	19	16	130	9	155
+45 mins.	12	13	18	43	3	98	5	106	10	8	8	26	13	143	**12**	168
Total Volume	54	51	90	195	9	418	29	456	41	35	23	99	64	604	33	701
% App. Total	27.7	26.2	46.2		2	91.7	6.4		41.4	35.4	23.2		9.1	86.2	4.7	
PHF	.711	.911	.662	.826	.750	.871	.659	.870	.788	.875	.639	.798	.889	.910	.688	.927

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
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Groups Printed- Large 2 Axle Vehicles

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	2	3	0	2	0	2	1	0	0	1	0	2	0	2	8
04:15 PM	0	0	0	0	0	4	0	4	1	0	0	1	1	1	2	4	9
04:30 PM	0	0	0	0	0	3	0	3	1	0	0	1	0	0	0	0	4
04:45 PM	0	0	0	0	0	2	0	2	0	0	1	1	0	1	1	2	5
Total	0	1	2	3	0	11	0	11	3	0	1	4	1	4	3	8	26
05:00 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	4
05:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	3	0	3	5
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	0	7	0	7	1	0	0	1	0	7	0	7	15
Grand Total	0	1	2	3	0	18	0	18	4	0	1	5	1	11	3	15	41
Apprch %	0	33.3	66.7		0	100	0		80	0	20		6.7	73.3	20		
Total %	0	2.4	4.9	7.3	0	43.9	0	43.9	9.8	0	2.4	12.2	2.4	26.8	7.3	36.6	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	**4**	0	**4**	**1**	0	0	**1**	**1**	**1**	**2**	**4**	**9**
04:30 PM	0	0	0	0	0	3	0	3	1	0	0	1	0	0	0	0	4
04:45 PM	0	0	0	0	0	2	0	2	0	0	**1**	1	0	1	1	2	5
05:00 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	4
Total Volume	0	0	0	0	0	13	0	13	2	0	1	3	1	2	3	6	22
% App. Total	0	0	0		0	100	0		66.7	0	33.3		16.7	33.3	50		
PHF	.000	.000	.000	.000	.000	.813	.000	.813	.500	.000	.250	.750	.250	.500	.375	.375	.611

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County of San Joaquin
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E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
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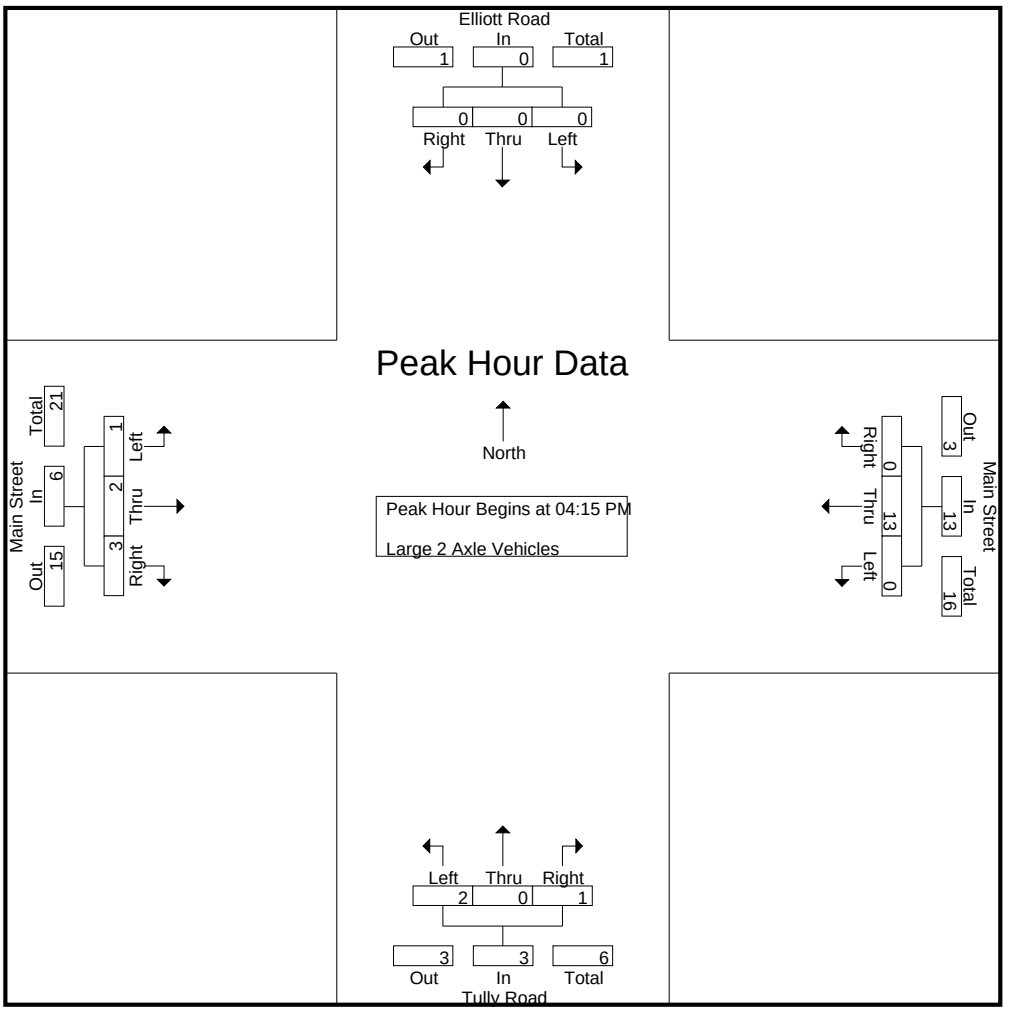

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	**4**	0	**4**	**1**	0	0	**1**	**1**	**1**	**2**	**4**
+15 mins.	0	0	0	0	0	3	0	3	1	0	0	1	0	0	0	0
+30 mins.	0	0	0	0	0	2	0	2	0	0	**1**	1	0	1	1	2
+45 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	13	0	13	2	0	1	3	1	2	3	6
% App. Total	0	0	0		0	100	0		66.7	0	33.3		16.7	33.3	50	
PHF	.000	.000	.000	.000	.000	.813	.000	.813	.500	.000	.250	.750	.250	.500	.375	.375

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County of San Joaquin
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Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 3 Axle Vehicles

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	1	0	2	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	2	4
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	2	0	2	0	0	0	0	0	0	0	0	3
Grand Total	0	0	1	1	0	4	0	4	0	0	0	0	1	1	0	2	7
Apprch %	0	0	100		0	100	0		0	0	0		50	50	0		
Total %	0	0	14.3	14.3	0	57.1	0	57.1	0	0	0	0	14.3	14.3	0	28.6	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	**1**	**1**	0	**2**	**3**
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	3	0	3	0	0	0	0	1	1	0	2	5
% App. Total	0	0	0		0	100	0		0	0	0		50	50	0		
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.250	.250	.000	.250	.417

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County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
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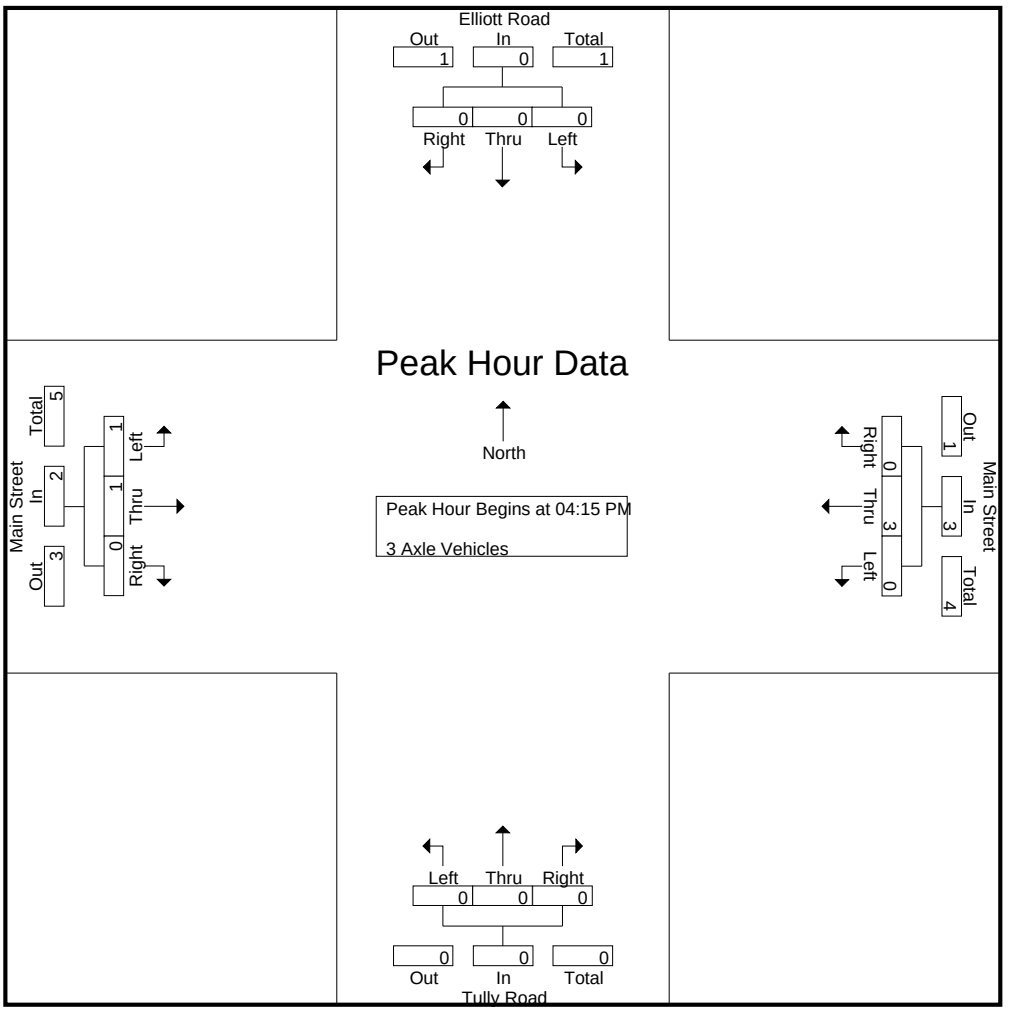

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	**1**	**1**	0	**2**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	3	0	3	0	0	0	0	1	1	0	2
% App. Total	0	0	0		0	100	0		0	0	0		50	50	0	
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.250	.250	.000	.250

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County of San Joaquin
N/S: Elliott Road/Tully Road
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Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
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Groups Printed- 4+ Axle Trucks

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
04:15 PM	0	0	0	0	0	5	0	5	0	0	0	0	1	3	0	4	9
04:30 PM	1	0	0	1	0	5	0	5	0	0	0	0	0	1	0	1	7
04:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2	5
Total	1	0	0	1	0	15	0	15	0	0	0	0	1	8	0	9	25
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
05:30 PM	0	1	1	2	0	2	0	2	0	0	0	0	1	2	0	3	7
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	1	1	2	0	4	0	4	0	0	0	0	2	2	0	4	10
Grand Total	1	1	1	3	0	19	0	19	0	0	0	0	3	10	0	13	35
Apprch %	33.3	33.3	33.3		0	100	0		0	0	0		23.1	76.9	0		
Total %	2.9	2.9	2.9	8.6	0	54.3	0	54.3	0	0	0	0	8.6	28.6	0	37.1	

	Elliott Road Southbound				Main Street Westbound				Tully Road Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	**5**	0	**5**	0	0	0	0	**1**	**3**	0	**4**	**9**
04:30 PM	**1**	0	0	**1**	0	5	0	5	0	0	0	0	0	1	0	1	7
04:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	1	0	13	0	13	0	0	0	0	1	6	0	7	21
% App. Total	100	0	0		0	100	0		0	0	0		14.3	85.7	0		
PHF	.250	.000	.000	.250	.000	.650	.000	.650	.000	.000	.000	.000	.250	.500	.000	.438	.583

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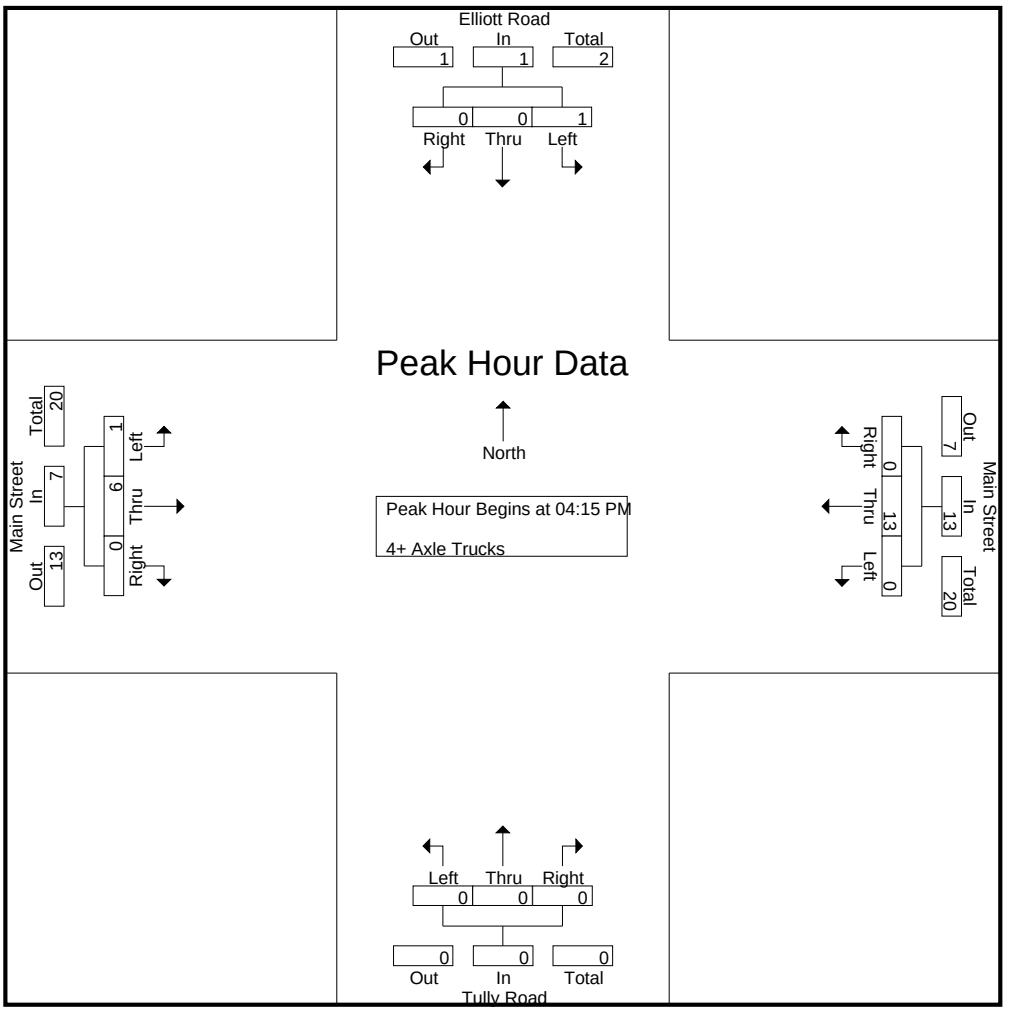
County of San Joaquin
N/S: Elliott Road/Tully Road
E/W: Main Street (SR-88)
Weather: Clear

File Name : 01_CSJ_Ell_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	**5**	0	**5**	0	0	0	0	**1**	**3**	0	**4**
+15 mins.	**1**	0	0	**1**	0	5	0	5	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	1	0	13	0	13	0	0	0	0	1	6	0	7
% App. Total	100	0	0		0	100	0		0	0	0		14.3	85.7	0	
PHF	.250	.000	.000	.250	.000	.650	.000	.650	.000	.000	.000	.000	.250	.500	.000	.438

Location: County of San Joaquain
N/S: Elliot Rd/Tully Rd
E/W: Main Street

Date: 8/20/2024
Day: Tuesday

PEDESTRIANS

	North Leg Elliot Road	East Leg Main Street	South Leg Tully Road	West Leg Main Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Elliot Road	East Leg Main Street	South Leg Tully Road	West Leg Main Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: County of San Joaquain
N/S: Elliot Rd/Tully Rd
E/W: Main Street

Date: 8/20/2024
Day: Tuesday

BICYCLES

	Southbound Elliot Road			Westbound Main Street			Northbound Tully Road			Eastbound Main Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Elliot Road			Westbound Main Street			Northbound Tully Road			Eastbound Main Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	12	0	12	1	1	1	3	1	18	0	19	4	0	5	9	43
07:15 AM	0	24	8	32	4	1	1	6	0	29	3	32	4	0	2	6	76
07:30 AM	0	42	0	42	7	2	1	10	16	50	5	71	6	1	13	20	143
07:45 AM	0	46	9	55	7	1	2	10	14	48	7	69	5	1	13	19	153
Total	0	124	17	141	19	5	5	29	31	145	15	191	19	2	33	54	415
08:00 AM	1	13	3	17	2	0	1	3	7	31	4	42	3	0	3	6	68
08:15 AM	3	8	4	15	0	0	2	2	2	23	1	26	4	0	6	10	53
08:30 AM	2	10	3	15	0	0	0	0	2	16	1	19	4	0	3	7	41
08:45 AM	0	13	4	17	1	1	0	2	2	13	0	15	5	0	2	7	41
Total	6	44	14	64	3	1	3	7	13	83	6	102	16	0	14	30	203
Grand Total	6	168	31	205	22	6	8	36	44	228	21	293	35	2	47	84	618
Apprch %	2.9	82	15.1		61.1	16.7	22.2		15	77.8	7.2		41.7	2.4	56		
Total %	1	27.2	5	33.2	3.6	1	1.3	5.8	7.1	36.9	3.4	47.4	5.7	0.3	7.6	13.6	
Passenger Vehicles	6	158	31	195	22	6	7	35	43	222	20	285	35	2	47	84	599
% Passenger Vehicles	100	94	100	95.1	100	100	87.5	97.2	97.7	97.4	95.2	97.3	100	100	100	100	96.9
Large 2 Axle Vehicles	0	7	0	7	0	0	0	0	1	5	0	6	0	0	0	0	13
% Large 2 Axle Vehicles	0	4.2	0	3.4	0	0	0	0	2.3	2.2	0	2	0	0	0	0	2.1
3 Axle Vehicles	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	3
% 3 Axle Vehicles	0	0.6	0	0.5	0	0	12.5	2.8	0	0	4.8	0.3	0	0	0	0	0.5
4+ Axle Trucks	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
% 4+ Axle Trucks	0	1.2	0	1	0	0	0	0	0	0.4	0	0.3	0	0	0	0	0.5

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	24	8	32	4	1	1	6	0	29	3	32	4	0	2	6	76
07:30 AM	0	42	0	42	**7**	**2**	1	**10**	**16**	**50**	5	**71**	**6**	**1**	**13**	**20**	143
07:45 AM	0	**46**	**9**	**55**	7	1	**2**	10	14	48	**7**	69	5	1	13	19	**153**
08:00 AM	**1**	13	3	17	2	0	1	3	7	31	4	42	3	0	3	6	68
Total Volume	1	125	20	146	20	4	5	29	37	158	19	214	18	2	31	51	440
% App. Total	0.7	85.6	13.7		69	13.8	17.2		17.3	73.8	8.9		35.3	3.9	60.8		
PHF	.250	.679	.556	.664	.714	.500	.625	.725	.578	.790	.679	.754	.750	.500	.596	.638	.719

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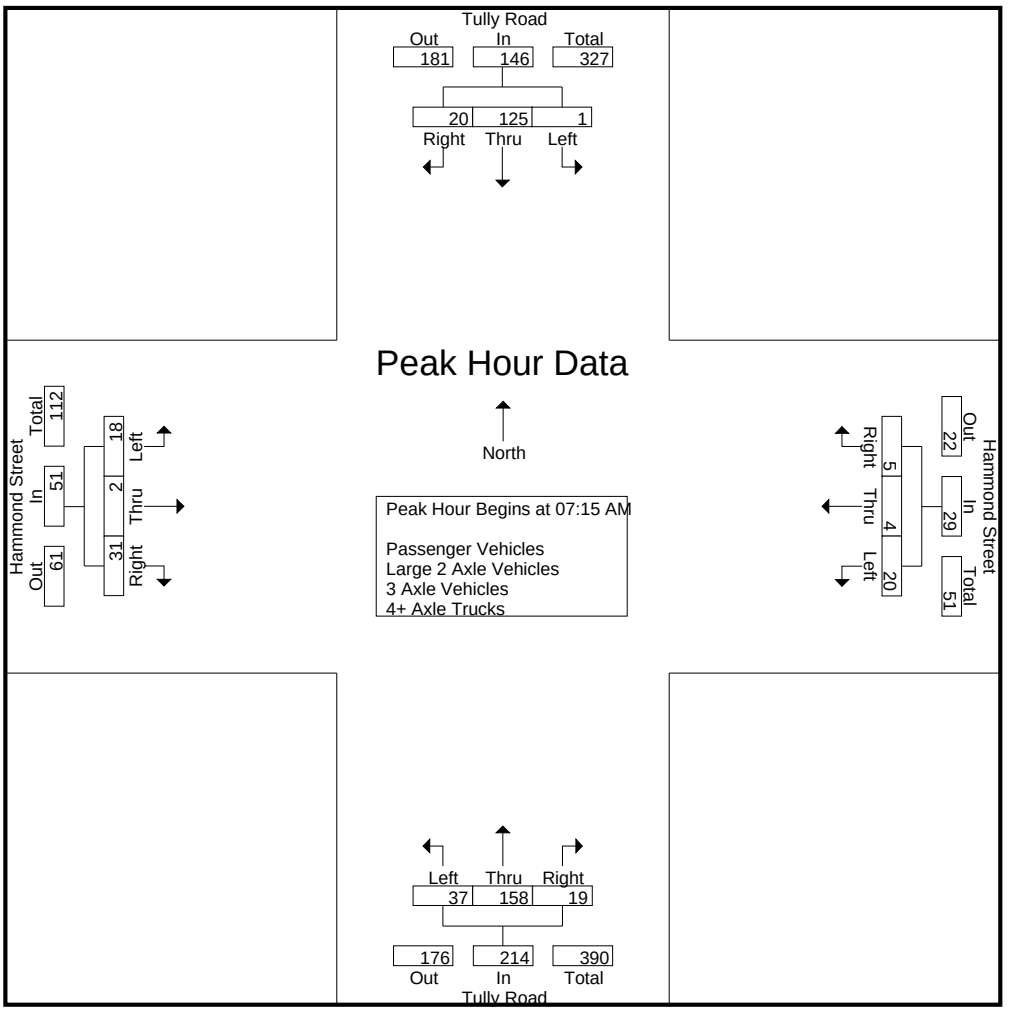
County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:15 AM				07:30 AM			
+0 mins.	0	24	8	32	1	1	1	3	0	29	3	32	**6**	**1**	**13**	**20**
+15 mins.	0	42	0	42	4	1	1	6	**16**	**50**	5	**71**	5	1	13	19
+30 mins.	0	**46**	**9**	**55**	**7**	**2**	1	**10**	14	48	**7**	69	3	0	3	6
+45 mins.	**1**	13	3	17	7	1	**2**	10	7	31	4	42	4	0	6	10
Total Volume	1	125	20	146	19	5	5	29	37	158	19	214	18	2	35	55
% App. Total	0.7	85.6	13.7		65.5	17.2	17.2		17.3	73.8	8.9		32.7	3.6	63.6	
PHF	.250	.679	.556	.664	.679	.625	.625	.725	.578	.790	.679	.754	.750	.500	.673	.688

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County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	12	0	12	1	1	1	3	1	17	0	18	4	0	5	9	42
07:15 AM	0	23	8	31	4	1	1	6	0	29	3	32	4	0	2	6	75
07:30 AM	0	40	0	40	7	2	1	10	16	50	5	71	6	1	13	20	141
07:45 AM	0	44	9	53	7	1	2	10	13	47	7	67	5	1	13	19	149
Total	0	119	17	136	19	5	5	29	30	143	15	188	19	2	33	54	407
08:00 AM	1	13	3	17	2	0	1	3	7	31	4	42	3	0	3	6	68
08:15 AM	3	7	4	14	0	0	1	1	2	21	0	23	4	0	6	10	48
08:30 AM	2	8	3	13	0	0	0	0	2	14	1	17	4	0	3	7	37
08:45 AM	0	11	4	15	1	1	0	2	2	13	0	15	5	0	2	7	39
Total	6	39	14	59	3	1	2	6	13	79	5	97	16	0	14	30	192
Grand Total	6	158	31	195	22	6	7	35	43	222	20	285	35	2	47	84	599
Apprch %	3.1	81	15.9		62.9	17.1	20		15.1	77.9	7		41.7	2.4	56		
Total %	1	26.4	5.2	32.6	3.7	1	1.2	5.8	7.2	37.1	3.3	47.6	5.8	0.3	7.8	14	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	23	8	31	4	1	1	6	0	29	3	32	4	0	2	6	75
07:30 AM	0	40	0	40	**7**	**2**	1	**10**	**16**	**50**	5	**71**	**6**	**1**	**13**	**20**	141
07:45 AM	0	**44**	**9**	**53**	7	1	**2**	10	13	47	**7**	67	5	1	13	19	**149**
08:00 AM	**1**	13	3	17	2	0	1	3	7	31	4	42	3	0	3	6	68
Total Volume	1	120	20	141	20	4	5	29	36	157	19	212	18	2	31	51	433
% App. Total	0.7	85.1	14.2		69	13.8	17.2		17	74.1	9		35.3	3.9	60.8		
PHF	.250	.682	.556	.665	.714	.500	.625	.725	.563	.785	.679	.746	.750	.500	.596	.638	.727

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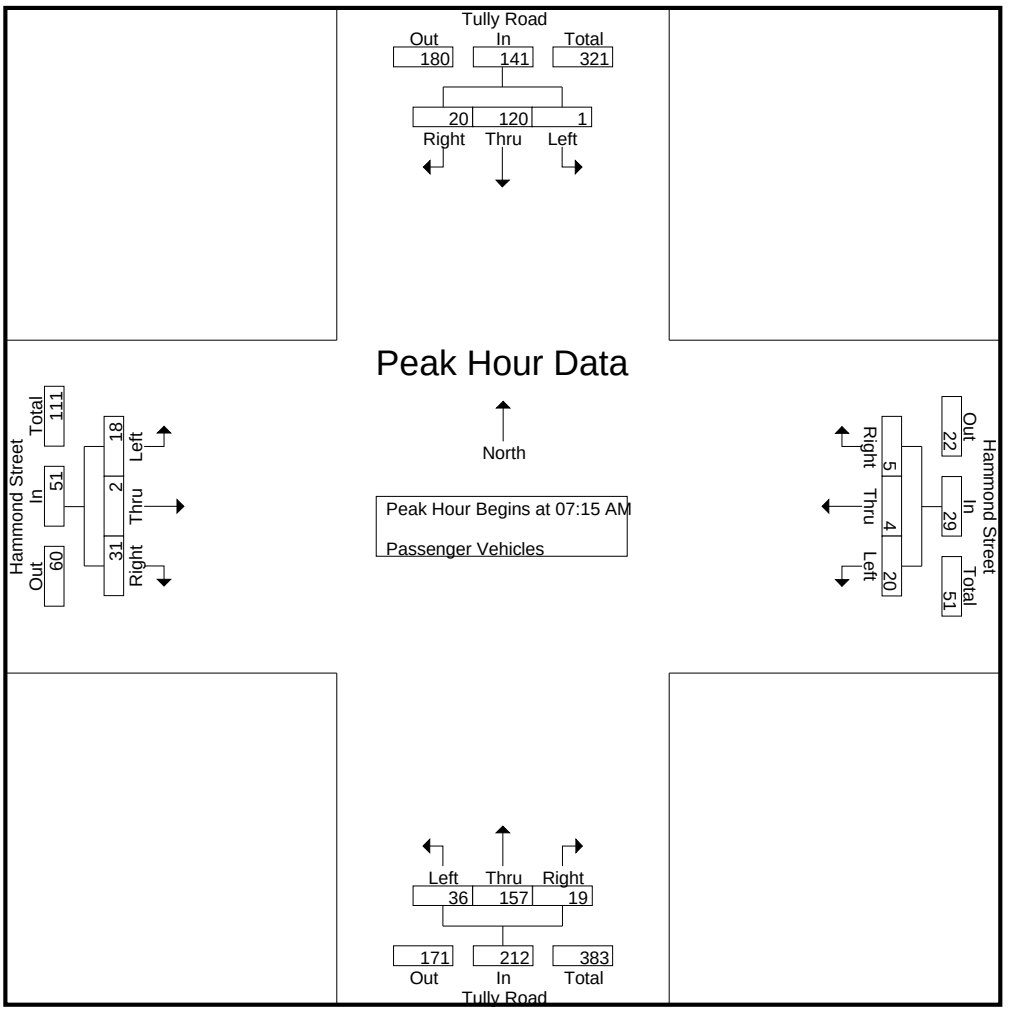
County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	23	8	31	4	1	1	6	0	29	3	32	4	0	2	6
+15 mins.	0	40	0	40	**7**	**2**	1	**10**	**16**	**50**	5	**71**	**6**	**1**	**13**	**20**
+30 mins.	0	**44**	**9**	**53**	7	1	**2**	10	13	47	**7**	67	5	1	13	19
+45 mins.	**1**	13	3	17	2	0	1	3	7	31	4	42	3	0	3	6
Total Volume	1	120	20	141	20	4	5	29	36	157	19	212	18	2	31	51
% App. Total	0.7	85.1	14.2		69	13.8	17.2		17	74.1	9		35.3	3.9	60.8	
PHF	.250	.682	.556	.665	.714	.500	.625	.725	.563	.785	.679	.746	.750	.500	.596	.638

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County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	1	0	1	0	0	0	0	1	1	0	2	0	0	0	0	3
Total	0	3	0	3	0	0	0	0	1	2	0	3	0	0	0	0	6
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3
08:30 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
08:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	4	0	4	0	0	0	0	0	3	0	3	0	0	0	0	7
Grand Total	0	7	0	7	0	0	0	0	1	5	0	6	0	0	0	0	13
Apprch %	0	100	0		0	0	0		16.7	83.3	0		0	0	0		
Total %	0	53.8	0	53.8	0	0	0	0	7.7	38.5	0	46.2	0	0	0	0	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	1	0	1	0	0	0	0	**1**	**1**	0	**2**	0	0	0	0	**3**
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	3	0	3	0	0	0	0	1	1	0	2	0	0	0	0	5
% App. Total	0	100	0		0	0	0		50	50	0		0	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.250	.250	.000	.250	.000	.000	.000	.000	.417

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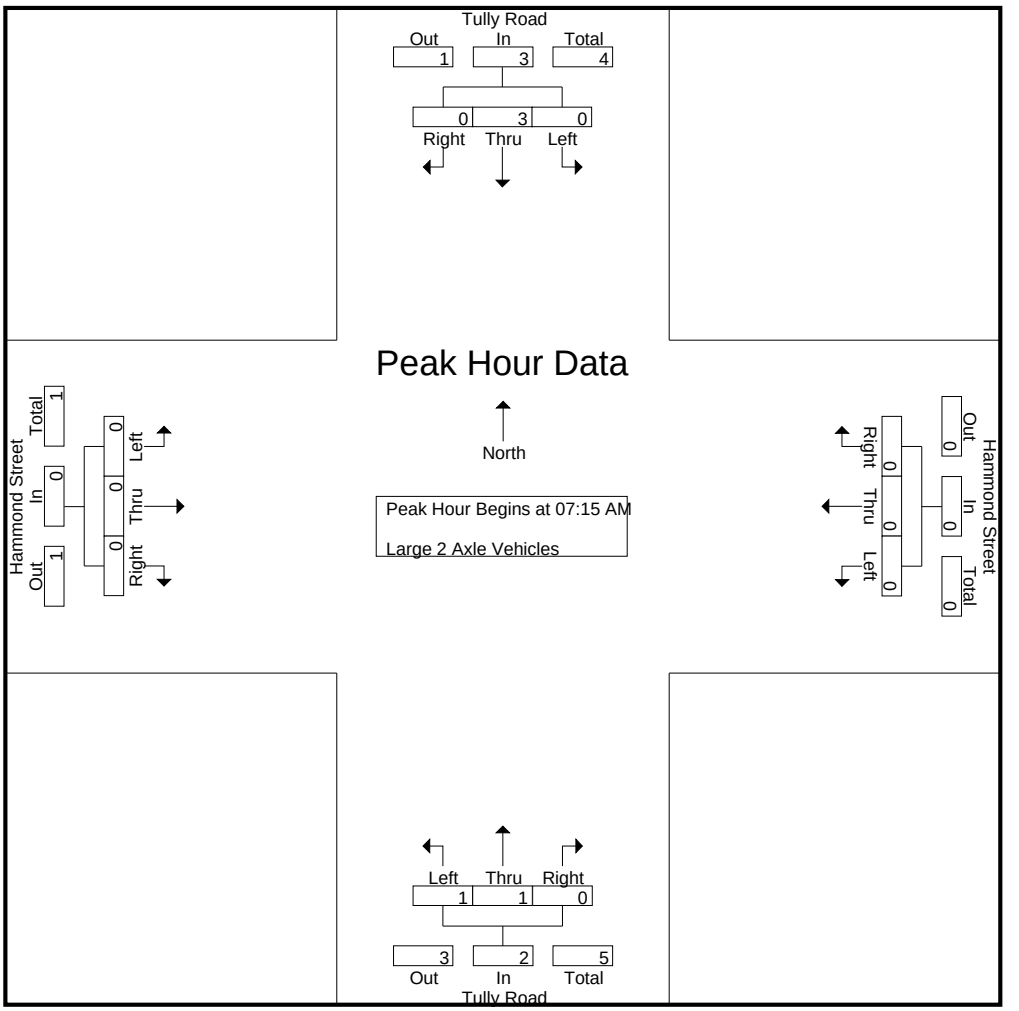
County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	**1**	**1**	0	**2**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	3	0	3	0	0	0	0	1	1	0	2	0	0	0	0
% App. Total	0	100	0		0	0	0		50	50	0		0	0	0	
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.250	.250	.000	.250	.000	.000	.000	.000

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County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 3 Axle Vehicles

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	2
08:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	3
Grand Total	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	3
Apprch %	0	100	0		0	0	100		0	0	100		0	0	0		
Total %	0	33.3	0	33.3	0	0	33.3	33.3	0	0	33.3	33.3	0	0	0	0	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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E/W: Hammond Street
Weather: Clear

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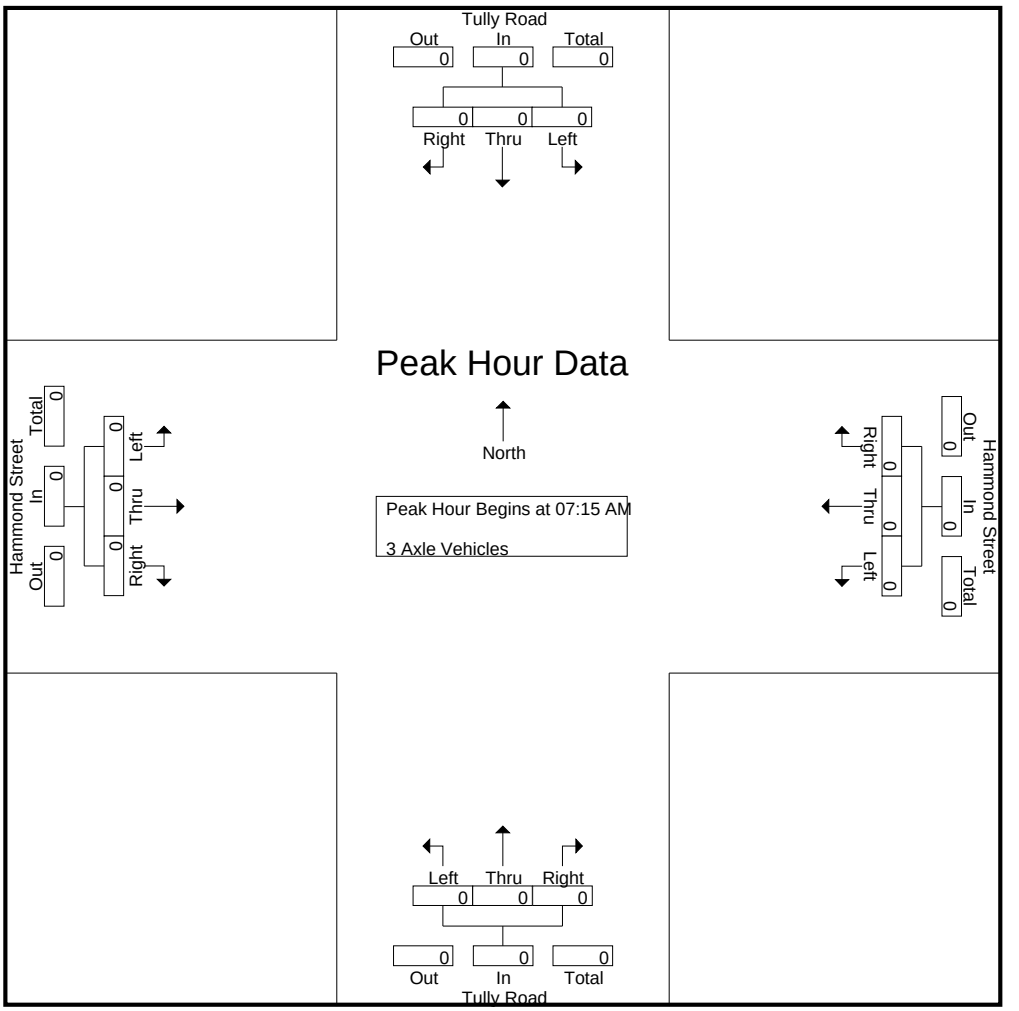

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Grand Total	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	66.7	0	66.7	0	0	0	0	0	33.3	0	33.3	0	0	0	0	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
07:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500

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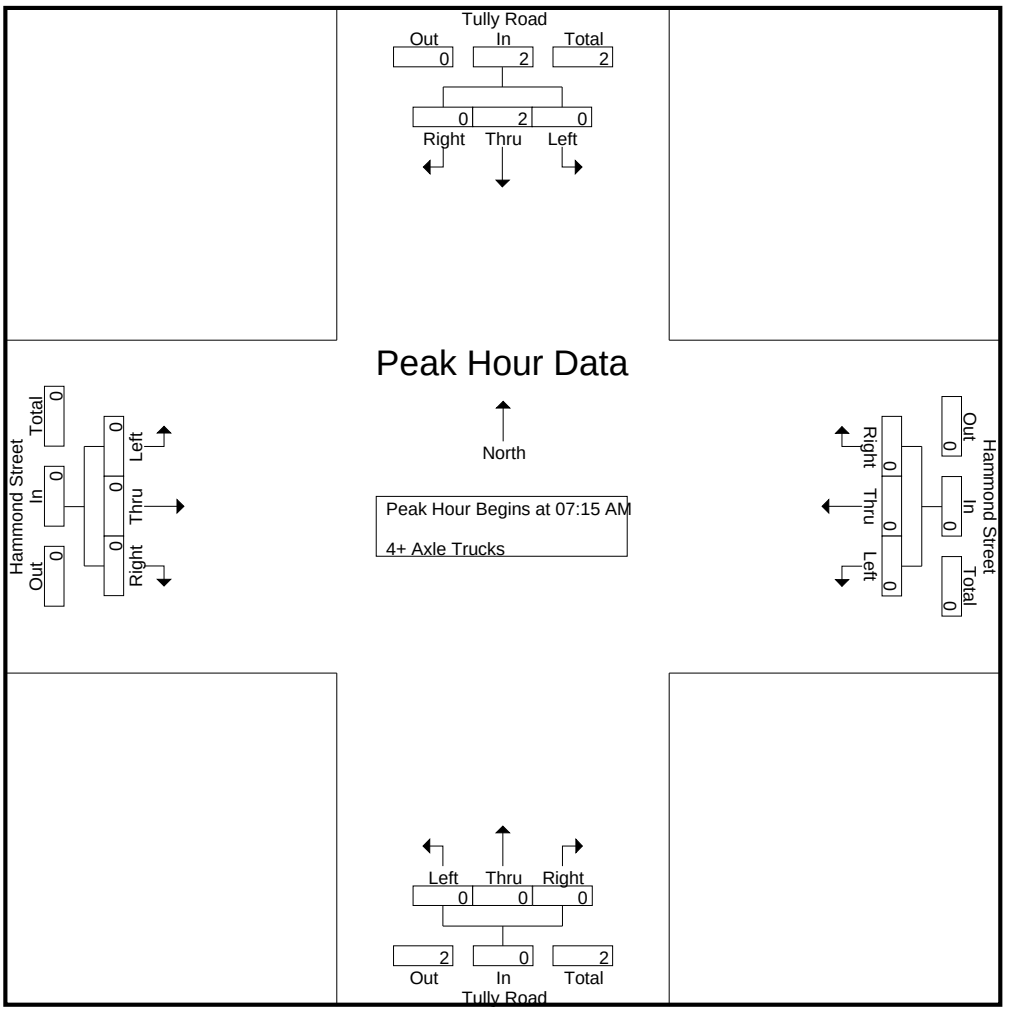

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 02_CSJ_Tul_Ham PM
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	16	5	22	0	0	0	0	5	17	0	22	8	0	3	11	55
04:15 PM	0	20	3	23	3	0	2	5	12	13	5	30	7	3	7	17	75
04:30 PM	0	19	2	21	1	1	3	5	7	22	1	30	8	1	7	16	72
04:45 PM	1	16	5	22	1	0	1	2	3	11	0	14	4	0	10	14	52
Total	2	71	15	88	5	1	6	12	27	63	6	96	27	4	27	58	254
05:00 PM	1	22	7	30	2	2	0	4	3	19	0	22	8	1	10	19	75
05:15 PM	0	21	7	28	2	1	1	4	1	16	0	17	6	2	2	10	59
05:30 PM	0	19	2	21	1	0	0	1	3	17	0	20	11	2	2	15	57
05:45 PM	1	13	4	18	1	1	0	2	0	9	0	9	2	1	3	6	35
Total	2	75	20	97	6	4	1	11	7	61	0	68	27	6	17	50	226
Grand Total	4	146	35	185	11	5	7	23	34	124	6	164	54	10	44	108	480
Apprch %	2.2	78.9	18.9		47.8	21.7	30.4		20.7	75.6	3.7		50	9.3	40.7		
Total %	0.8	30.4	7.3	38.5	2.3	1	1.5	4.8	7.1	25.8	1.2	34.2	11.2	2.1	9.2	22.5	
Passenger Vehicles	4	142	34	180	11	5	7	23	33	119	6	158	54	10	42	106	467
% Passenger Vehicles	100	97.3	97.1	97.3	100	100	100	100	97.1	96	100	96.3	100	100	95.5	98.1	97.3
Large 2 Axle Vehicles	0	3	1	4	0	0	0	0	1	5	0	6	0	0	2	2	12
% Large 2 Axle Vehicles	0	2.1	2.9	2.2	0	0	0	0	2.9	4	0	3.7	0	0	4.5	1.9	2.5
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% 4+ Axle Trucks	0	0.7	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0.2

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	20	3	23	**3**	0	2	**5**	**12**	13	**5**	**30**	7	**3**	7	17	**75**
04:30 PM	0	19	2	21	1	1	**3**	5	7	**22**	1	30	**8**	1	7	16	72
04:45 PM	**1**	16	5	22	1	0	1	2	3	11	0	14	4	0	**10**	14	52
05:00 PM	1	**22**	**7**	**30**	2	**2**	0	4	3	19	0	22	8	1	10	**19**	75
Total Volume	2	77	17	96	7	3	6	16	25	65	6	96	27	5	34	66	274
% App. Total	2.1	80.2	17.7		43.8	18.8	37.5		26	67.7	6.2		40.9	7.6	51.5		
PHF	.500	.875	.607	.800	.583	.375	.500	.800	.521	.739	.300	.800	.844	.417	.850	.868	.913

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Site Code : 22524674
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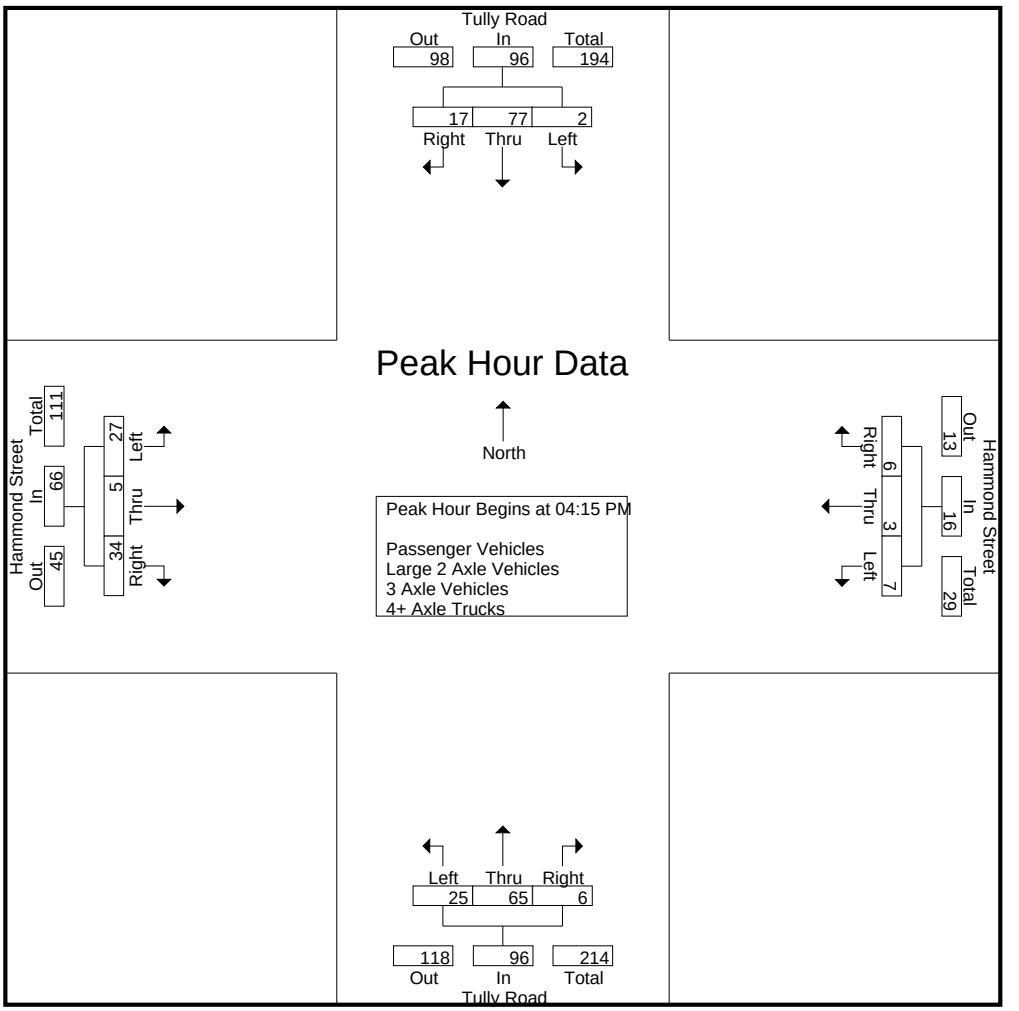

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:15 PM				04:00 PM				04:15 PM			
+0 mins.	0	19	2	21	**3**	0	2	**5**	5	17	0	22	7	**3**	7	17
+15 mins.	**1**	16	5	22	1	1	**3**	5	**12**	13	**5**	**30**	**8**	1	7	16
+30 mins.	1	**22**	**7**	**30**	1	0	1	2	7	**22**	1	30	4	0	**10**	14
+45 mins.	0	21	7	28	2	**2**	0	4	3	11	0	14	8	1	10	**19**
Total Volume	2	78	21	101	7	3	6	16	27	63	6	96	27	5	34	66
% App. Total	2	77.2	20.8		43.8	18.8	37.5		28.1	65.6	6.2		40.9	7.6	51.5	
PHF	.500	.886	.750	.842	.583	.375	.500	.800	.563	.716	.300	.800	.844	.417	.850	.868

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Groups Printed- Passenger Vehicles

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	16	4	21	0	0	0	0	5	16	0	21	8	0	2	10	52
04:15 PM	0	20	3	23	3	0	2	5	12	12	5	29	7	3	6	16	73
04:30 PM	0	17	2	19	1	1	3	5	6	21	1	28	8	1	7	16	68
04:45 PM	1	16	5	22	1	0	1	2	3	10	0	13	4	0	10	14	51
Total	2	69	14	85	5	1	6	12	26	59	6	91	27	4	25	56	244
05:00 PM	1	21	7	29	2	2	0	4	3	19	0	22	8	1	10	19	74
05:15 PM	0	21	7	28	2	1	1	4	1	15	0	16	6	2	2	10	58
05:30 PM	0	18	2	20	1	0	0	1	3	17	0	20	11	2	2	15	56
05:45 PM	1	13	4	18	1	1	0	2	0	9	0	9	2	1	3	6	35
Total	2	73	20	95	6	4	1	11	7	60	0	67	27	6	17	50	223
Grand Total	4	142	34	180	11	5	7	23	33	119	6	158	54	10	42	106	467
Apprch %	2.2	78.9	18.9		47.8	21.7	30.4		20.9	75.3	3.8		50.9	9.4	39.6		
Total %	0.9	30.4	7.3	38.5	2.4	1.1	1.5	4.9	7.1	25.5	1.3	33.8	11.6	2.1	9	22.7	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	20	3	23	**3**	0	2	**5**	**12**	12	**5**	**29**	7	**3**	6	16	73
04:30 PM	0	17	2	19	1	1	**3**	5	6	**21**	1	28	**8**	1	7	16	68
04:45 PM	**1**	16	5	22	1	0	1	2	3	10	0	13	4	0	**10**	14	51
05:00 PM	1	**21**	**7**	**29**	2	**2**	0	4	3	19	0	22	8	1	10	**19**	**74**
Total Volume	2	74	17	93	7	3	6	16	24	62	6	92	27	5	33	65	266
% App. Total	2.2	79.6	18.3		43.8	18.8	37.5		26.1	67.4	6.5		41.5	7.7	50.8		
PHF	.500	.881	.607	.802	.583	.375	.500	.800	.500	.738	.300	.793	.844	.417	.825	.855	.899

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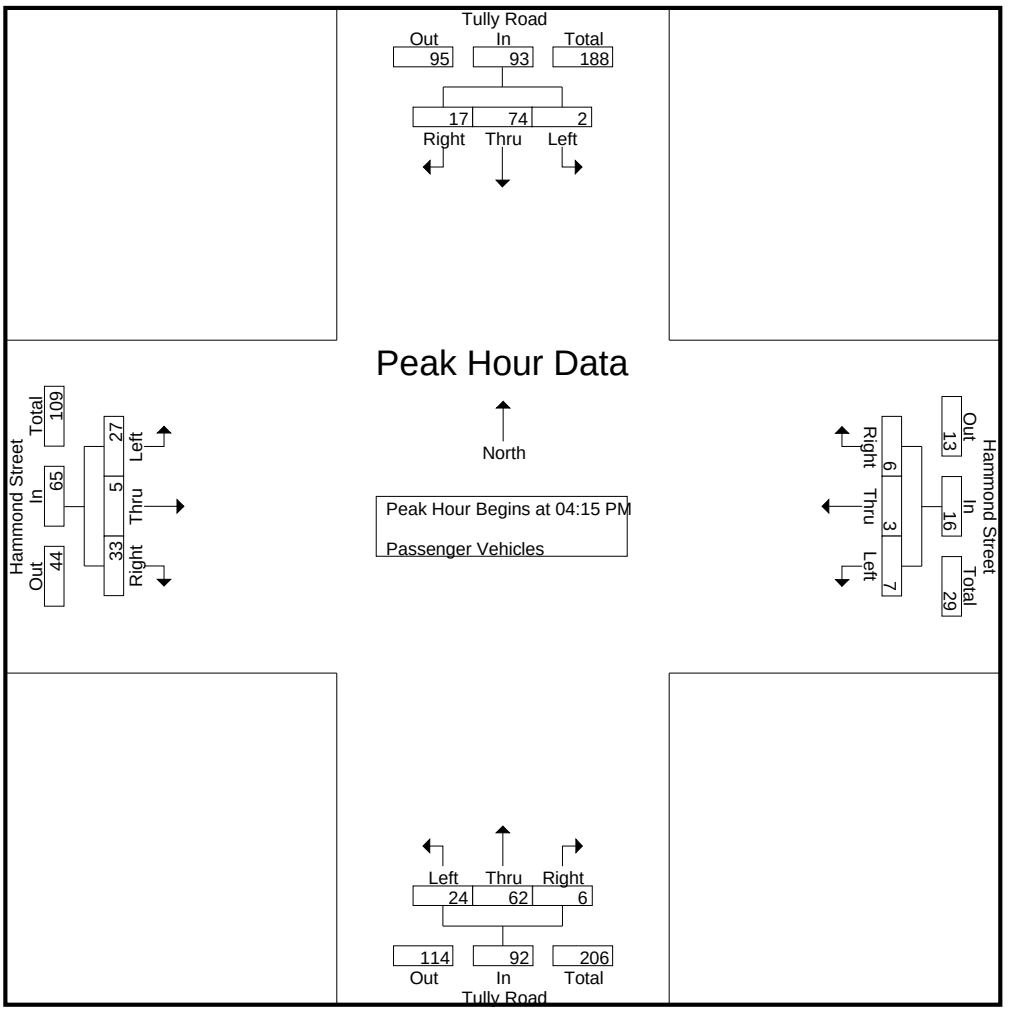

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	20	3	23	**3**	0	2	**5**	**12**	12	**5**	**29**	7	**3**	6	16
+15 mins.	0	17	2	19	1	1	**3**	5	6	**21**	1	28	**8**	1	7	16
+30 mins.	**1**	16	5	22	1	0	1	2	3	10	0	13	4	0	**10**	14
+45 mins.	1	**21**	**7**	**29**	2	**2**	0	4	3	19	0	22	8	1	10	**19**
Total Volume	2	74	17	93	7	3	6	16	24	62	6	92	27	5	33	65
% App. Total	2.2	79.6	18.3		43.8	18.8	37.5		26.1	67.4	6.5		41.5	7.7	50.8	
PHF	.500	.881	.607	.802	.583	.375	.500	.800	.500	.738	.300	.793	.844	.417	.825	.855

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Groups Printed- Large 2 Axle Vehicles

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	1	1	0	0	0	0	0	1	0	1	0	0	1	1	3
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	2
04:30 PM	0	2	0	2	0	0	0	0	1	1	0	2	0	0	0	0	4
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	2	1	3	0	0	0	0	1	4	0	5	0	0	2	2	10
05:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Grand Total	0	3	1	4	0	0	0	0	1	5	0	6	0	0	2	2	12
Apprch %	0	75	25		0	0	0		16.7	83.3	0		0	0	100		
Total %	0	25	8.3	33.3	0	0	0	0	8.3	41.7	0	50	0	0	16.7	16.7	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	**1**	0	1	0	0	**1**	**1**	2
04:30 PM	0	**2**	0	**2**	0	0	0	0	**1**	1	0	**2**	0	0	0	0	**4**
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	3	0	3	0	0	0	0	1	3	0	4	0	0	1	1	8
% App. Total	0	100	0		0	0	0		25	75	0		0	0	100		
PHF	.000	.375	.000	.375	.000	.000	.000	.000	.250	.750	.000	.500	.000	.000	.250	.250	.500

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County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham PM
Site Code : 22524674
Start Date : 8/20/2024
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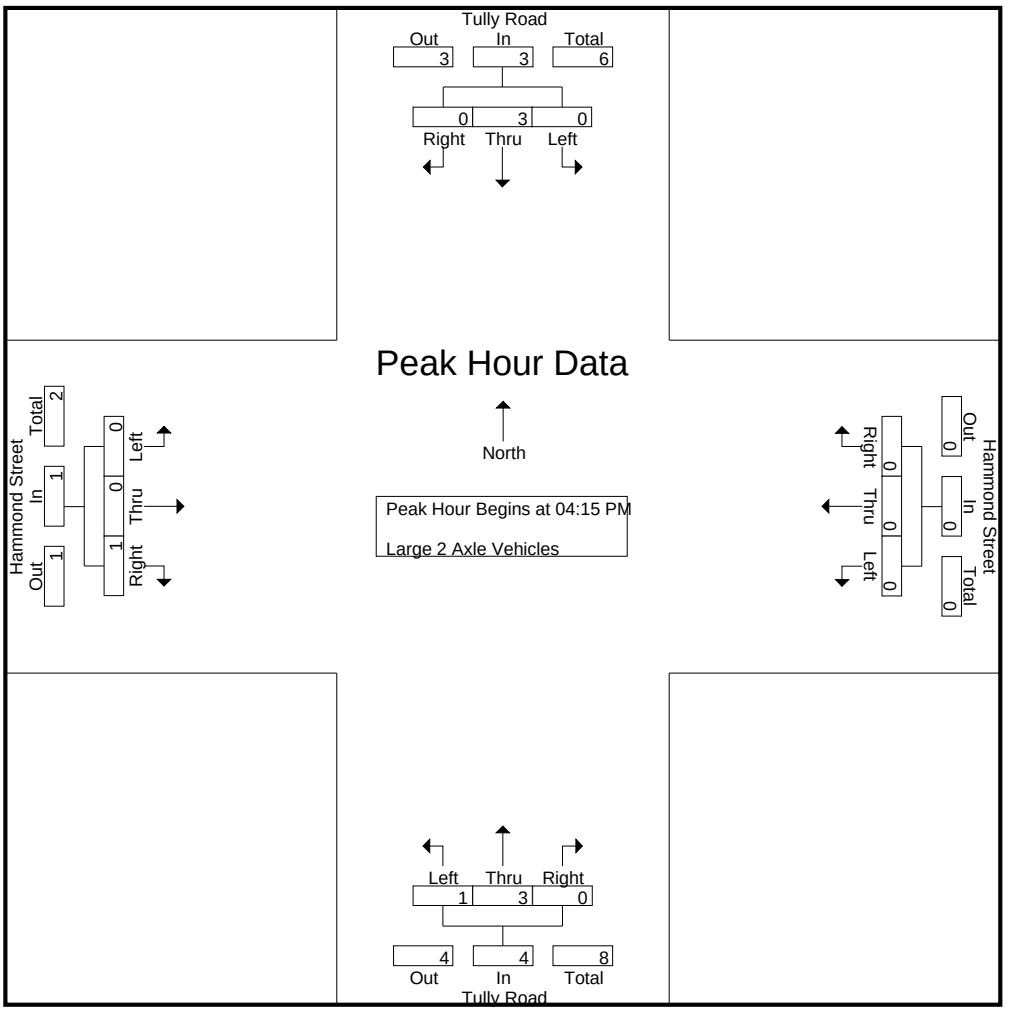

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	**1**	0	1	0	0	**1**	**1**
+15 mins.	0	**2**	0	**2**	0	0	0	0	**1**	1	0	**2**	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	3	0	3	0	0	0	0	1	3	0	4	0	0	1	1
% App. Total	0	100	0		0	0	0		25	75	0		0	0	100	
PHF	.000	.375	.000	.375	.000	.000	.000	.000	.250	.750	.000	.500	.000	.000	.250	.250

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File Name : 02_CSJ_Tul_Ham PM
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Groups Printed- 3 Axle Vehicles

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Weather: Clear

File Name : 02_CSJ_Tul_Ham PM
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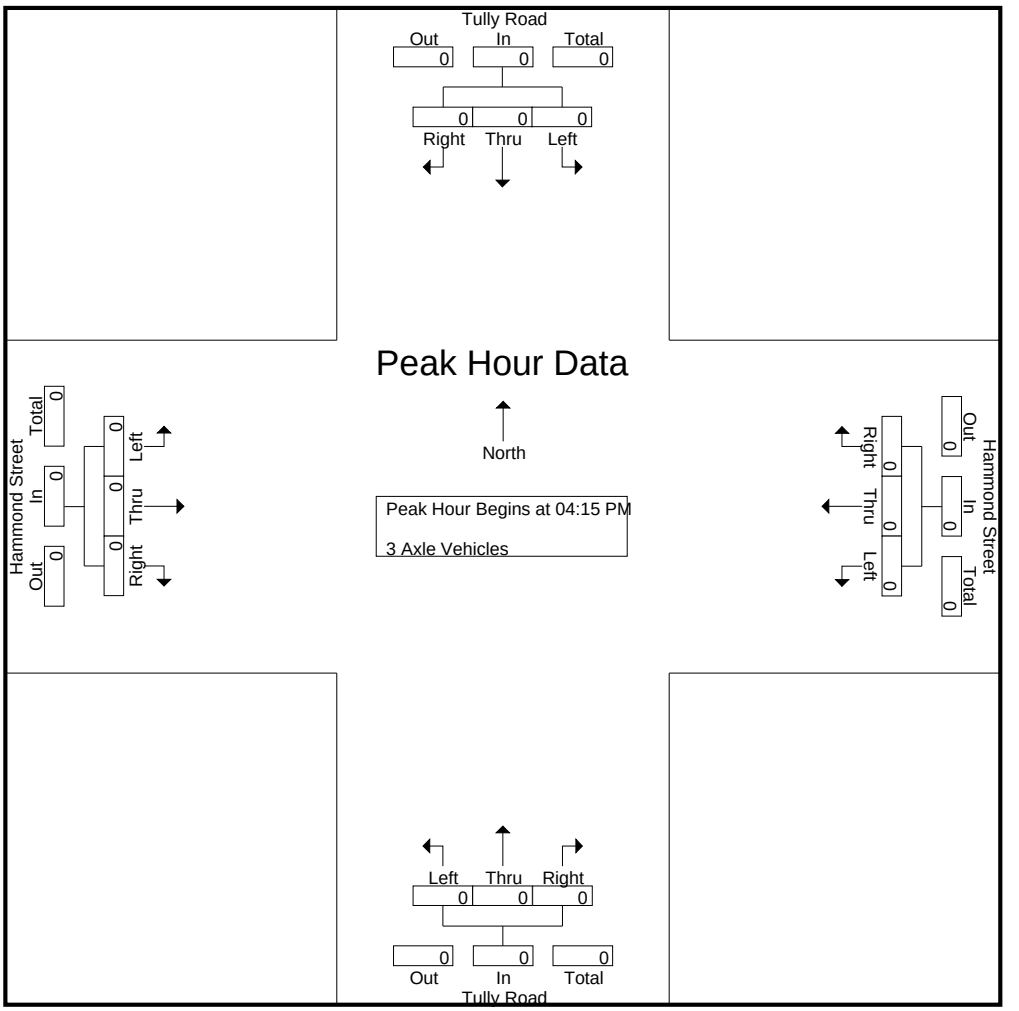

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Tully Road
E/W: Hammond Street
Weather: Clear

File Name : 02_CSJ_Tul_Ham PM
Site Code : 22524674
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Groups Printed- 4+ Axle Trucks

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	100	0		0	0	0		0	0	0		0	0	0		
Total %	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	

	Tully Road Southbound				Hammond Street Westbound				Tully Road Northbound				Hammond Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Tully Road
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Weather: Clear

File Name : 02_CSJ_Tul_Ham PM
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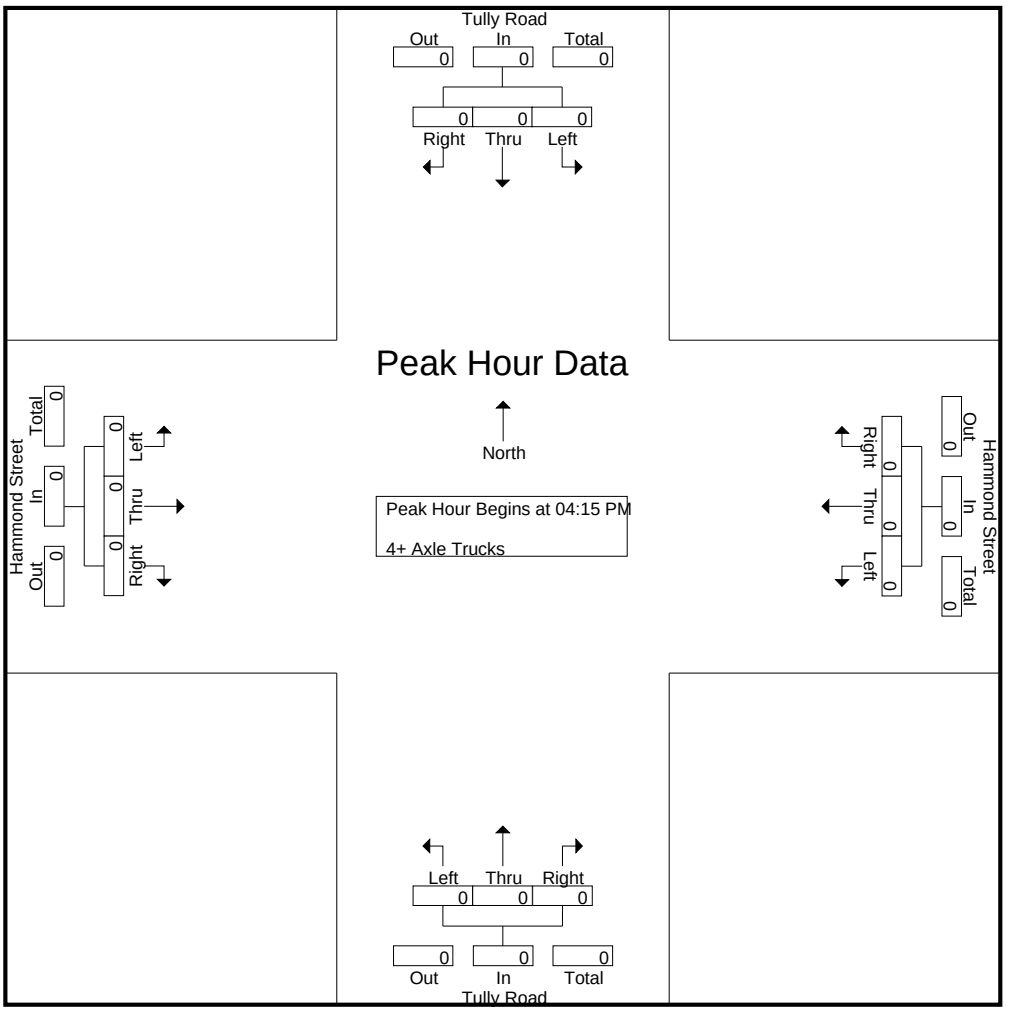

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Location: County of San Joaquain
N/S: Tully Road
E/W: Hammond Street

Date: 8/20/2024
Day: Tuesday

PEDESTRIANS

	North Leg Tully Road	East Leg Hammond Street	South Leg Tully Road	West Leg Hammond Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Tully Road	East Leg Hammond Street	South Leg Tully Road	West Leg Hammond Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: County of San Joaquain
N/S: Tully Road
E/W: Hammond Street

Date: 8/20/2024
Day: Tuesday

BICYCLES

	Southbound Tully Road			Westbound Hammond Street			Northbound Tully Road			Eastbound Hammond Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	0	1	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	1	0	1	0	0	0	0	1	0	0	3

	Southbound Tully Road			Westbound Hammond Street			Northbound Tully Road			Eastbound Hammond Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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County of San Joaquin
N/S: Tully Road
E/W: Sharon Drive
Weather: Clear

File Name : 03_CSJ_Tul_Shar AM
Site Code : 22524674
Start Date : 8/20/2024
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	11	1	12	0	18	18	1	1	2	32
07:15 AM	18	1	19	0	33	33	1	1	2	54
07:30 AM	33	1	34	0	67	67	0	0	0	101
07:45 AM	47	1	48	1	43	44	2	0	2	94
Total	109	4	113	1	161	162	4	2	6	281
08:00 AM	16	1	17	0	23	23	0	1	1	41
08:15 AM	13	0	13	0	20	20	2	0	2	35
08:30 AM	9	0	9	0	13	13	1	0	1	23
08:45 AM	15	1	16	0	14	14	0	0	0	30
Total	53	2	55	0	70	70	3	1	4	129
Grand Total	162	6	168	1	231	232	7	3	10	410
Apprch %	96.4	3.6		0.4	99.6		70	30		
Total %	39.5	1.5	41	0.2	56.3	56.6	1.7	0.7	2.4	
Passenger Vehicles	155	6	161	1	224	225	7	3	10	396
% Passenger Vehicles	95.7	100	95.8	100	97	97	100	100	100	96.6
Large 2 Axle Vehicles	5	0	5	0	5	5	0	0	0	10
% Large 2 Axle Vehicles	3.1	0	3	0	2.2	2.2	0	0	0	2.4
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	2	0	2	0	2	2	0	0	0	4
% 4+ Axle Trucks	1.2	0	1.2	0	0.9	0.9	0	0	0	1

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	18	**1**	19	0	33	33	1	**1**	**2**	54
07:30 AM	33	1	34	0	**67**	**67**	0	0	0	**101**
07:45 AM	**47**	1	**48**	**1**	43	44	**2**	0	2	94
08:00 AM	16	1	17	0	23	23	0	1	1	41
Total Volume	114	4	118	1	166	167	3	2	5	290
% App. Total	96.6	3.4		0.6	99.4		60	40		
PHF	.606	1.00	.615	.250	.619	.623	.375	.500	.625	.718

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County of San Joaquin
N/S: Tully Road
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File Name : 03_CSJ_Tul_Shar AM
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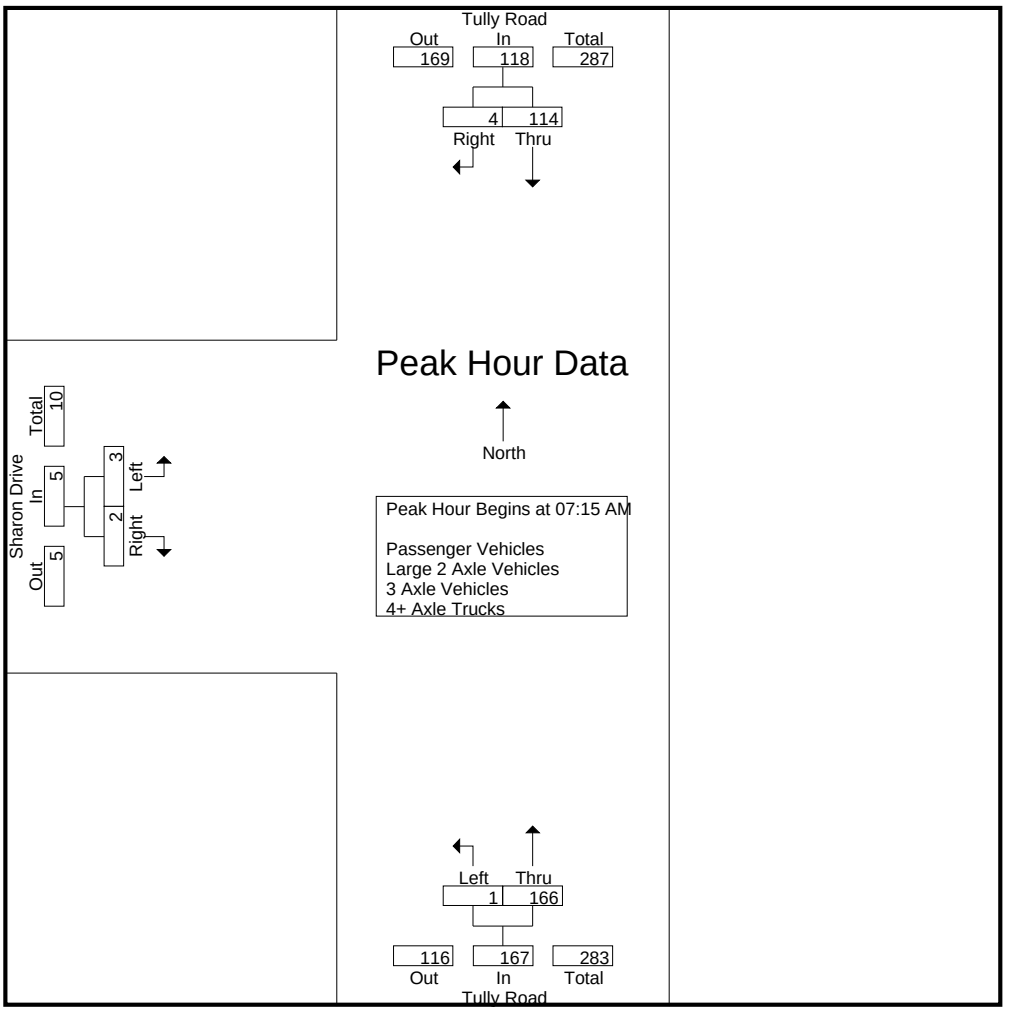

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:00 AM		
+0 mins.	18	**1**	19	0	33	33	1	**1**	**2**
+15 mins.	33	1	34	0	**67**	**67**	1	1	2
+30 mins.	**47**	1	**48**	**1**	43	44	0	0	0
+45 mins.	16	1	17	0	23	23	**2**	0	2
Total Volume	114	4	118	1	166	167	4	2	6
% App. Total	96.6	3.4		0.6	99.4		66.7	33.3	
PHF	.606	1.000	.615	.250	.619	.623	.500	.500	.750

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County of San Joaquin
N/S: Tully Road
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Weather: Clear

File Name : 03_CSJ_Tul_Shar AM
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Groups Printed- Passenger Vehicles

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	11	1	12	0	17	17	1	1	2	31
07:15 AM	18	1	19	0	33	33	1	1	2	54
07:30 AM	31	1	32	0	67	67	0	0	0	99
07:45 AM	44	1	45	1	41	42	2	0	2	89
Total	104	4	108	1	158	159	4	2	6	273
08:00 AM	16	1	17	0	23	23	0	1	1	41
08:15 AM	12	0	12	0	18	18	2	0	2	32
08:30 AM	8	0	8	0	11	11	1	0	1	20
08:45 AM	15	1	16	0	14	14	0	0	0	30
Total	51	2	53	0	66	66	3	1	4	123
Grand Total	155	6	161	1	224	225	7	3	10	396
Apprch %	96.3	3.7		0.4	99.6		70	30		
Total %	39.1	1.5	40.7	0.3	56.6	56.8	1.8	0.8	2.5	

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	18	**1**	19	0	33	33	1	**1**	**2**	54
07:30 AM	31	1	32	0	**67**	**67**	0	0	0	**99**
07:45 AM	**44**	1	**45**	**1**	41	42	**2**	0	2	89
08:00 AM	16	1	17	0	23	23	0	1	1	41
Total Volume	109	4	113	1	164	165	3	2	5	283
% App. Total	96.5	3.5		0.6	99.4		60	40		
PHF	.619	1.00	.628	.250	.612	.616	.375	.500	.625	.715

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County of San Joaquin
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File Name : 03_CSJ_Tul_Shar AM
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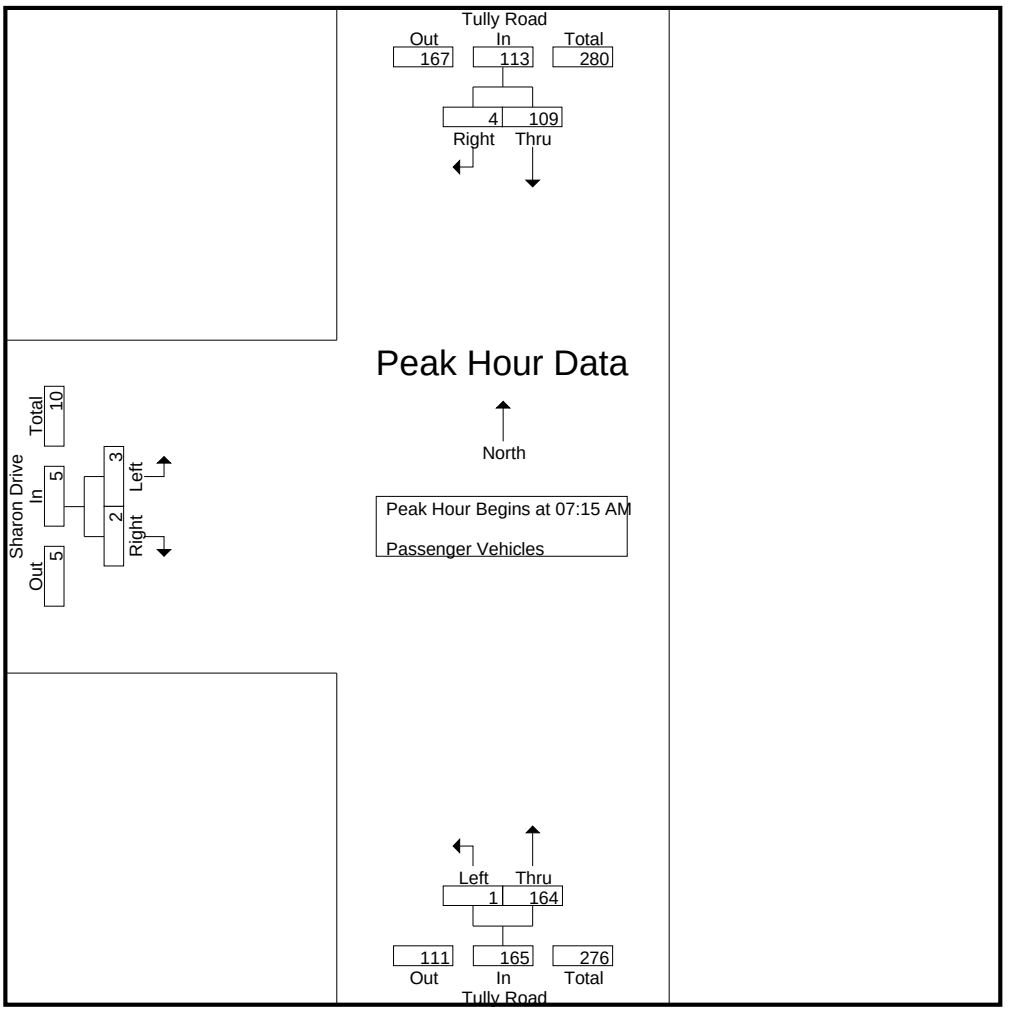

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	18	**1**	19	0	33	33	1	**1**	**2**
+15 mins.	31	1	32	0	**67**	**67**	0	0	0
+30 mins.	**44**	1	**45**	**1**	41	42	**2**	0	2
+45 mins.	16	1	17	0	23	23	0	1	1
Total Volume	109	4	113	1	164	165	3	2	5
% App. Total	96.5	3.5		0.6	99.4		60	40	
PHF	.619	1.000	.628	.250	.612	.616	.375	.500	.625

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Groups Printed- Large 2 Axle Vehicles

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	1	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	1	0	1	0	0	0	0	0	0	1
07:45 AM	2	0	2	0	2	2	0	0	0	4
Total	3	0	3	0	3	3	0	0	0	6
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	1	0	1	0	1	1	0	0	0	2
08:30 AM	1	0	1	0	1	1	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	2	0	2	0	2	2	0	0	0	4
Grand Total	5	0	5	0	5	5	0	0	0	10
Apprch %	100	0		0	100		0	0		
Total %	50	0	50	0	50	50	0	0	0	

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	1	0	1	0	0	0	0	0	0	1
07:45 AM	**2**	0	**2**	0	**2**	**2**	0	0	0	**4**
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	3	0	3	0	2	2	0	0	0	5
% App. Total	100	0		0	100		0	0		
PHF	.375	.000	.375	.000	.250	.250	.000	.000	.000	.313

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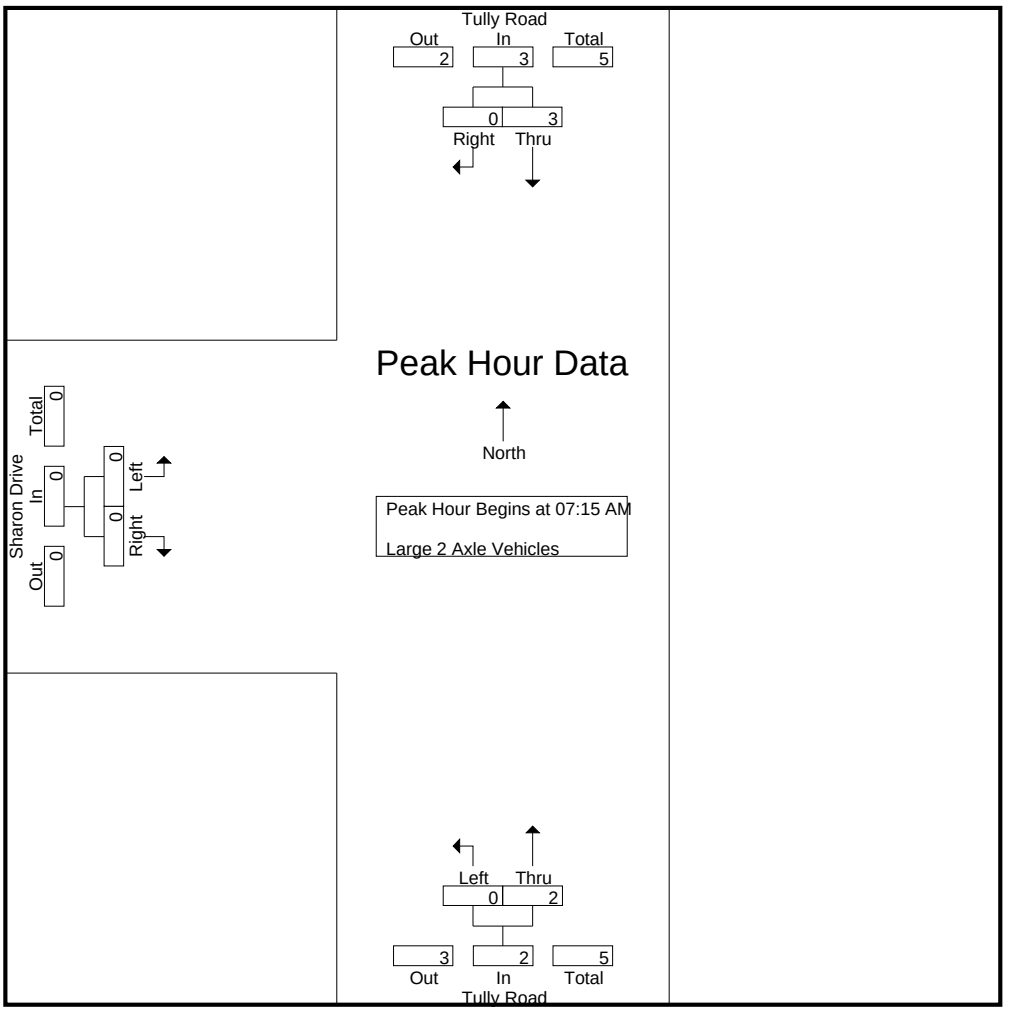

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	1	0	1	0	0	0	0	0	0
+30 mins.	**2**	0	**2**	0	**2**	**2**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	3	0	3	0	2	2	0	0	0
% App. Total	100	0		0	100		0	0	
PHF	.375	.000	.375	.000	.250	.250	.000	.000	.000

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Groups Printed- 3 Axle Vehicles

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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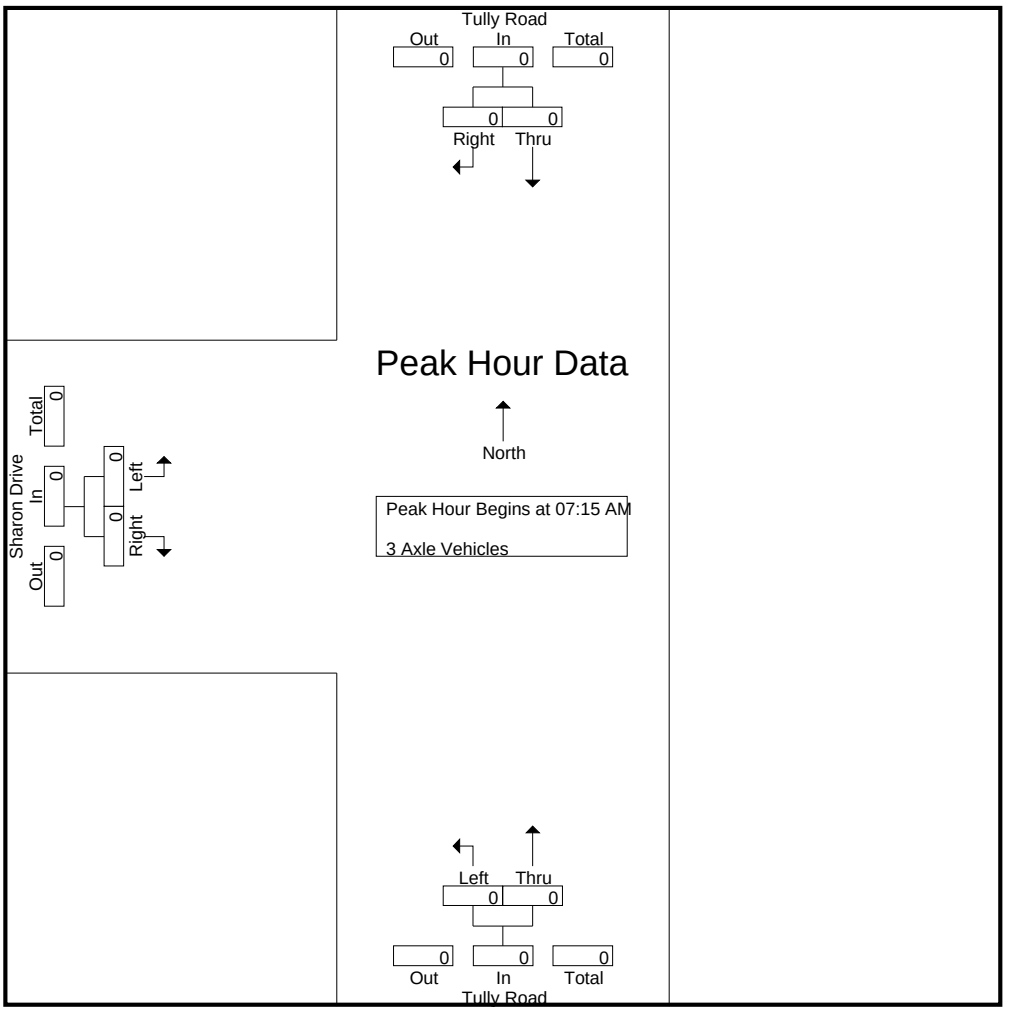

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	1	0	1	0	0	0	0	0	0	1
07:45 AM	1	0	1	0	0	0	0	0	0	1
Total	2	0	2	0	0	0	0	0	0	2
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	1	1	0	0	0	1
08:30 AM	0	0	0	0	1	1	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	2	2	0	0	0	2
Grand Total	2	0	2	0	2	2	0	0	0	4
Apprch %	100	0		0	100		0	0		
Total %	50	0	50	0	50	50	0	0	0	

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	**1**	0	**1**	0	0	0	0	0	0	**1**
07:45 AM	1	0	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	2	0	2	0	0	0	0	0	0	2
% App. Total	100	0		0	0		0	0		
PHF	.500	.000	.500	.000	.000	.000	.000	.000	.000	.500

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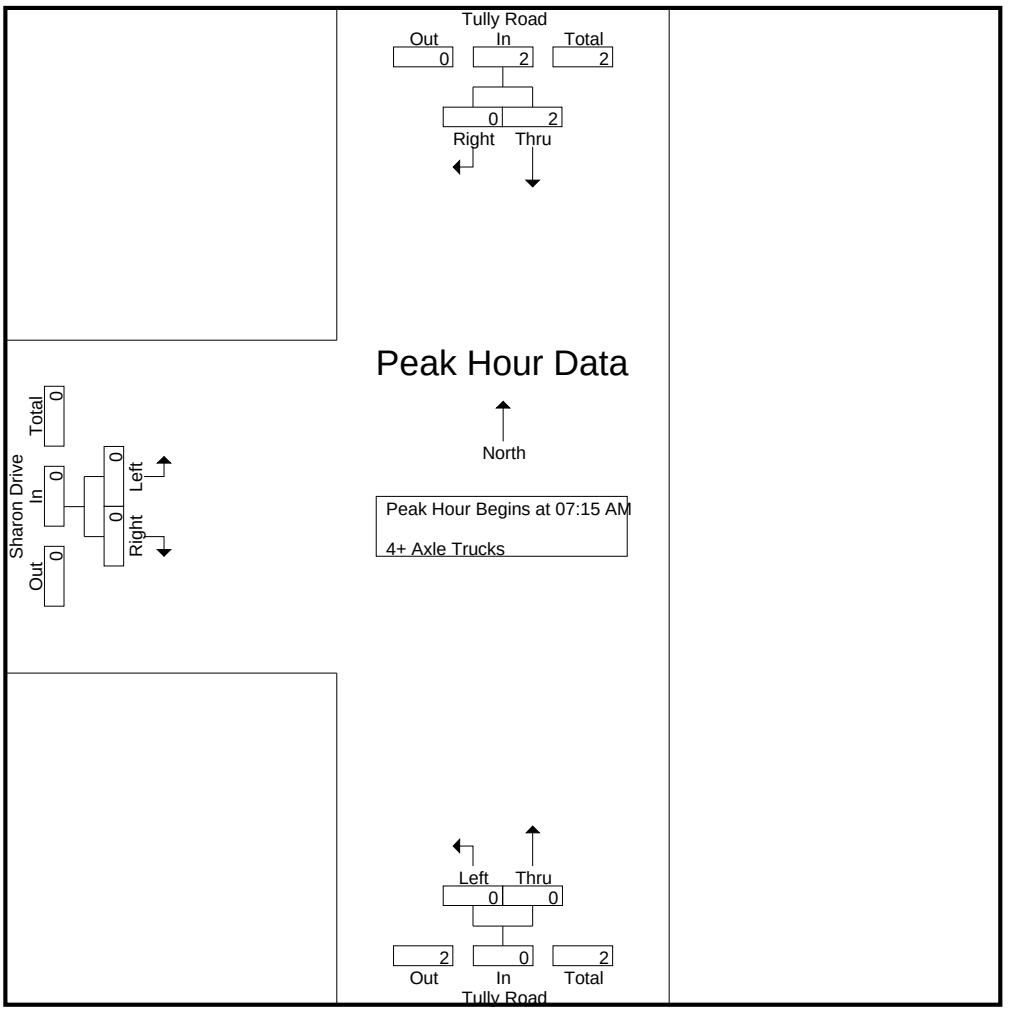

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	**1**	0	**1**	0	0	0	0	0	0
+30 mins.	1	0	1	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	2	0	2	0	0	0	0	0	0
% App. Total	100	0		0	0		0	0	
PHF	.500	.000	.500	.000	.000	.000	.000	.000	.000

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	15	2	17	0	15	15	0	1	1	33
04:15 PM	30	0	30	1	17	18	1	0	1	49
04:30 PM	20	1	21	0	20	20	0	0	0	41
04:45 PM	25	0	25	0	14	14	0	0	0	39
Total	90	3	93	1	66	67	1	1	2	162
05:00 PM	30	0	30	0	19	19	0	0	0	49
05:15 PM	25	0	25	0	16	16	1	0	1	42
05:30 PM	20	2	22	1	18	19	0	0	0	41
05:45 PM	16	1	17	0	9	9	0	0	0	26
Total	91	3	94	1	62	63	1	0	1	158
Grand Total	181	6	187	2	128	130	2	1	3	320
Apprch %	96.8	3.2		1.5	98.5		66.7	33.3		
Total %	56.6	1.9	58.4	0.6	40	40.6	0.6	0.3	0.9	
Passenger Vehicles	178	5	183	2	124	126	2	0	2	311
% Passenger Vehicles	98.3	83.3	97.9	100	96.9	96.9	100	0	66.7	97.2
Large 2 Axle Vehicles	1	1	2	0	4	4	0	1	1	7
% Large 2 Axle Vehicles	0.6	16.7	1.1	0	3.1	3.1	0	100	33.3	2.2
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	2	0	2	0	0	0	0	0	0	2
% 4+ Axle Trucks	1.1	0	1.1	0	0	0	0	0	0	0.6

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	**30**	0	**30**	**1**	17	18	**1**	0	**1**	**49**
04:30 PM	20	**1**	21	0	**20**	**20**	0	0	0	41
04:45 PM	25	0	25	0	14	14	0	0	0	39
05:00 PM	30	0	30	0	19	19	0	0	0	49
Total Volume	105	1	106	1	70	71	1	0	1	178
% App. Total	99.1	0.9		1.4	98.6		100	0		
PHF	.875	.250	.883	.250	.875	.888	.250	.000	.250	.908

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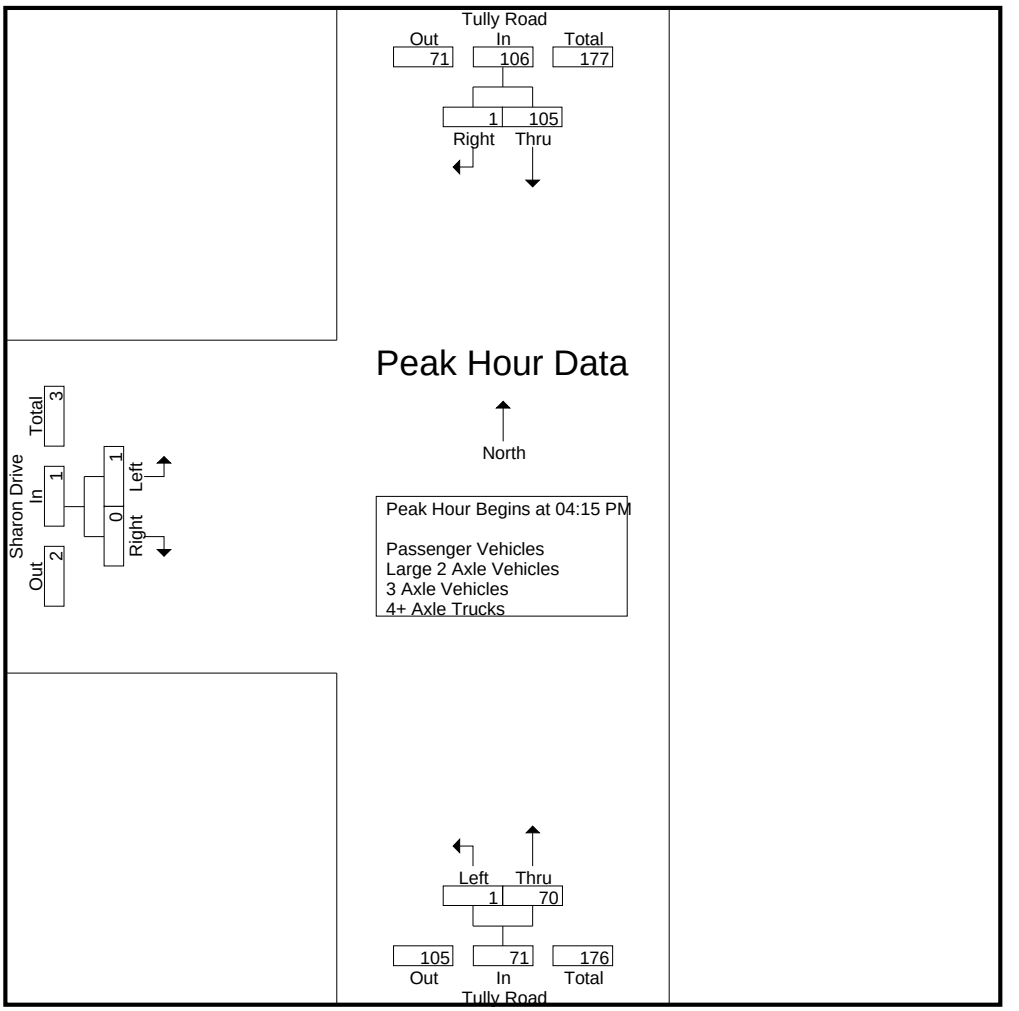

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:00 PM		
+0 mins.	**30**	0	**30**	**1**	17	18	0	**1**	**1**
+15 mins.	20	**1**	21	0	**20**	**20**	**1**	0	1
+30 mins.	25	0	25	0	14	14	0	0	0
+45 mins.	30	0	30	0	19	19	0	0	0
Total Volume	105	1	106	1	70	71	1	1	2
% App. Total	99.1	0.9		1.4	98.6		50	50	
PHF	.875	.250	.883	.250	.875	.888	.250	.250	.500

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Groups Printed- Passenger Vehicles

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	15	1	16	0	14	14	0	0	0	30
04:15 PM	29	0	29	1	17	18	1	0	1	48
04:30 PM	20	1	21	0	19	19	0	0	0	40
04:45 PM	25	0	25	0	12	12	0	0	0	37
Total	89	2	91	1	62	63	1	0	1	155
05:00 PM	30	0	30	0	19	19	0	0	0	49
05:15 PM	24	0	24	0	16	16	1	0	1	41
05:30 PM	19	2	21	1	18	19	0	0	0	40
05:45 PM	16	1	17	0	9	9	0	0	0	26
Total	89	3	92	1	62	63	1	0	1	156
Grand Total	178	5	183	2	124	126	2	0	2	311
Apprch %	97.3	2.7		1.6	98.4		100	0		
Total %	57.2	1.6	58.8	0.6	39.9	40.5	0.6	0	0.6	

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	29	0	29	**1**	17	18	**1**	0	**1**	48
04:30 PM	20	**1**	21	0	**19**	**19**	0	0	0	40
04:45 PM	25	0	25	0	12	12	0	0	0	37
05:00 PM	**30**	0	**30**	0	19	19	0	0	0	**49**
Total Volume	104	1	105	1	67	68	1	0	1	174
% App. Total	99	1		1.5	98.5		100	0		
PHF	.867	.250	.875	.250	.882	.895	.250	.000	.250	.888

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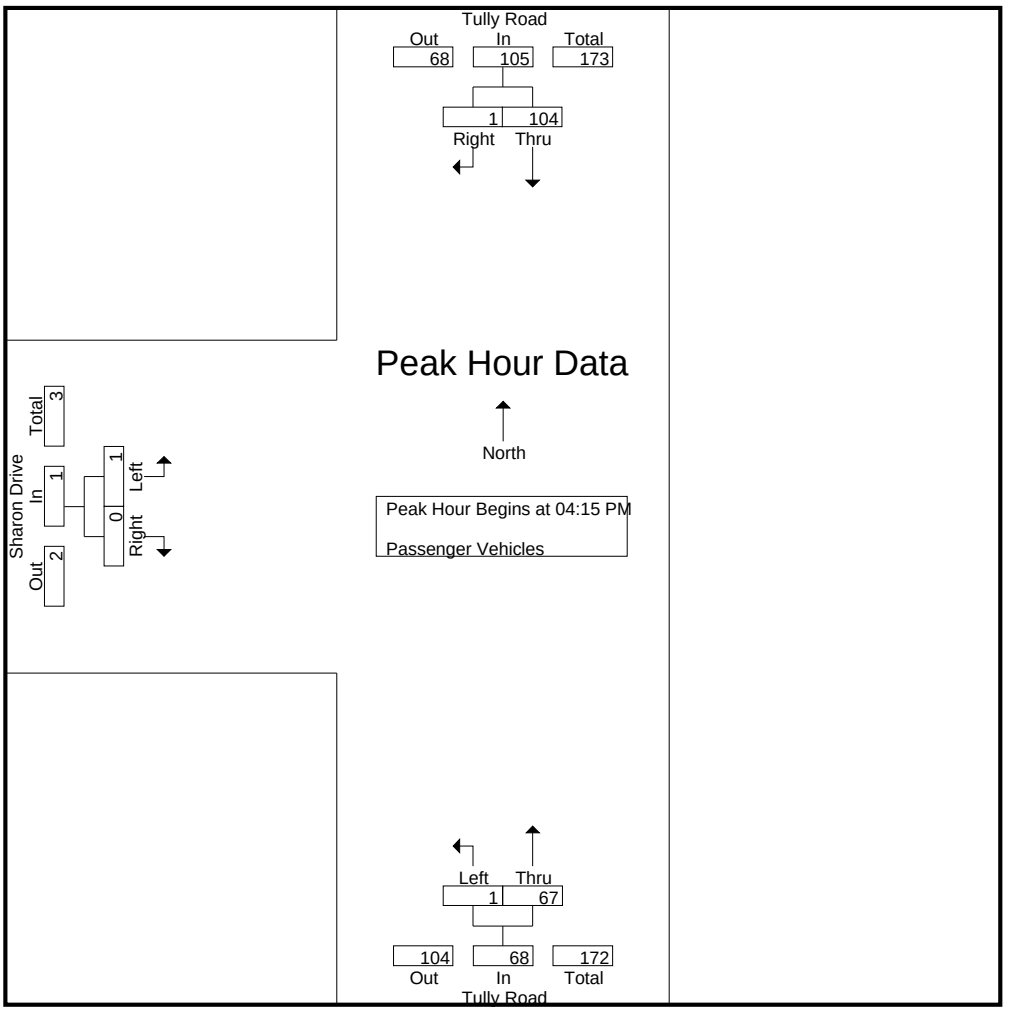

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	29	0	29	**1**	17	18	**1**	0	**1**
+15 mins.	20	**1**	21	0	**19**	**19**	0	0	0
+30 mins.	25	0	25	0	12	12	0	0	0
+45 mins.	**30**	0	**30**	0	19	19	0	0	0
Total Volume	104	1	105	1	67	68	1	0	1
% App. Total	99	1		1.5	98.5		100	0	
PHF	.867	.250	.875	.250	.882	.895	.250	.000	.250

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Groups Printed- Large 2 Axle Vehicles

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	1	1	0	1	1	0	1	1	3
04:15 PM	1	0	1	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	1	1	0	0	0	1
04:45 PM	0	0	0	0	2	2	0	0	0	2
Total	1	1	2	0	4	4	0	1	1	7
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	1	1	2	0	4	4	0	1	1	7
Apprch %	50	50		0	100		0	100		
Total %	14.3	14.3	28.6	0	57.1	57.1	0	14.3	14.3	

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	**1**	0	**1**	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	1	1	0	0	0	1
04:45 PM	0	0	0	0	**2**	**2**	0	0	0	**2**
05:00 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	1	0	3	3	0	0	0	4
% App. Total	100	0		0	100		0	0		
PHF	.250	.000	.250	.000	.375	.375	.000	.000	.000	.500

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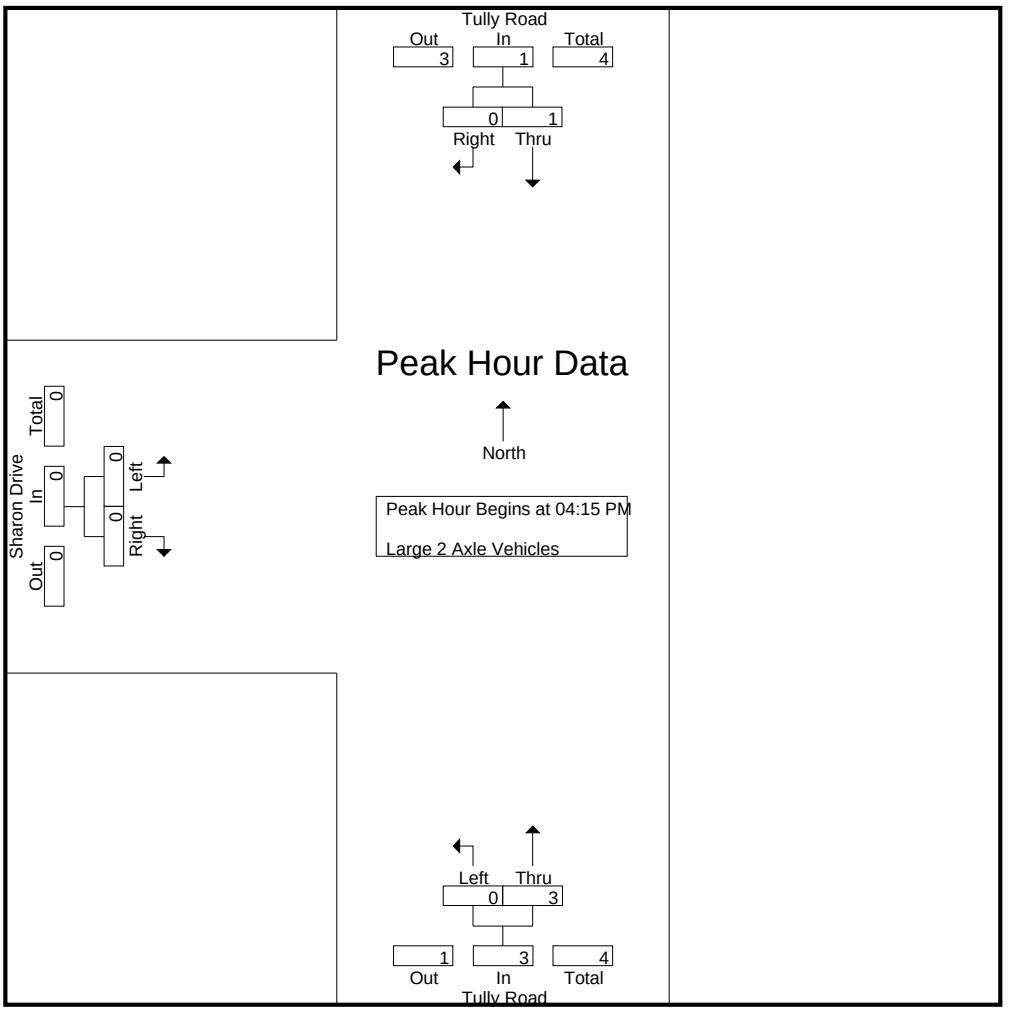

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	**1**	0	**1**	0	0	0	0	0	0
+15 mins.	0	0	0	0	1	1	0	0	0
+30 mins.	0	0	0	0	**2**	**2**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	1	0	1	0	3	3	0	0	0
% App. Total	100	0		0	100		0	0	
PHF	.250	.000	.250	.000	.375	.375	.000	.000	.000

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Corona, CA 92878
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County of San Joaquin
N/S: Tully Road
E/W: Sharon Drive
Weather: Clear

File Name : 03_CSJ_Tul_Shar PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 3 Axle Vehicles

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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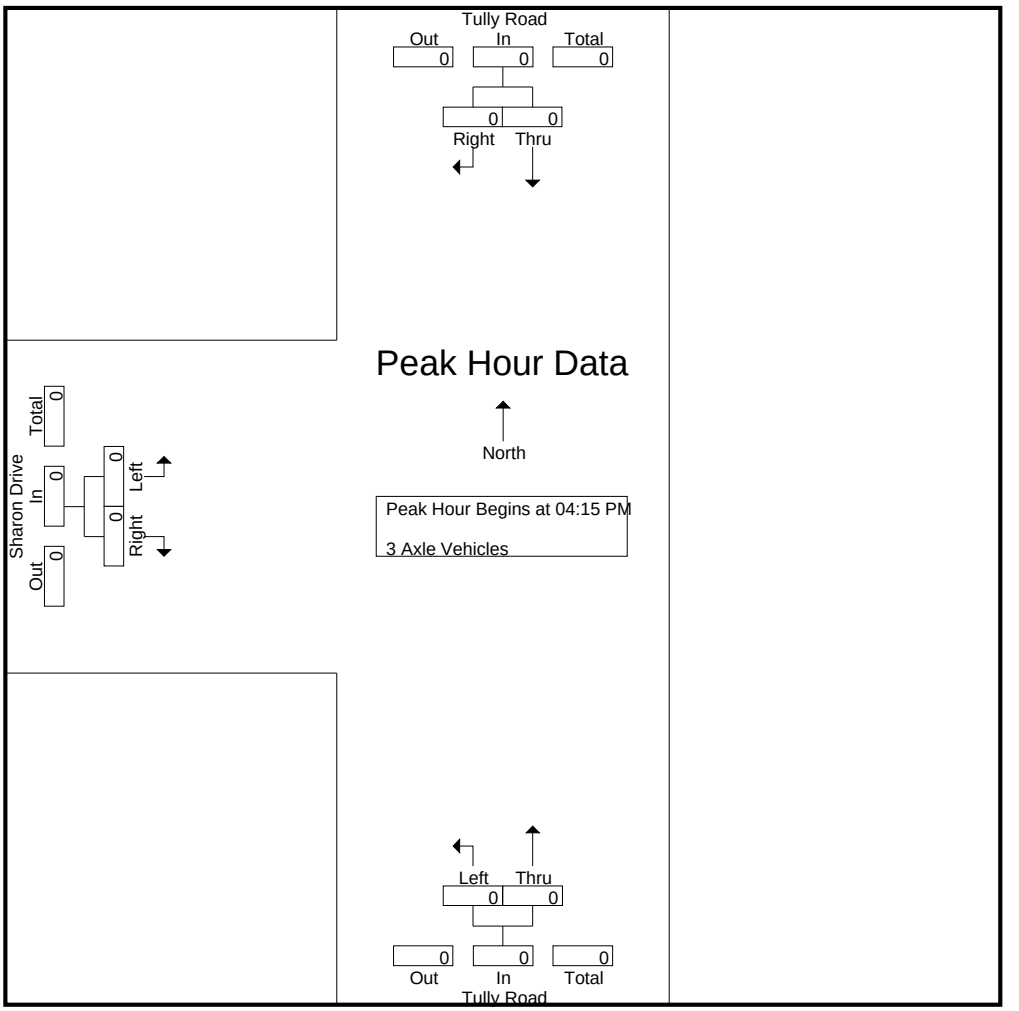
County of San Joaquin
N/S: Tully Road
E/W: Sharon Drive
Weather: Clear

File Name : 03_CSJ_Tul_Shar PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Tully Road
E/W: Sharon Drive
Weather: Clear

File Name : 03_CSJ_Tul_Shar PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 4+ Axle Trucks

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	1	0	1	0	0	0	0	0	0	1
05:30 PM	1	0	1	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	2	0	2	0	0	0	0	0	0	2
Grand Total	2	0	2	0	0	0	0	0	0	2
Apprch %	100	0		0	0		0	0		
Total %	100	0	100	0	0	0	0	0	0	

	Tully Road Southbound			Tully Road Northbound			Sharon Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Tully Road
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File Name : 03_CSJ_Tul_Shar PM
Site Code : 22524674
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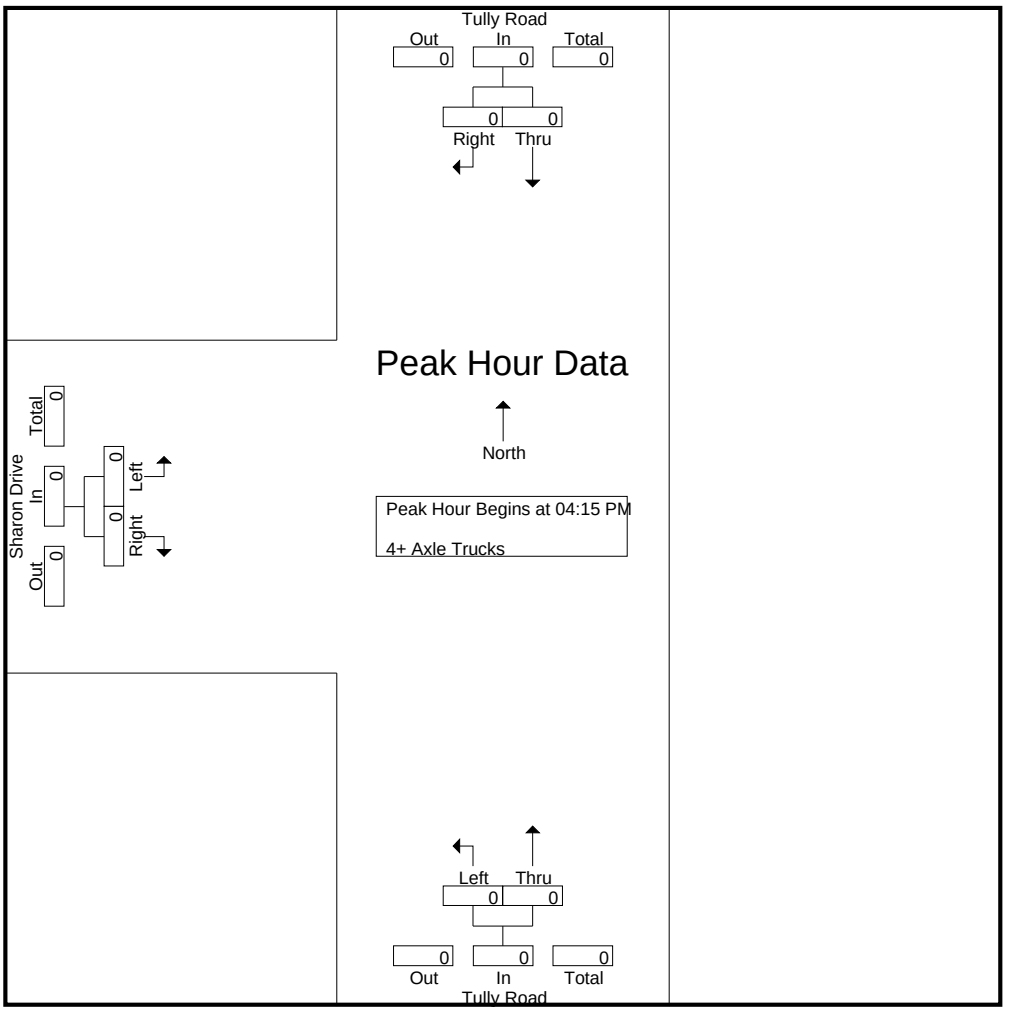

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Location: County of San Joaquain
N/S: Tully Road
E/W: Sharon Drive

Date: 8/20/2024
Day: Tuesday

PEDESTRIANS

	North Leg Tully Road	East Leg Dead End	South Leg Tully Road	West Leg Sharon Drive	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Tully Road	East Leg Dead End	South Leg Tully Road	West Leg Sharon Drive	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: County of San Joaquain
N/S: Tully Road
E/W: Sharon Drive

Date: 8/20/2024
Day: Tuesday

BICYCLES

	Southbound Tully Road			Westbound Dead End			Northbound Tully Road			Eastbound Sharon Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	2	0	0	0	0	2

	Southbound Tully Road			Westbound Dead End			Northbound Tully Road			Eastbound Sharon Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	1	5	9	3	10	1	14	1	1	0	2	6	3	1	10	35
07:15 AM	2	5	9	16	0	9	1	10	1	3	1	5	4	2	1	7	38
07:30 AM	1	9	13	23	0	11	13	24	0	6	0	6	5	5	1	11	64
07:45 AM	11	15	16	42	3	14	5	22	1	5	1	7	1	4	0	5	76
Total	17	30	43	90	6	44	20	70	3	15	2	20	16	14	3	33	213
08:00 AM	3	3	7	13	0	6	2	8	1	4	0	5	3	4	1	8	34
08:15 AM	1	5	6	12	1	7	0	8	2	2	1	5	0	4	0	4	29
08:30 AM	2	4	7	13	1	7	1	9	1	1	0	2	2	7	0	9	33
08:45 AM	1	5	1	7	0	12	1	13	1	3	1	5	4	13	0	17	42
Total	7	17	21	45	2	32	4	38	5	10	2	17	9	28	1	38	138
Grand Total	24	47	64	135	8	76	24	108	8	25	4	37	25	42	4	71	351
Apprch %	17.8	34.8	47.4		7.4	70.4	22.2		21.6	67.6	10.8		35.2	59.2	5.6		
Total %	6.8	13.4	18.2	38.5	2.3	21.7	6.8	30.8	2.3	7.1	1.1	10.5	7.1	12	1.1	20.2	
Passenger Vehicles	22	46	64	132	7	74	23	104	8	24	4	36	24	38	4	66	338
% Passenger Vehicles	91.7	97.9	100	97.8	87.5	97.4	95.8	96.3	100	96	100	97.3	96	90.5	100	93	96.3
Large 2 Axle Vehicles	0	0	0	0	1	0	0	1	0	0	0	0	1	2	0	3	4
% Large 2 Axle Vehicles	0	0	0	0	12.5	0	0	0.9	0	0	0	0	4	4.8	0	4.2	1.1
3 Axle Vehicles	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% 3 Axle Vehicles	4.2	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0.3
4+ Axle Trucks	1	1	0	2	0	2	1	3	0	1	0	1	0	2	0	2	8
% 4+ Axle Trucks	4.2	2.1	0	1.5	0	2.6	4.2	2.8	0	4	0	2.7	0	4.8	0	2.8	2.3

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	3	1	5	9	**3**	10	1	14	**1**	1	0	2	**6**	3	**1**	10	35
07:15 AM	2	5	9	16	0	9	1	10	1	3	**1**	5	4	2	1	7	38
07:30 AM	1	9	13	23	0	11	**13**	**24**	0	**6**	0	6	5	**5**	1	**11**	64
07:45 AM	**11**	**15**	**16**	**42**	3	**14**	5	22	1	5	1	**7**	1	4	0	5	**76**
Total Volume	17	30	43	90	6	44	20	70	3	15	2	20	16	14	3	33	213
% App. Total	18.9	33.3	47.8		8.6	62.9	28.6		15	75	10		48.5	42.4	9.1		
PHF	.386	.500	.672	.536	.500	.786	.385	.729	.750	.625	.500	.714	.667	.700	.750	.750	.701

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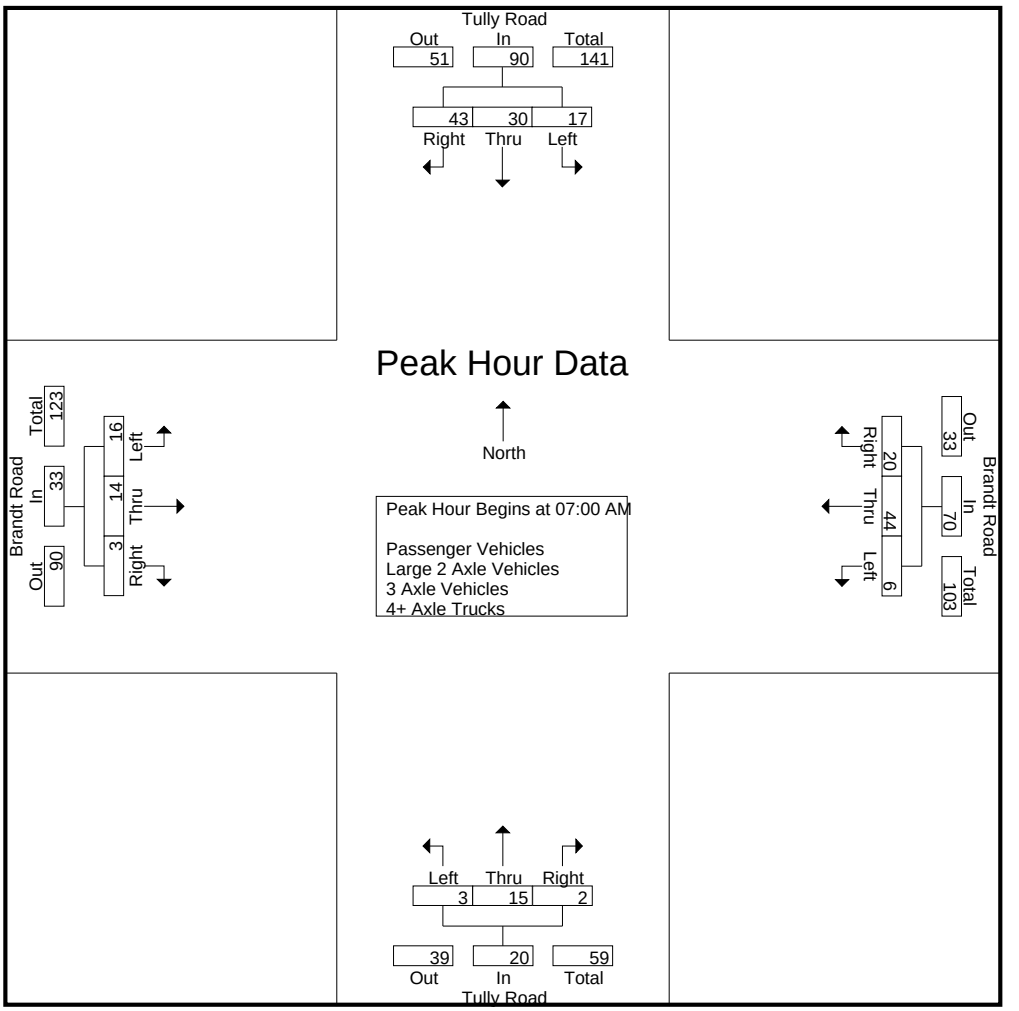
County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:15 AM				08:00 AM			
+0 mins.	2	5	9	16	**3**	10	1	14	**1**	3	**1**	5	3	4	**1**	8
+15 mins.	1	9	13	23	0	9	1	10	0	**6**	0	6	0	4	0	4
+30 mins.	**11**	**15**	**16**	**42**	0	11	**13**	**24**	1	5	1	**7**	2	7	0	9
+45 mins.	3	3	7	13	3	**14**	5	22	1	4	0	5	**4**	**13**	0	**17**
Total Volume	17	32	45	94	6	44	20	70	3	18	2	23	9	28	1	38
% App. Total	18.1	34	47.9		8.6	62.9	28.6		13	78.3	8.7		23.7	73.7	2.6	
PHF	.386	.533	.703	.560	.500	.786	.385	.729	.750	.750	.500	.821	.563	.538	.250	.559

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	1	5	9	2	10	1	13	1	1	0	2	6	2	1	9	33
07:15 AM	2	5	9	16	0	9	1	10	1	3	1	5	4	2	1	7	38
07:30 AM	1	8	13	22	0	11	13	24	0	6	0	6	4	4	1	9	61
07:45 AM	11	15	16	42	3	12	5	20	1	5	1	7	1	4	0	5	74
Total	17	29	43	89	5	42	20	67	3	15	2	20	15	12	3	30	206
08:00 AM	2	3	7	12	0	6	2	8	1	4	0	5	3	4	1	8	33
08:15 AM	1	5	6	12	1	7	0	8	2	2	1	5	0	3	0	3	28
08:30 AM	1	4	7	12	1	7	0	8	1	1	0	2	2	6	0	8	30
08:45 AM	1	5	1	7	0	12	1	13	1	2	1	4	4	13	0	17	41
Total	5	17	21	43	2	32	3	37	5	9	2	16	9	26	1	36	132
Grand Total	22	46	64	132	7	74	23	104	8	24	4	36	24	38	4	66	338
Apprch %	16.7	34.8	48.5		6.7	71.2	22.1		22.2	66.7	11.1		36.4	57.6	6.1		
Total %	6.5	13.6	18.9	39.1	2.1	21.9	6.8	30.8	2.4	7.1	1.2	10.7	7.1	11.2	1.2	19.5	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	3	1	5	9	2	10	1	13	**1**	1	0	2	**6**	2	**1**	**9**	33
07:15 AM	2	5	9	16	0	9	1	10	1	3	**1**	5	4	2	1	7	38
07:30 AM	1	8	13	22	0	11	**13**	**24**	0	**6**	0	6	4	**4**	1	9	61
07:45 AM	**11**	**15**	**16**	**42**	**3**	**12**	5	20	1	5	1	**7**	1	4	0	5	**74**
Total Volume	17	29	43	89	5	42	20	67	3	15	2	20	15	12	3	30	206
% App. Total	19.1	32.6	48.3		7.5	62.7	29.9		15	75	10		50	40	10		
PHF	.386	.483	.672	.530	.417	.875	.385	.698	.750	.625	.500	.714	.625	.750	.750	.833	.696

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
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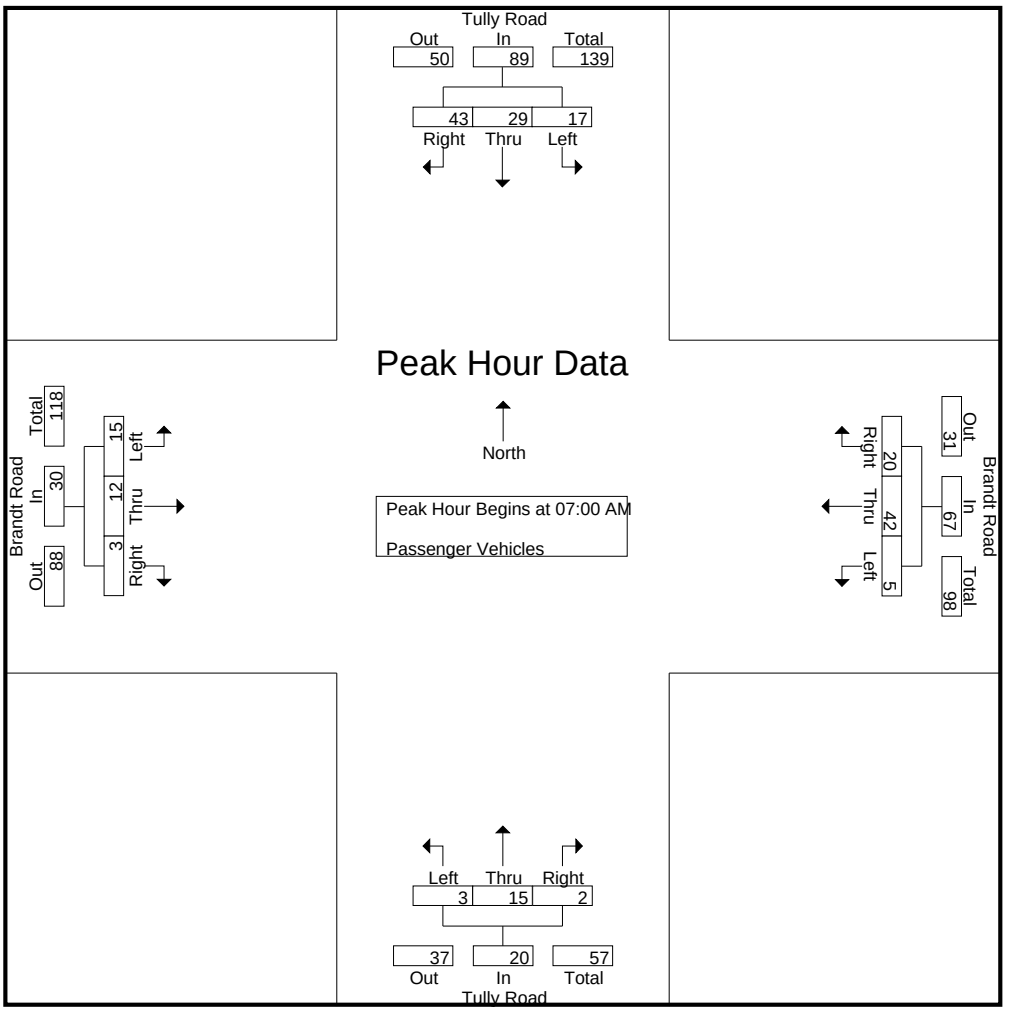

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	3	1	5	9	2	10	1	13	**1**	1	0	2	**6**	2	**1**	**9**
+15 mins.	2	5	9	16	0	9	1	10	1	3	**1**	5	4	2	1	7
+30 mins.	1	8	13	22	0	11	**13**	**24**	0	**6**	0	6	4	**4**	1	9
+45 mins.	**11**	**15**	**16**	**42**	**3**	**12**	5	20	1	5	1	**7**	1	4	0	5
Total Volume	17	29	43	89	5	42	20	67	3	15	2	20	15	12	3	30
% App. Total	19.1	32.6	48.3		7.5	62.7	29.9		15	75	10		50	40	10	
PHF	.386	.483	.672	.530	.417	.875	.385	.698	.750	.625	.500	.714	.625	.750	.750	.833

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	2	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	0	0	0	0	1	0	0	1	0	0	0	0	1	2	0	3	4
Apprch %	0	0	0		100	0	0		0	0	0		33.3	66.7	0		
Total %	0	0	0	0	25	0	0	25	0	0	0	0	25	50	0	75	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	**2**	**2**
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	2	3
% App. Total	0	0	0		100	0	0		0	0	0		50	50	0		
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.250	.250	.000	.250	.375

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
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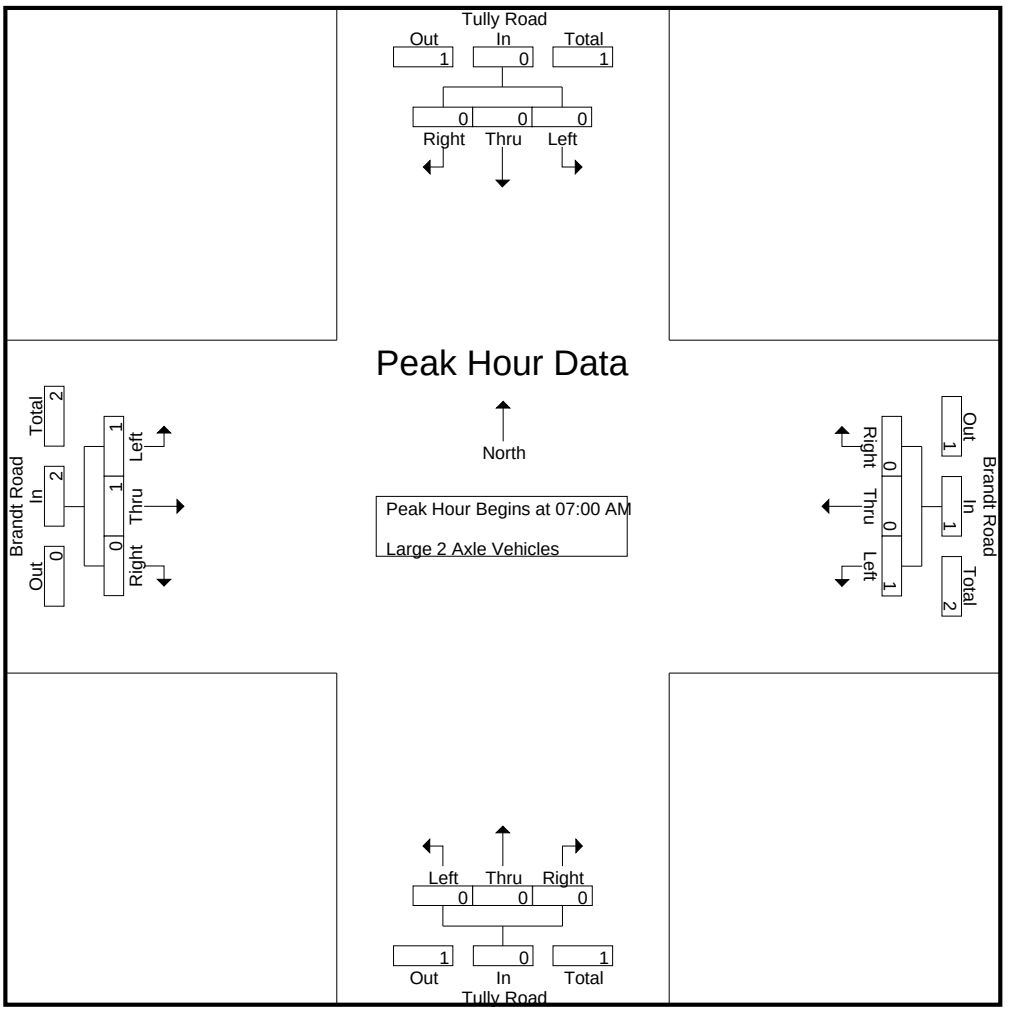

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	**2**
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	2
% App. Total	0	0	0		100	0	0		0	0	0		50	50	0	
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.250	.250	.000	.250

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Groups Printed- 3 Axle Vehicles

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	100	0	0		0	0	0		0	0	0		0	0	0		
Total %	100	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Site Code : 22524674
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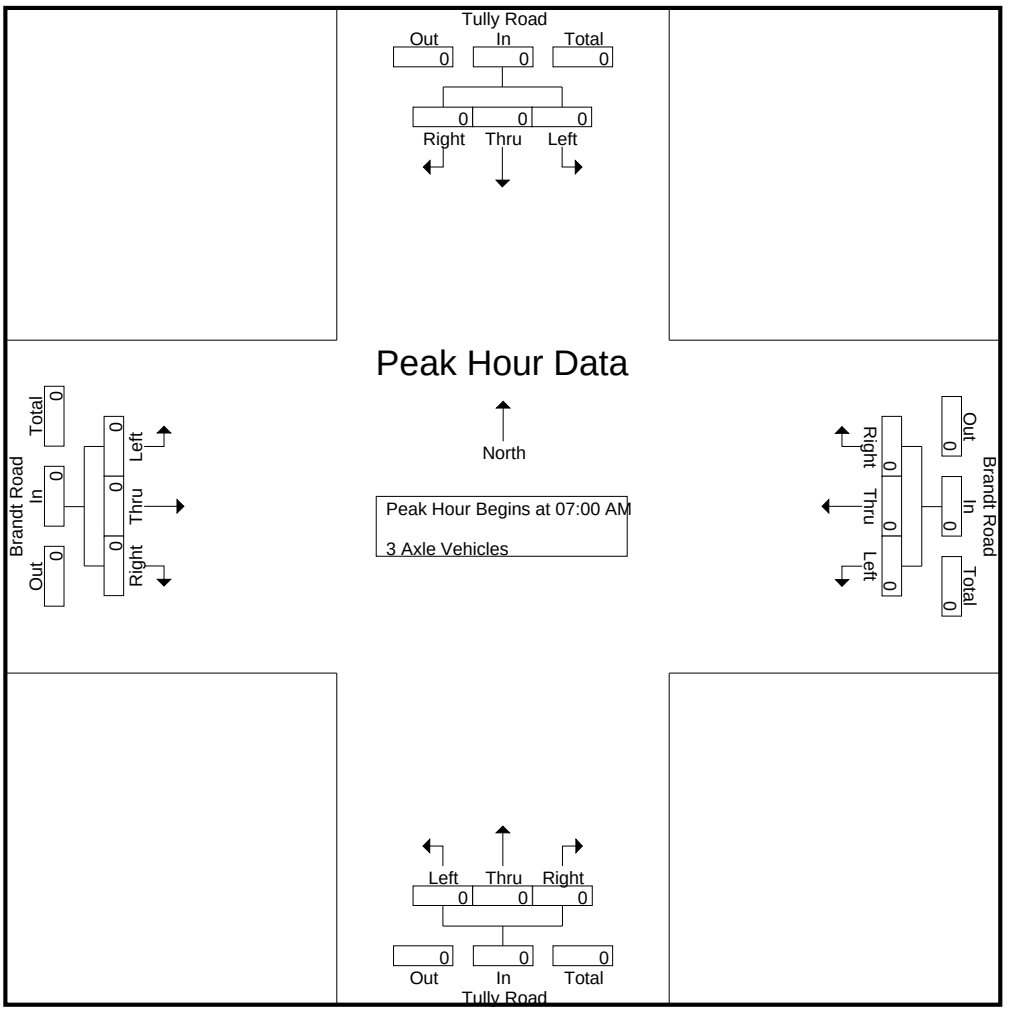

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 04_CSJ_Tul_Brandt AM
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Groups Printed- 4+ Axle Trucks

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	1	0	1	0	2	0	2	0	0	0	0	0	1	0	1	4
08:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	1	0	0	1	0	0	1	1	0	1	0	1	0	1	0	1	4
Grand Total	1	1	0	2	0	2	1	3	0	1	0	1	0	2	0	2	8
Apprch %	50	50	0		0	66.7	33.3		0	100	0		0	100	0		
Total %	12.5	12.5	0	25	0	25	12.5	37.5	0	12.5	0	12.5	0	25	0	25	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	**2**
Total Volume	0	1	0	1	0	2	0	2	0	0	0	0	0	1	0	1	4
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.500

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County of San Joaquin
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File Name : 04_CSJ_Tul_Brandt AM
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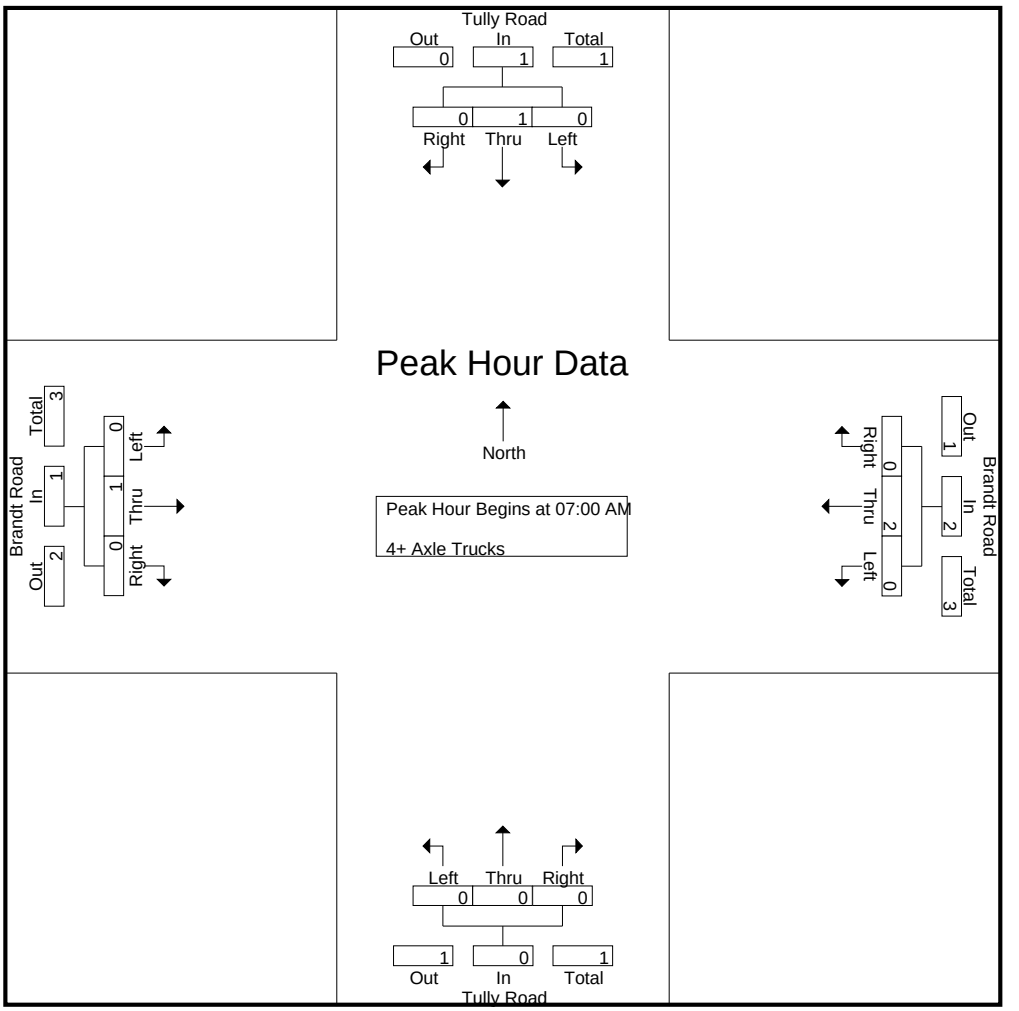

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	2	0	2	0	0	0	0	0	1	0	1
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	6	5	14	0	6	1	7	1	6	1	8	6	10	3	19	48
04:15 PM	6	4	2	12	1	11	1	13	0	3	2	5	10	12	0	22	52
04:30 PM	4	3	3	10	0	9	4	13	0	5	1	6	6	9	0	15	44
04:45 PM	1	4	3	8	0	6	2	8	1	5	1	7	4	8	1	13	36
Total	14	17	13	44	1	32	8	41	2	19	5	26	26	39	4	69	180
05:00 PM	4	1	3	8	0	7	0	7	0	5	0	5	9	14	1	24	44
05:15 PM	1	5	3	9	1	9	1	11	1	2	0	3	3	5	2	10	33
05:30 PM	2	3	2	7	1	9	3	13	0	1	0	1	7	16	0	23	44
05:45 PM	3	3	4	10	0	7	1	8	0	4	0	4	9	6	0	15	37
Total	10	12	12	34	2	32	5	39	1	12	0	13	28	41	3	72	158
Grand Total	24	29	25	78	3	64	13	80	3	31	5	39	54	80	7	141	338
Apprch %	30.8	37.2	32.1		3.8	80	16.2		7.7	79.5	12.8		38.3	56.7	5		
Total %	7.1	8.6	7.4	23.1	0.9	18.9	3.8	23.7	0.9	9.2	1.5	11.5	16	23.7	2.1	41.7	
Passenger Vehicles	23	28	25	76	3	62	13	78	3	31	5	39	54	77	7	138	331
% Passenger Vehicles	95.8	96.6	100	97.4	100	96.9	100	97.5	100	100	100	100	100	96.2	100	97.9	97.9
Large 2 Axle Vehicles	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% Large 2 Axle Vehicles	0	0	0	0	0	1.6	0	1.2	0	0	0	0	0	1.2	0	0.7	0.6
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	1	1	0	2	0	1	0	1	0	0	0	0	0	2	0	2	5
% 4+ Axle Trucks	4.2	3.4	0	2.6	0	1.6	0	1.2	0	0	0	0	0	2.5	0	1.4	1.5

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	3	**6**	**5**	**14**	0	6	1	7	**1**	**6**	1	**8**	6	10	**3**	19	48
04:15 PM	**6**	4	2	12	**1**	**11**	1	**13**	0	3	**2**	5	**10**	**12**	0	**22**	**52**
04:30 PM	4	3	3	10	0	9	**4**	13	0	5	1	6	6	9	0	15	44
04:45 PM	1	4	3	8	0	6	2	8	1	5	1	7	4	8	1	13	36
Total Volume	14	17	13	44	1	32	8	41	2	19	5	26	26	39	4	69	180
% App. Total	31.8	38.6	29.5		2.4	78	19.5		7.7	73.1	19.2		37.7	56.5	5.8		
PHF	.583	.708	.650	.786	.250	.727	.500	.788	.500	.792	.625	.813	.650	.813	.333	.784	.865

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File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
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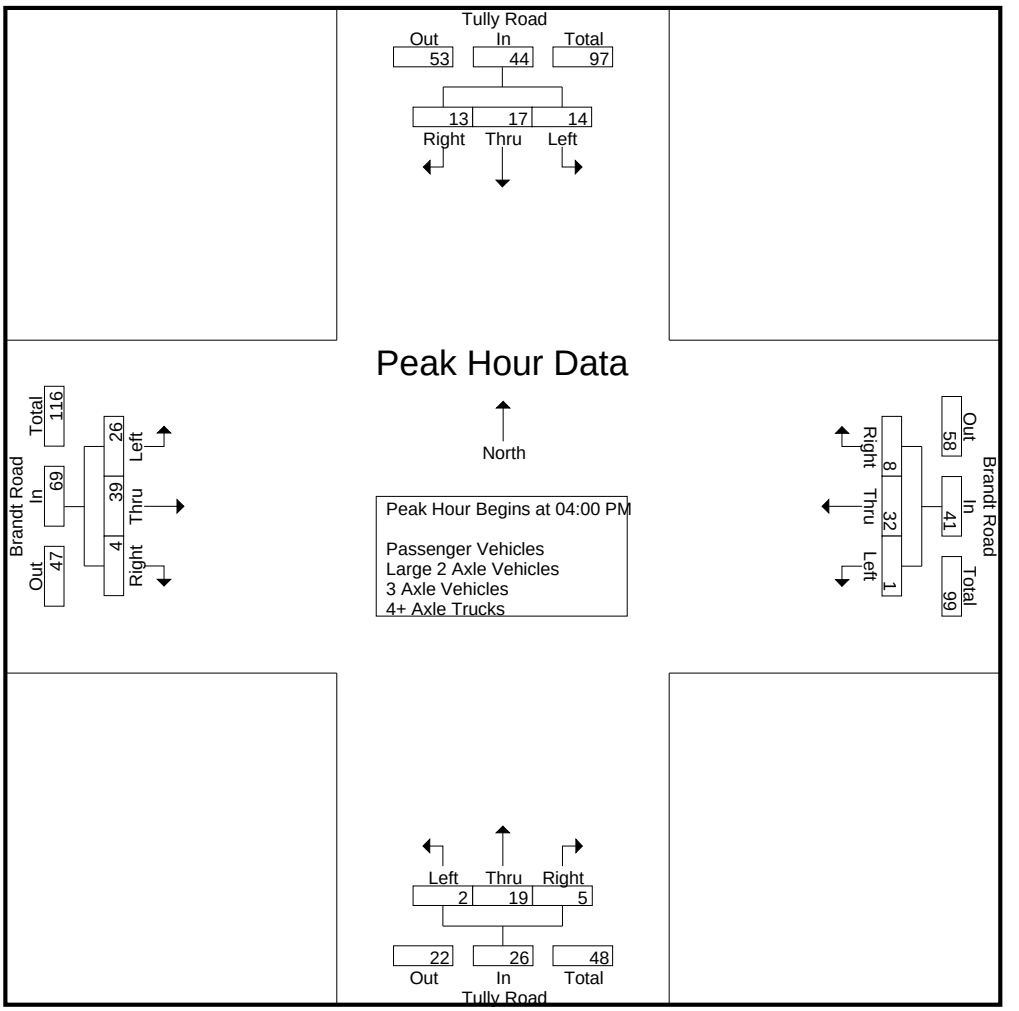

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:15 PM			
+0 mins.	3	**6**	**5**	**14**	0	6	1	7	**1**	**6**	1	**8**	**10**	12	0	22
+15 mins.	**6**	4	2	12	**1**	**11**	1	**13**	0	3	**2**	5	6	9	0	15
+30 mins.	4	3	3	10	0	9	**4**	13	0	5	1	6	4	8	**1**	13
+45 mins.	1	4	3	8	0	6	2	8	1	5	1	7	9	**14**	1	**24**
Total Volume	14	17	13	44	1	32	8	41	2	19	5	26	29	43	2	74
% App. Total	31.8	38.6	29.5		2.4	78	19.5		7.7	73.1	19.2		39.2	58.1	2.7	
PHF	.583	.708	.650	.786	.250	.727	.500	.788	.500	.792	.625	.813	.725	.768	.500	.771

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County of San Joaquin
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File Name : 04_CSJ_Tul_Brandt PM
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Groups Printed- Passenger Vehicles

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	6	5	14	0	6	1	7	1	6	1	8	6	8	3	17	46
04:15 PM	6	4	2	12	1	10	1	12	0	3	2	5	10	12	0	22	51
04:30 PM	4	3	3	10	0	9	4	13	0	5	1	6	6	9	0	15	44
04:45 PM	1	4	3	8	0	5	2	7	1	5	1	7	4	8	1	13	35
Total	14	17	13	44	1	30	8	39	2	19	5	26	26	37	4	67	176
05:00 PM	4	1	3	8	0	7	0	7	0	5	0	5	9	14	1	24	44
05:15 PM	1	4	3	8	1	9	1	11	1	2	0	3	3	5	2	10	32
05:30 PM	2	3	2	7	1	9	3	13	0	1	0	1	7	16	0	23	44
05:45 PM	2	3	4	9	0	7	1	8	0	4	0	4	9	5	0	14	35
Total	9	11	12	32	2	32	5	39	1	12	0	13	28	40	3	71	155
Grand Total	23	28	25	76	3	62	13	78	3	31	5	39	54	77	7	138	331
Apprch %	30.3	36.8	32.9		3.8	79.5	16.7		7.7	79.5	12.8		39.1	55.8	5.1		
Total %	6.9	8.5	7.6	23	0.9	18.7	3.9	23.6	0.9	9.4	1.5	11.8	16.3	23.3	2.1	41.7	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	3	**6**	**5**	**14**	0	6	1	7	**1**	**6**	1	**8**	6	8	**3**	17	46
04:15 PM	**6**	4	2	12	**1**	**10**	1	12	0	3	**2**	5	**10**	**12**	0	**22**	**51**
04:30 PM	4	3	3	10	0	9	**4**	**13**	0	5	1	6	6	9	0	15	44
04:45 PM	1	4	3	8	0	5	2	7	1	5	1	7	4	8	1	13	35
Total Volume	14	17	13	44	1	30	8	39	2	19	5	26	26	37	4	67	176
% App. Total	31.8	38.6	29.5		2.6	76.9	20.5		7.7	73.1	19.2		38.8	55.2	6		
PHF	.583	.708	.650	.786	.250	.750	.500	.750	.500	.792	.625	.813	.650	.771	.333	.761	.863

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PO Box 1178
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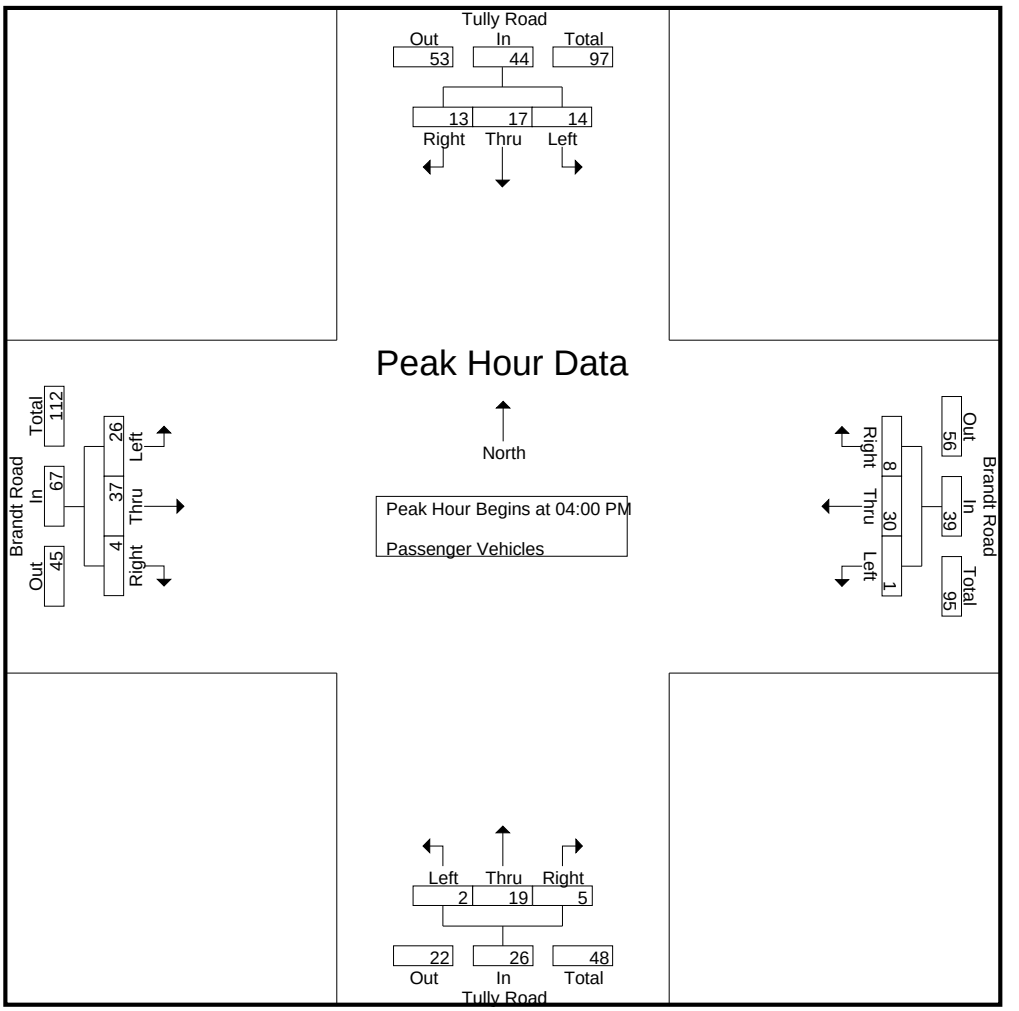
County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	3	**6**	**5**	**14**	0	6	1	7	**1**	**6**	1	**8**	6	8	**3**	17
+15 mins.	**6**	4	2	12	**1**	**10**	1	12	0	3	**2**	5	**10**	**12**	0	**22**
+30 mins.	4	3	3	10	0	9	**4**	**13**	0	5	1	6	6	9	0	15
+45 mins.	1	4	3	8	0	5	2	7	1	5	1	7	4	8	1	13
Total Volume	14	17	13	44	1	30	8	39	2	19	5	26	26	37	4	67
% App. Total	31.8	38.6	29.5		2.6	76.9	20.5		7.7	73.1	19.2		38.8	55.2	6	
PHF	.583	.708	.650	.786	.250	.750	.500	.750	.500	.792	.625	.813	.650	.771	.333	.761

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	50	0	50	0	0	0	0	0	50	0	50	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
04:15 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.500

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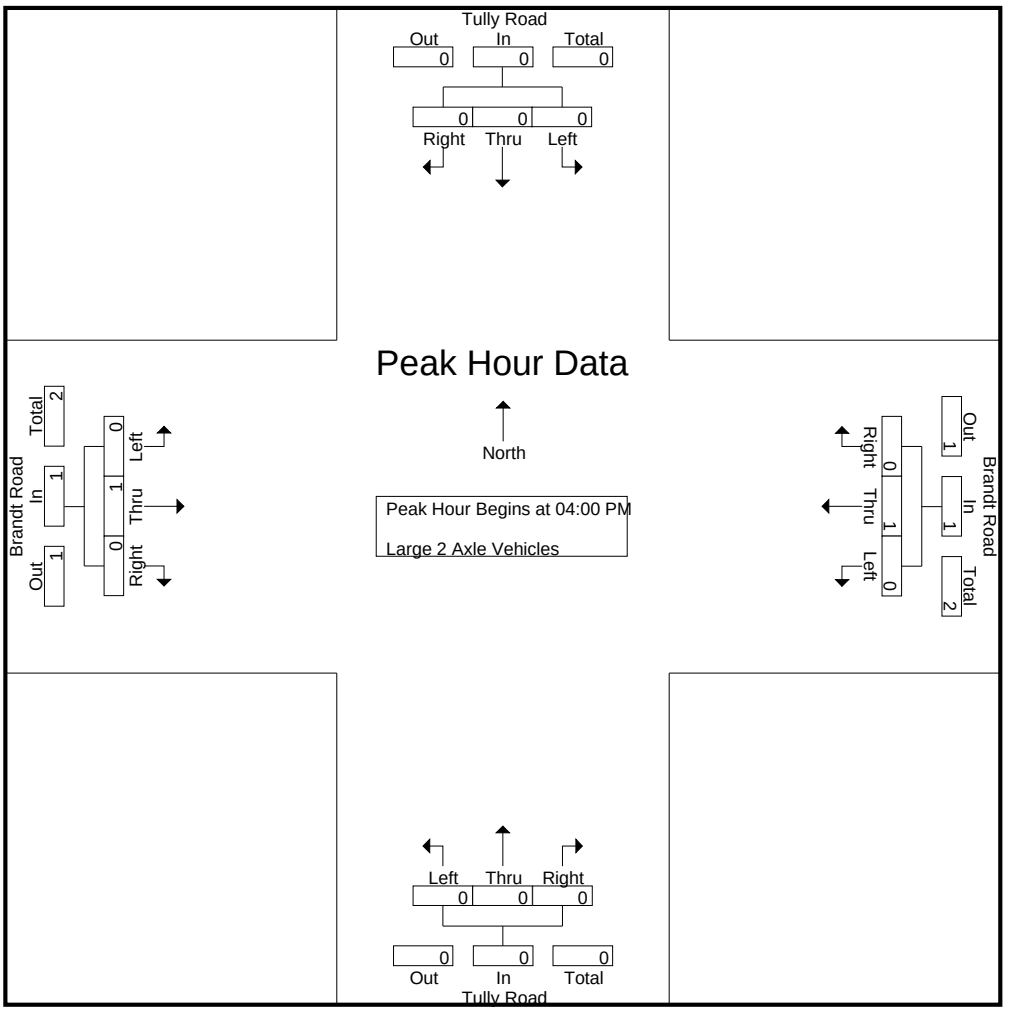
County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 3 Axle Vehicles

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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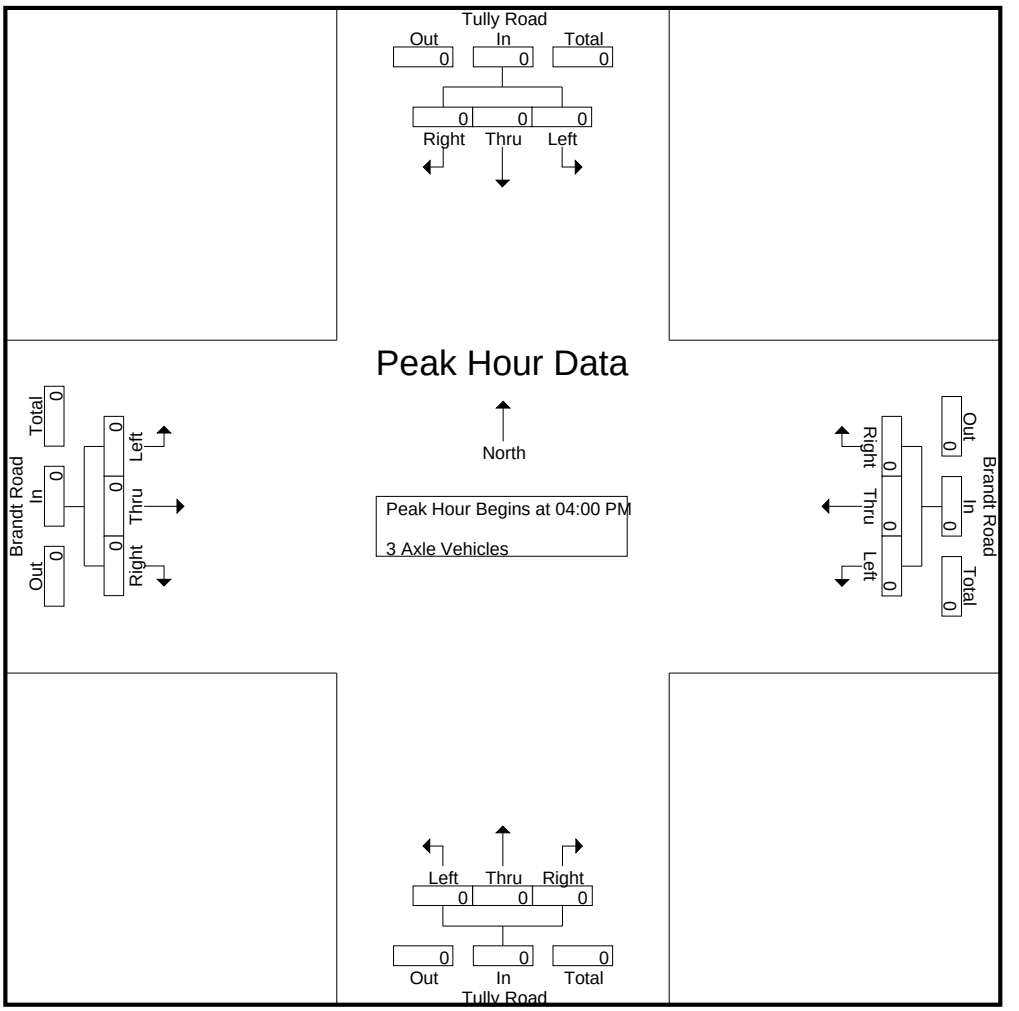
County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 4+ Axle Trucks

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	1	1	0	2	0	0	0	0	0	0	0	0	0	1	0	1	3
Grand Total	1	1	0	2	0	1	0	1	0	0	0	0	0	2	0	2	5
Apprch %	50	50	0		0	100	0		0	0	0		0	100	0		
Total %	20	20	0	40	0	20	0	20	0	0	0	0	0	40	0	40	

	Tully Road Southbound				Brandt Road Westbound				Tully Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.500

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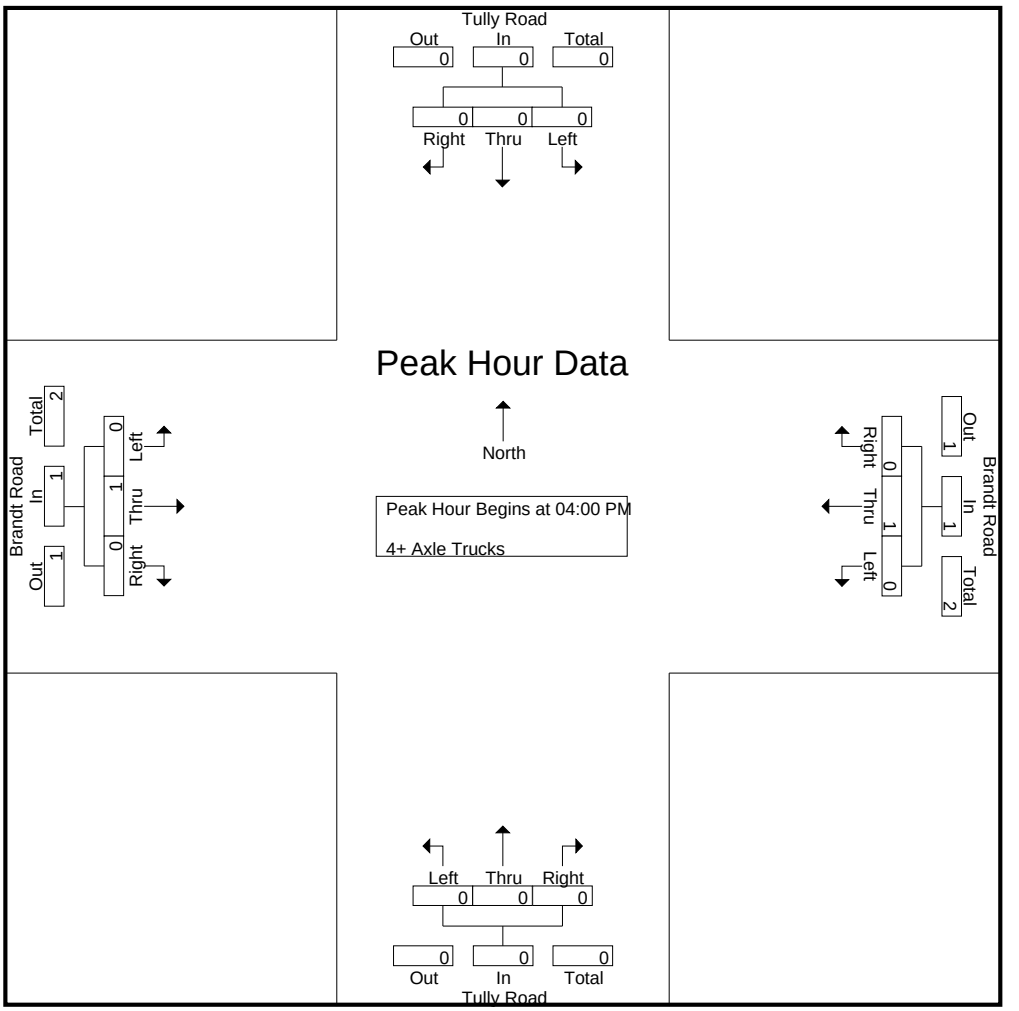
County of San Joaquin
N/S: Tully Road
E/W: Brandt Road
Weather: Clear

File Name : 04_CSJ_Tul_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

Location: County of San Joaquain
N/S: Tully Road
E/W: Brandt Road

Date: 8/20/2024
Day: Tuesday

PEDESTRIANS

	North Leg Tully Road Pedestrians	East Leg Brandt Road Pedestrians	South Leg Tully Road Pedestrians	West Leg Brandt Road Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Tully Road Pedestrians	East Leg Brandt Road Pedestrians	South Leg Tully Road Pedestrians	West Leg Brandt Road Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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951-268-6268

Location: County of San Joaquain
N/S: Tully Road
E/W: Brandt Road

Date: 8/20/2024
Day: Tuesday

BICYCLES

	Southbound Tully Road			Westbound Brandt Road			Northbound Tully Road			Eastbound Brandt Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	14	0	14
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	15	0	15

	Southbound Tully Road			Westbound Brandt Road			Northbound Tully Road			Eastbound Brandt Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	13	4	18	7	10	3	20	2	7	5	14	3	5	0	8	60
07:15 AM	0	9	5	14	10	11	1	22	4	8	3	15	1	2	0	3	54
07:30 AM	0	17	5	22	12	10	1	23	4	33	4	41	1	6	0	7	93
07:45 AM	3	36	11	50	9	22	5	36	7	33	0	40	1	3	0	4	130
Total	4	75	25	104	38	53	10	101	17	81	12	110	6	16	0	22	337
08:00 AM	1	14	1	16	4	6	1	11	7	9	6	22	2	1	3	6	55
08:15 AM	1	8	1	10	7	6	2	15	2	10	1	13	2	6	2	10	48
08:30 AM	5	9	3	17	3	11	1	15	5	10	1	16	2	5	6	13	61
08:45 AM	1	15	3	19	6	10	2	18	2	7	5	14	0	10	1	11	62
Total	8	46	8	62	20	33	6	59	16	36	13	65	6	22	12	40	226
Grand Total	12	121	33	166	58	86	16	160	33	117	25	175	12	38	12	62	563
Apprch %	7.2	72.9	19.9		36.2	53.8	10		18.9	66.9	14.3		19.4	61.3	19.4		
Total %	2.1	21.5	5.9	29.5	10.3	15.3	2.8	28.4	5.9	20.8	4.4	31.1	2.1	6.7	2.1	11	
Passenger Vehicles	12	117	33	162	57	84	16	157	31	115	24	170	12	33	11	56	545
% Passenger Vehicles	100	96.7	100	97.6	98.3	97.7	100	98.1	93.9	98.3	96	97.1	100	86.8	91.7	90.3	96.8
Large 2 Axle Vehicles	0	2	0	2	1	0	0	1	1	1	1	3	0	3	0	3	9
% Large 2 Axle Vehicles	0	1.7	0	1.2	1.7	0	0	0.6	3	0.9	4	1.7	0	7.9	0	4.8	1.6
3 Axle Vehicles	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
% 3 Axle Vehicles	0	0.8	0	0.6	0	0	0	0	0	0	0	0	0	2.6	0	1.6	0.4
4+ Axle Trucks	0	1	0	1	0	2	0	2	1	1	0	2	0	1	1	2	7
% 4+ Axle Trucks	0	0.8	0	0.6	0	2.3	0	1.2	3	0.9	0	1.1	0	2.6	8.3	3.2	1.2

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	1	13	4	18	7	10	3	20	2	7	**5**	14	**3**	5	0	**8**	60
07:15 AM	0	9	5	14	10	11	1	22	4	8	3	15	1	2	0	3	54
07:30 AM	0	17	5	22	**12**	10	1	23	4	**33**	4	**41**	1	**6**	0	7	93
07:45 AM	**3**	**36**	**11**	**50**	9	**22**	**5**	**36**	**7**	33	0	40	1	3	0	4	**130**
Total Volume	4	75	25	104	38	53	10	101	17	81	12	110	6	16	0	22	337
% App. Total	3.8	72.1	24		37.6	52.5	9.9		15.5	73.6	10.9		27.3	72.7	0		
PHF	.333	.521	.568	.520	.792	.602	.500	.701	.607	.614	.600	.671	.500	.667	.000	.688	.648

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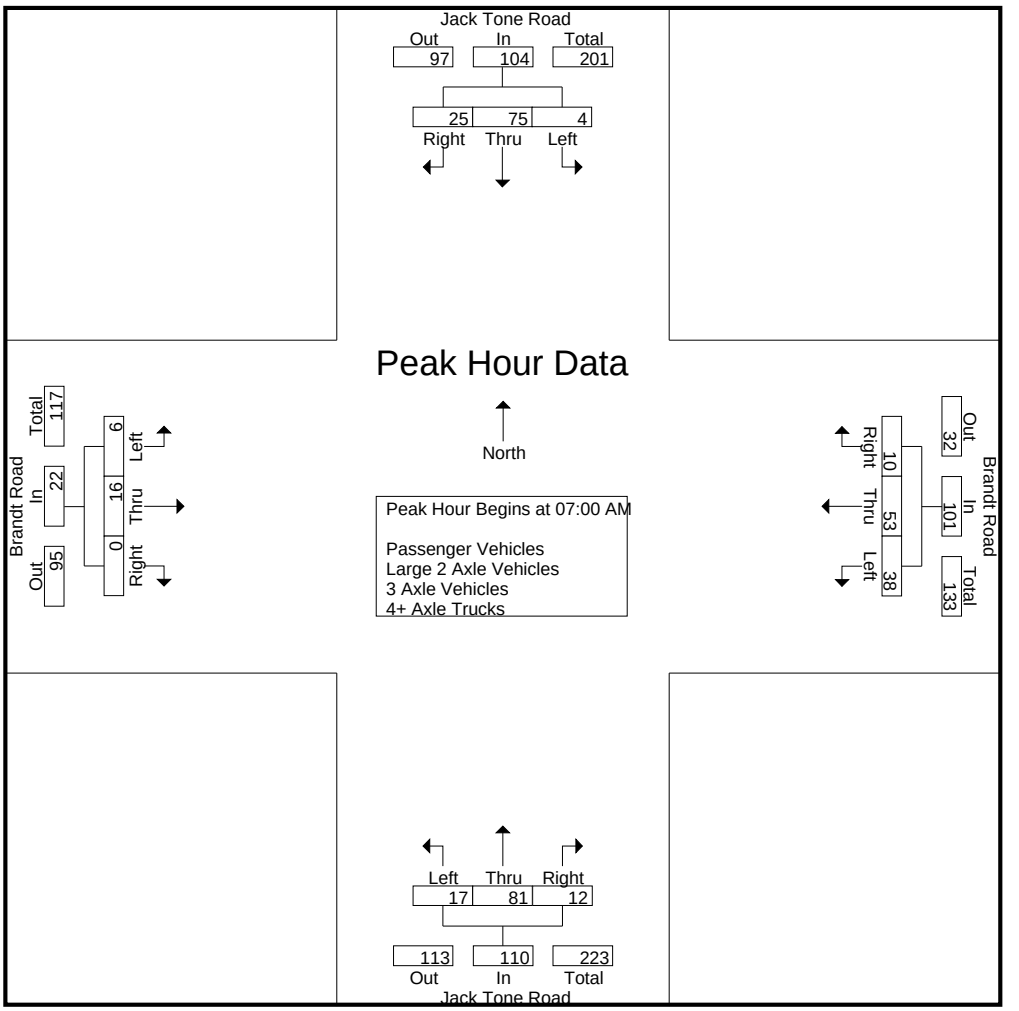
County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:15 AM				08:00 AM			
+0 mins.	1	13	4	18	7	10	3	20	4	8	3	15	**2**	1	3	6
+15 mins.	0	9	5	14	10	11	1	22	4	**33**	4	**41**	2	6	2	10
+30 mins.	0	17	5	22	**12**	10	1	23	**7**	33	0	40	2	5	**6**	**13**
+45 mins.	**3**	**36**	**11**	**50**	9	**22**	**5**	**36**	7	9	**6**	22	0	**10**	1	11
Total Volume	4	75	25	104	38	53	10	101	22	83	13	118	6	22	12	40
% App. Total	3.8	72.1	24		37.6	52.5	9.9		18.6	70.3	11		15	55	30	
PHF	.333	.521	.568	.520	.792	.602	.500	.701	.786	.629	.542	.720	.750	.550	.500	.769

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	13	4	18	6	10	3	19	2	6	5	13	3	4	0	7	57
07:15 AM	0	9	5	14	10	11	1	22	4	8	3	15	1	2	0	3	54
07:30 AM	0	17	5	22	12	10	1	23	4	33	3	40	1	5	0	6	91
07:45 AM	3	36	11	50	9	20	5	34	6	33	0	39	1	3	0	4	127
Total	4	75	25	104	37	51	10	98	16	80	11	107	6	14	0	20	329
08:00 AM	1	13	1	15	4	6	1	11	7	9	6	22	2	1	3	6	54
08:15 AM	1	8	1	10	7	6	2	15	2	10	1	13	2	5	2	9	47
08:30 AM	5	9	3	17	3	11	1	15	4	10	1	15	2	4	5	11	58
08:45 AM	1	12	3	16	6	10	2	18	2	6	5	13	0	9	1	10	57
Total	8	42	8	58	20	33	6	59	15	35	13	63	6	19	11	36	216
Grand Total	12	117	33	162	57	84	16	157	31	115	24	170	12	33	11	56	545
Apprch %	7.4	72.2	20.4		36.3	53.5	10.2		18.2	67.6	14.1		21.4	58.9	19.6		
Total %	2.2	21.5	6.1	29.7	10.5	15.4	2.9	28.8	5.7	21.1	4.4	31.2	2.2	6.1	2	10.3	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	1	13	4	18	6	10	3	19	2	6	**5**	13	**3**	4	0	**7**	57
07:15 AM	0	9	5	14	10	11	1	22	4	8	3	15	1	2	0	3	54
07:30 AM	0	17	5	22	**12**	10	1	23	4	**33**	3	**40**	1	**5**	0	6	91
07:45 AM	**3**	**36**	**11**	**50**	9	**20**	**5**	**34**	**6**	33	0	39	1	3	0	4	**127**
Total Volume	4	75	25	104	37	51	10	98	16	80	11	107	6	14	0	20	329
% App. Total	3.8	72.1	24		37.8	52	10.2		15	74.8	10.3		30	70	0		
PHF	.333	.521	.568	.520	.771	.638	.500	.721	.667	.606	.550	.669	.500	.700	.000	.714	.648

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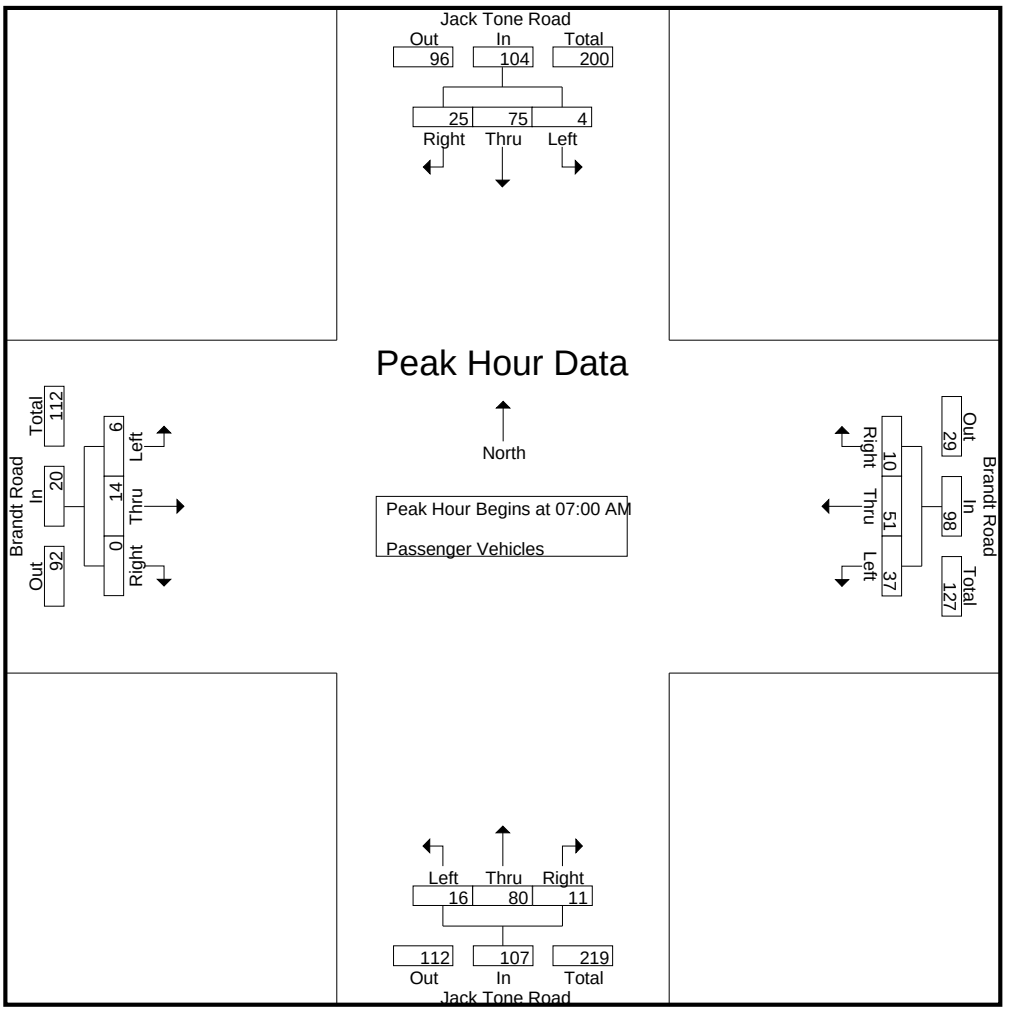
County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	1	13	4	18	6	10	3	19	2	6	**5**	13	**3**	4	0	**7**
+15 mins.	0	9	5	14	10	11	1	22	4	8	3	15	1	2	0	3
+30 mins.	0	17	5	22	**12**	10	1	23	4	**33**	3	**40**	1	**5**	0	6
+45 mins.	**3**	**36**	**11**	**50**	9	**20**	**5**	**34**	**6**	33	0	39	1	3	0	4
Total Volume	4	75	25	104	37	51	10	98	16	80	11	107	6	14	0	20
% App. Total	3.8	72.1	24		37.8	52	10.2		15	74.8	10.3		30	70	0	
PHF	.333	.521	.568	.520	.771	.638	.500	.721	.667	.606	.550	.669	.500	.700	.000	.714

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	1	1	2	0	1	0	1	4
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
08:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	3
Total	0	2	0	2	0	0	0	0	1	0	0	1	0	2	0	2	5
Grand Total	0	2	0	2	1	0	0	1	1	1	1	3	0	3	0	3	9
Apprch %	0	100	0		100	0	0		33.3	33.3	33.3		0	100	0		
Total %	0	22.2	0	22.2	11.1	0	0	11.1	11.1	11.1	11.1	33.3	0	33.3	0	33.3	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	**1**	0	0	**1**	0	**1**	0	**1**	0	0	0	0	**2**
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	**1**	1	0	**1**	0	**1**	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	0	1	0	1	1	2	0	1	0	1	4
% App. Total	0	0	0		100	0	0		0	50	50		0	100	0		
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.250	.250	.500	.000	.250	.000	.250	.500

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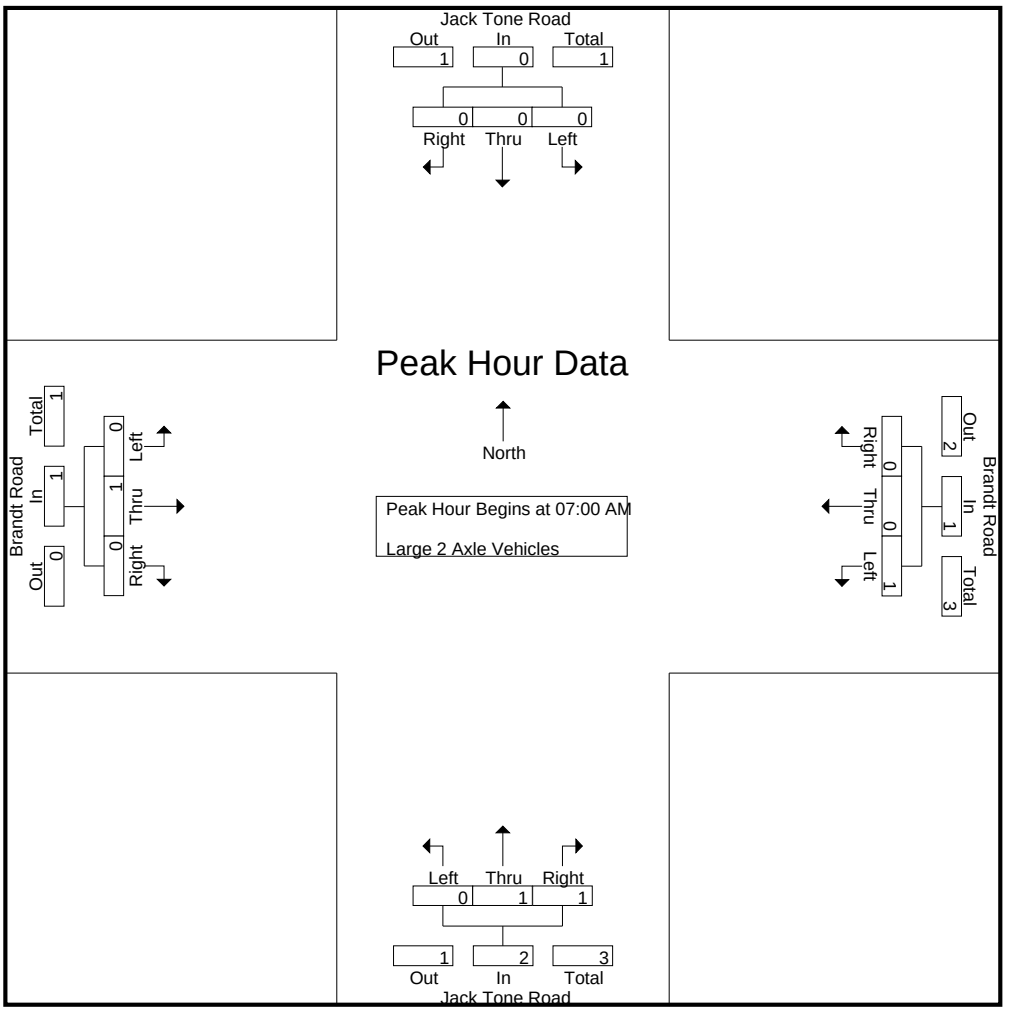
County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	**1**	0	0	**1**	0	**1**	0	**1**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	**1**	1	0	**1**	0	**1**
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	0	1	0	1	1	2	0	1	0	1
% App. Total	0	0	0		100	0	0		0	50	50		0	100	0	
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.250	.250	.500	.000	.250	.000	.250

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 3 Axle Vehicles

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Grand Total	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Apprch %	0	100	0		0	0	0		0	0	0		0	100	0		
Total %	0	50	0	50	0	0	0	0	0	0	0	0	0	50	0	50	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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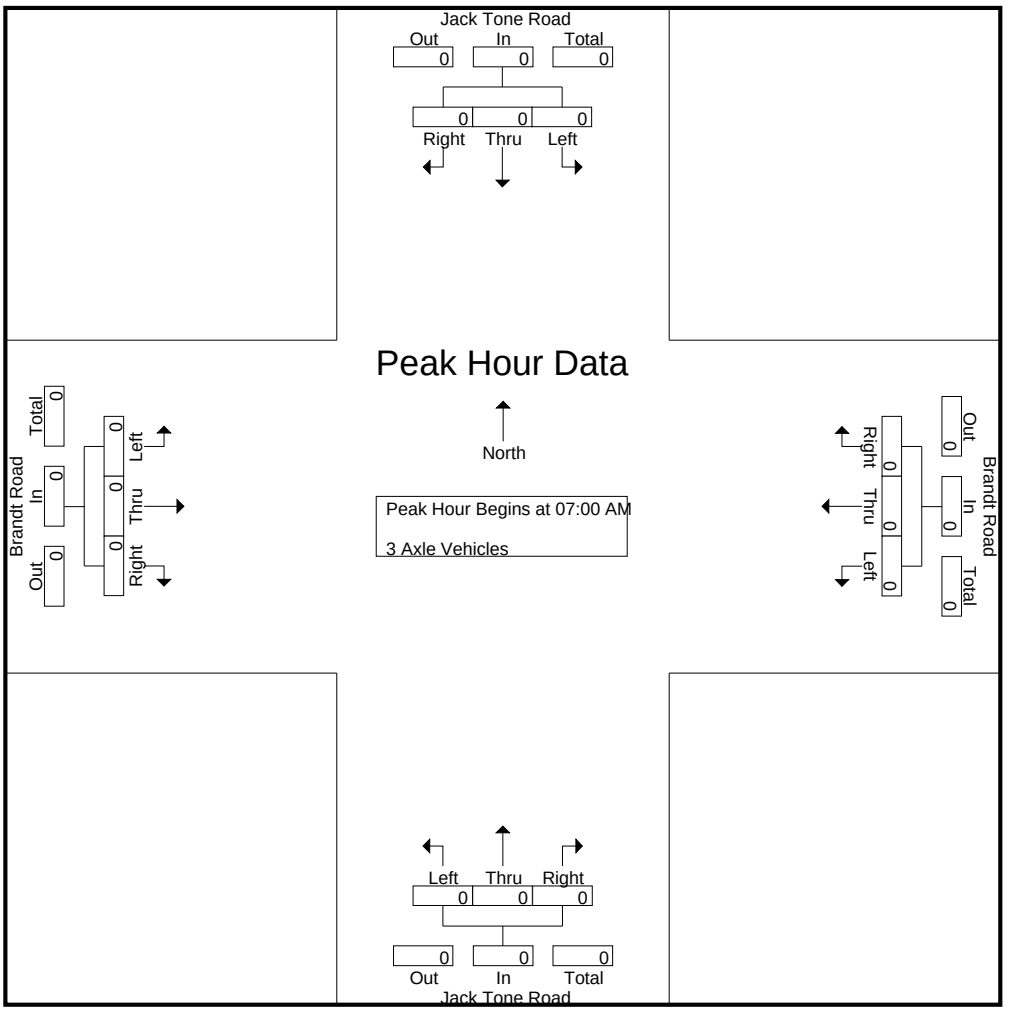
County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 4+ Axle Trucks

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	2	0	2	1	0	0	1	0	0	0	0	3
Total	0	0	0	0	0	2	0	2	1	0	0	1	0	1	0	1	4
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
08:45 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Total	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1	3
Grand Total	0	1	0	1	0	2	0	2	1	1	0	2	0	1	1	2	7
Apprch %	0	100	0		0	100	0		50	50	0		0	50	50		
Total %	0	14.3	0	14.3	0	28.6	0	28.6	14.3	14.3	0	28.6	0	14.3	14.3	28.6	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	**2**	0	**2**	**1**	0	0	**1**	0	0	0	0	**3**
Total Volume	0	0	0	0	0	2	0	2	1	0	0	1	0	1	0	1	4
% App. Total	0	0	0		0	100	0		100	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.250	.000	.000	.250	.000	.250	.000	.250	.333

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
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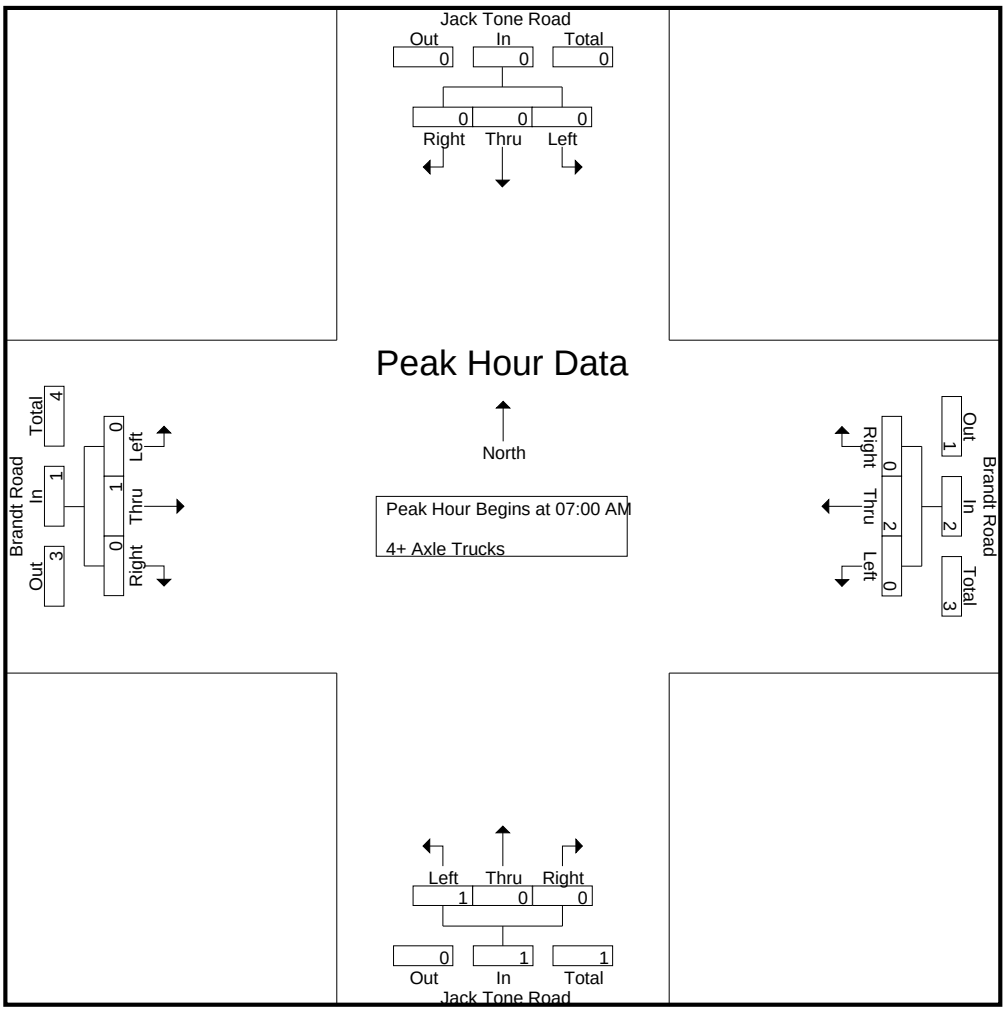

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**2**	0	**2**	**1**	0	0	**1**	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	1	0	0	1	0	1	0	1
% App. Total	0	0	0		0	100	0		100	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.250	.000	.000	.250	.000	.250	.000	.250

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	20	2	26	5	5	0	10	3	11	6	20	5	9	4	18	74
04:15 PM	3	17	3	23	5	6	4	15	5	21	9	35	2	11	6	19	92
04:30 PM	4	17	3	24	7	5	0	12	2	10	3	15	3	9	1	13	64
04:45 PM	2	21	0	23	2	5	0	7	1	15	5	21	2	11	4	17	68
Total	13	75	8	96	19	21	4	44	11	57	23	91	12	40	15	67	298
05:00 PM	3	23	3	29	4	6	2	12	1	14	6	21	4	15	3	22	84
05:15 PM	1	11	2	14	3	4	5	12	1	19	2	22	2	9	3	14	62
05:30 PM	4	17	6	27	3	6	3	12	3	18	8	29	3	11	2	16	84
05:45 PM	3	12	4	19	6	3	3	12	4	12	3	19	5	9	2	16	66
Total	11	63	15	89	16	19	13	48	9	63	19	91	14	44	10	68	296
Grand Total	24	138	23	185	35	40	17	92	20	120	42	182	26	84	25	135	594
Apprch %	13	74.6	12.4		38	43.5	18.5		11	65.9	23.1		19.3	62.2	18.5		
Total %	4	23.2	3.9	31.1	5.9	6.7	2.9	15.5	3.4	20.2	7.1	30.6	4.4	14.1	4.2	22.7	
Passenger Vehicles	24	131	22	177	33	40	16	89	20	119	40	179	26	82	23	131	576
% Passenger Vehicles	100	94.9	95.7	95.7	94.3	100	94.1	96.7	100	99.2	95.2	98.4	100	97.6	92	97	97
Large 2 Axle Vehicles	0	3	1	4	1	0	0	1	0	0	0	0	0	1	1	2	7
% Large 2 Axle Vehicles	0	2.2	4.3	2.2	2.9	0	0	1.1	0	0	0	0	0	1.2	4	1.5	1.2
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	4	0	4	1	0	1	2	0	1	2	3	0	1	1	2	11
% 4+ Axle Trucks	0	2.9	0	2.2	2.9	0	5.9	2.2	0	0.8	4.8	1.6	0	1.2	4	1.5	1.9

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	3	17	**3**	23	5	**6**	**4**	**15**	**5**	**21**	**9**	**35**	2	11	**6**	19	**92**
04:30 PM	**4**	17	3	24	**7**	5	0	12	2	10	3	15	3	9	1	13	64
04:45 PM	2	21	0	23	2	5	0	7	1	15	5	21	2	11	4	17	68
05:00 PM	3	**23**	3	**29**	4	6	2	12	1	14	6	21	**4**	**15**	3	**22**	84
Total Volume	12	78	9	99	18	22	6	46	9	60	23	92	11	46	14	71	308
% App. Total	12.1	78.8	9.1		39.1	47.8	13		9.8	65.2	25		15.5	64.8	19.7		
PHF	.750	.848	.750	.853	.643	.917	.375	.767	.450	.714	.639	.657	.688	.767	.583	.807	.837

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N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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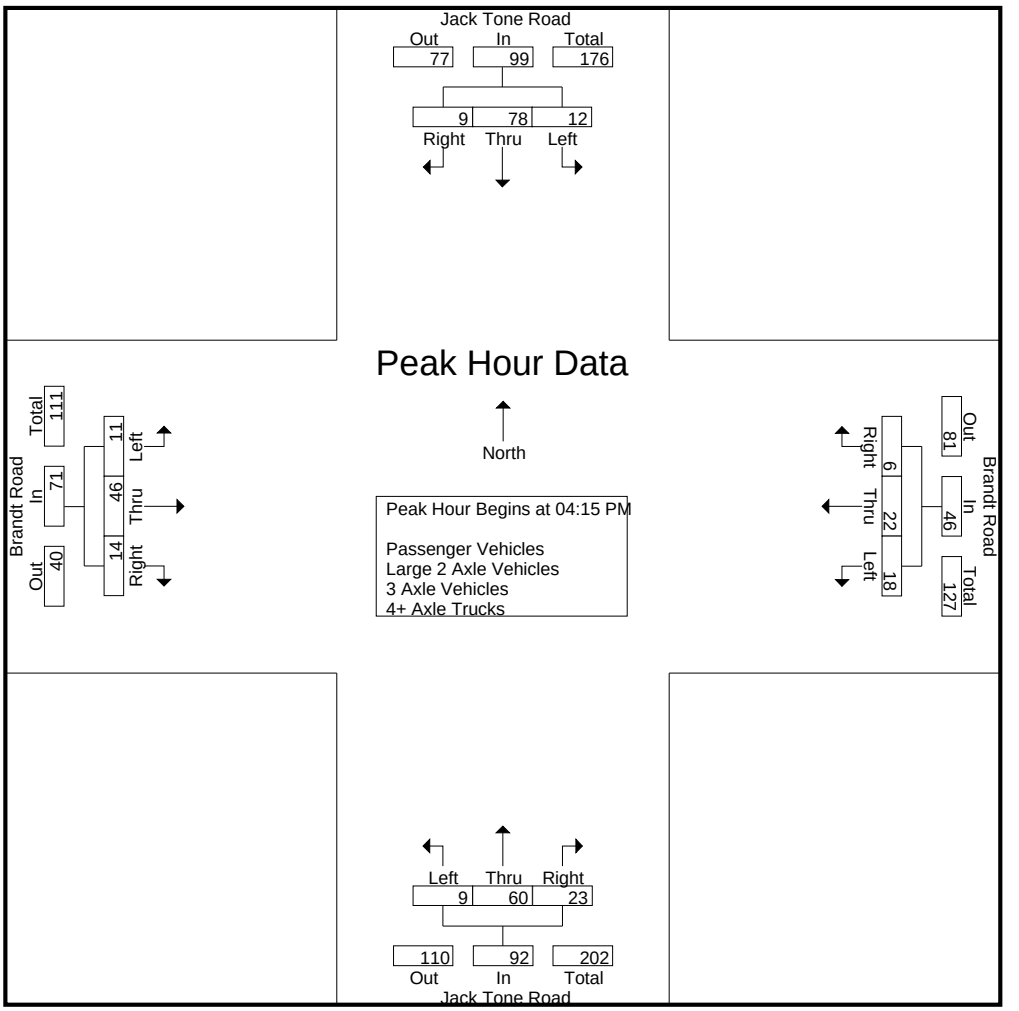

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				05:00 PM				04:45 PM				04:15 PM			
+0 mins.	3	17	**3**	23	4	**6**	2	**12**	1	15	5	21	2	11	**6**	19
+15 mins.	**4**	17	3	24	3	4	**5**	12	1	14	6	21	3	9	1	13
+30 mins.	2	21	0	23	3	6	3	12	1	**19**	2	22	2	11	4	17
+45 mins.	3	**23**	3	**29**	**6**	3	3	12	**3**	18	**8**	**29**	**4**	**15**	3	**22**
Total Volume	12	78	9	99	16	19	13	48	6	66	21	93	11	46	14	71
% App. Total	12.1	78.8	9.1		33.3	39.6	27.1		6.5	71	22.6		15.5	64.8	19.7	
PHF	.750	.848	.750	.853	.667	.792	.650	1.000	.500	.868	.656	.802	.688	.767	.583	.807

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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Groups Printed- Passenger Vehicles

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	18	2	24	5	5	0	10	3	11	5	19	5	8	4	17	70
04:15 PM	3	16	2	21	4	6	4	14	5	20	9	34	2	11	5	18	87
04:30 PM	4	17	3	24	7	5	0	12	2	10	3	15	3	9	1	13	64
04:45 PM	2	19	0	21	2	5	0	7	1	15	5	21	2	11	4	17	66
Total	13	70	7	90	18	21	4	43	11	56	22	89	12	39	14	65	287
05:00 PM	3	23	3	29	3	6	2	11	1	14	5	20	4	15	2	21	81
05:15 PM	1	11	2	14	3	4	5	12	1	19	2	22	2	9	3	14	62
05:30 PM	4	16	6	26	3	6	2	11	3	18	8	29	3	11	2	16	82
05:45 PM	3	11	4	18	6	3	3	12	4	12	3	19	5	8	2	15	64
Total	11	61	15	87	15	19	12	46	9	63	18	90	14	43	9	66	289
Grand Total	24	131	22	177	33	40	16	89	20	119	40	179	26	82	23	131	576
Apprch %	13.6	74	12.4		37.1	44.9	18		11.2	66.5	22.3		19.8	62.6	17.6		
Total %	4.2	22.7	3.8	30.7	5.7	6.9	2.8	15.5	3.5	20.7	6.9	31.1	4.5	14.2	4	22.7	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	3	16	2	21	4	**6**	**4**	**14**	**5**	**20**	**9**	**34**	2	11	**5**	18	**87**
04:30 PM	**4**	17	**3**	24	**7**	5	0	12	2	10	3	15	3	9	1	13	64
04:45 PM	2	19	0	21	2	5	0	7	1	15	5	21	2	11	4	17	66
05:00 PM	3	**23**	3	**29**	3	6	2	11	1	14	5	20	**4**	**15**	2	**21**	81
Total Volume	12	75	8	95	16	22	6	44	9	59	22	90	11	46	12	69	298
% App. Total	12.6	78.9	8.4		36.4	50	13.6		10	65.6	24.4		15.9	66.7	17.4		
PHF	.750	.815	.667	.819	.571	.917	.375	.786	.450	.738	.611	.662	.688	.767	.600	.821	.856

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County of San Joaquin
N/S: Jack Tone Road
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File Name : 05_CSJ_Jack_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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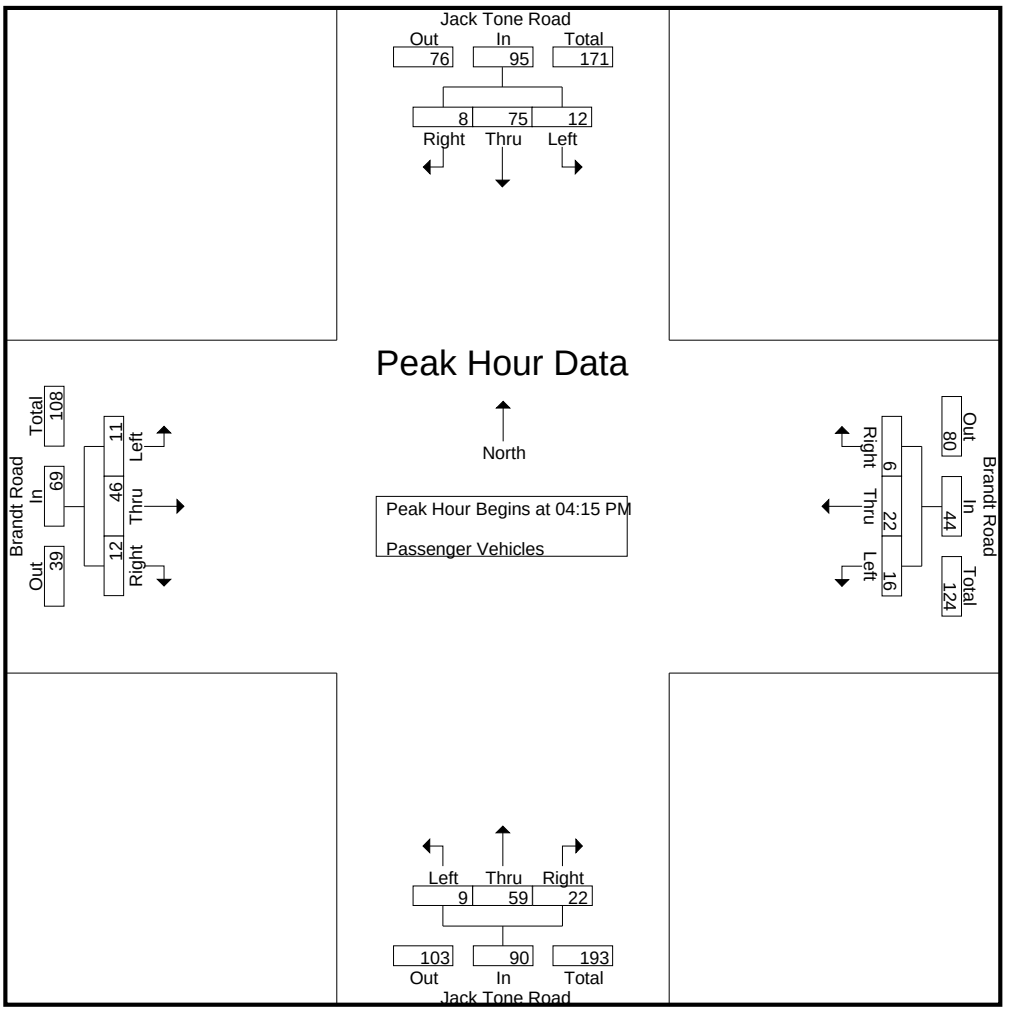

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	3	16	2	21	4	**6**	**4**	**14**	**5**	**20**	**9**	**34**	2	11	**5**	18
+15 mins.	**4**	17	**3**	24	**7**	5	0	12	2	10	3	15	3	9	1	13
+30 mins.	2	19	0	21	2	5	0	7	1	15	5	21	2	11	4	17
+45 mins.	3	**23**	3	**29**	3	6	2	11	1	14	5	20	**4**	**15**	2	**21**
Total Volume	12	75	8	95	16	22	6	44	9	59	22	90	11	46	12	69
% App. Total	12.6	78.9	8.4		36.4	50	13.6		10	65.6	24.4		15.9	66.7	17.4	
PHF	.750	.815	.667	.819	.571	.917	.375	.786	.450	.738	.611	.662	.688	.767	.600	.821

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County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	3
04:15 PM	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	3	1	4	1	0	0	1	0	0	0	0	0	1	0	1	6
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Grand Total	0	3	1	4	1	0	0	1	0	0	0	0	0	1	1	2	7
Apprch %	0	75	25		100	0	0		0	0	0		0	50	50		
Total %	0	42.9	14.3	57.1	14.3	0	0	14.3	0	0	0	0	0	14.3	14.3	28.6	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	**1**	**1**	**1**	0	0	**1**	0	0	0	0	0	0	0	0	**2**
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	**1**	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	1
Total Volume	0	1	1	2	1	0	0	1	0	0	0	0	0	0	1	1	4
% App. Total	0	50	50		100	0	0		0	0	0		0	0	100		
PHF	.000	.250	.250	.500	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.250	.500

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County of San Joaquin
N/S: Jack Tone Road
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File Name : 05_CSJ_Jack_Brandt PM
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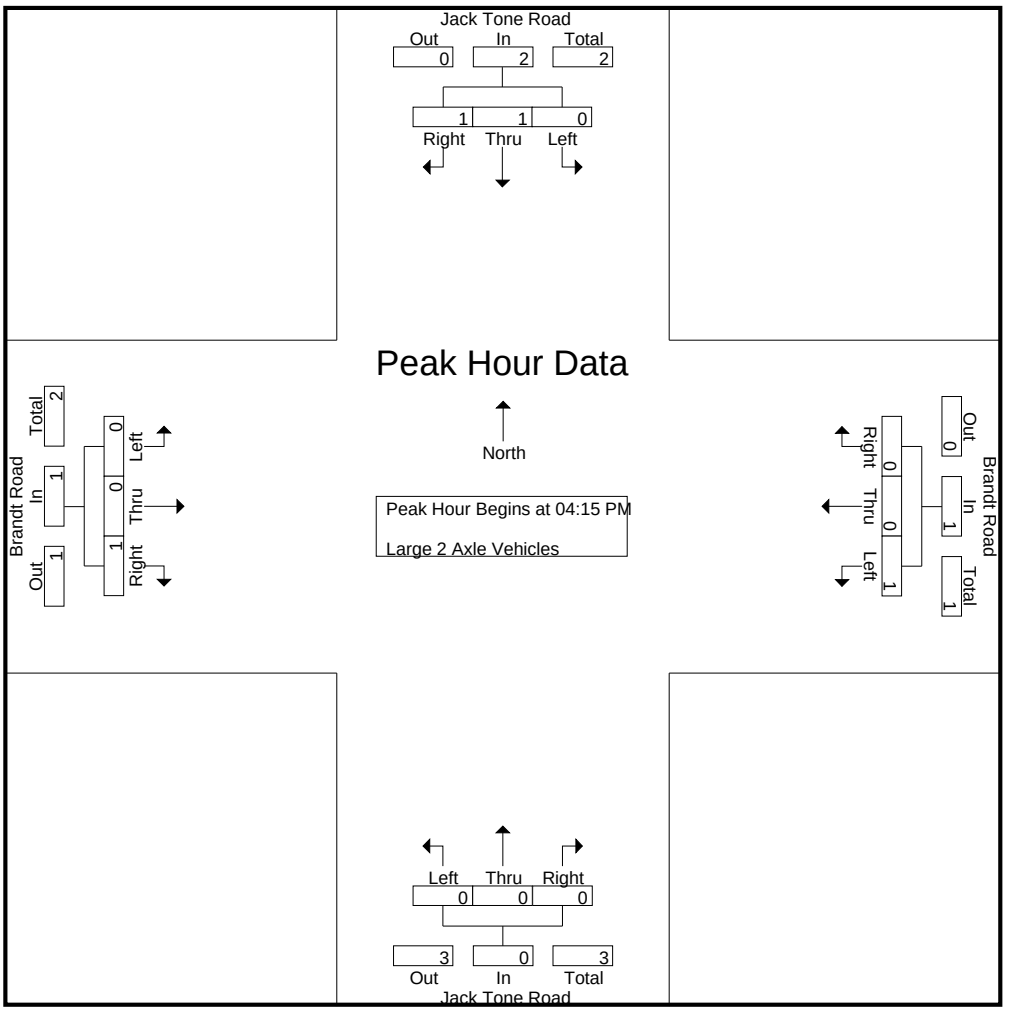

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	**1**	**1**	**1**	0	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	**1**	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**
Total Volume	0	1	1	2	1	0	0	1	0	0	0	0	0	0	1	1
% App. Total	0	50	50		100	0	0		0	0	0		0	0	100	
PHF	.000	.250	.250	.500	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.250

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County of San Joaquin
N/S: Jack Tone Road
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File Name : 05_CSJ_Jack_Brandt PM
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Groups Printed- 3 Axle Vehicles

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Jack Tone Road
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File Name : 05_CSJ_Jack_Brandt PM
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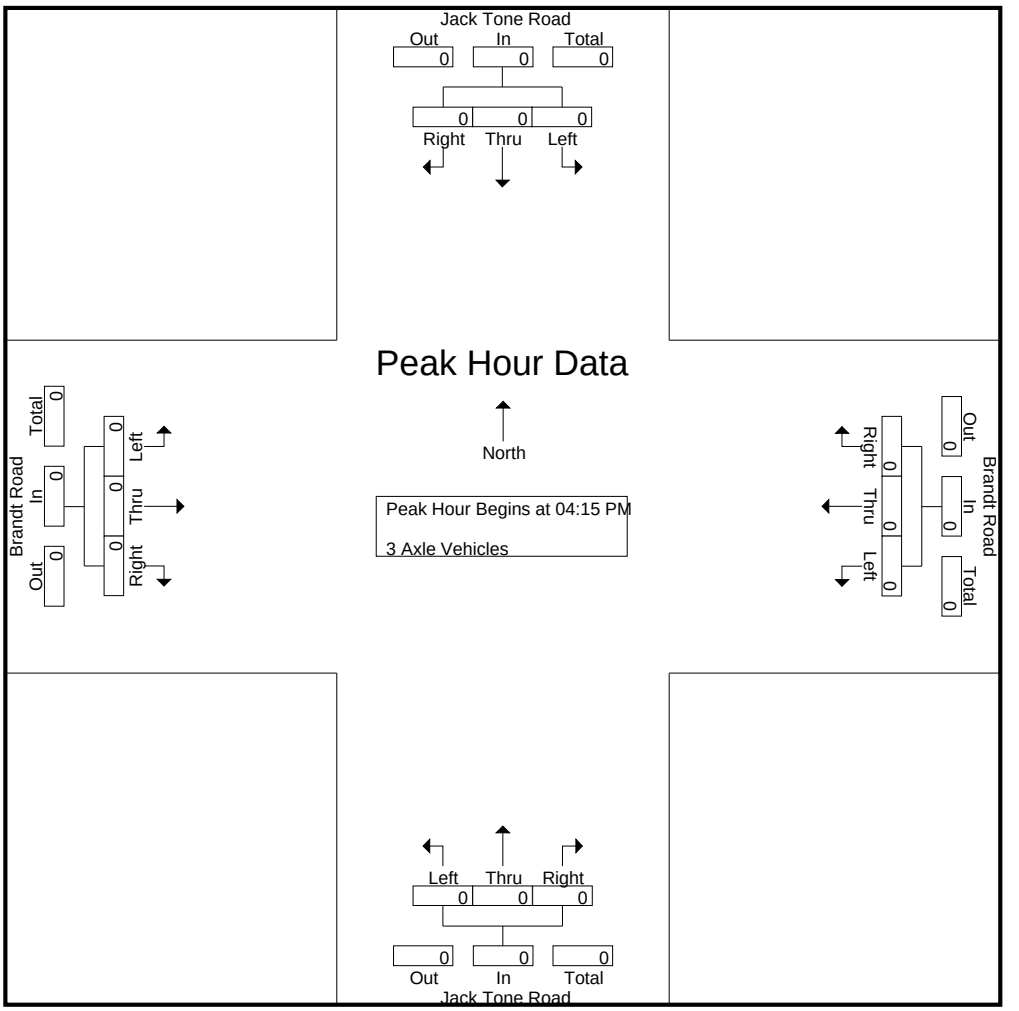

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Joaquin
N/S: Jack Tone Road
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Page No : 1

Groups Printed- 4+ Axle Trucks

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
04:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	2	0	0	0	0	0	1	1	2	0	0	1	1	5
05:00 PM	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
05:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	0	2	0	2	1	0	1	2	0	0	1	1	0	1	0	1	6
Grand Total	0	4	0	4	1	0	1	2	0	1	2	3	0	1	1	2	11
Apprch %	0	100	0		50	0	50		0	33.3	66.7		0	50	50		
Total %	0	36.4	0	36.4	9.1	0	9.1	18.2	0	9.1	18.2	27.3	0	9.1	9.1	18.2	

	Jack Tone Road Southbound				Brandt Road Westbound				Jack Tone Road Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	0	0	**1**	**1**	**3**
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	**1**	0	0	**1**	0	0	**1**	1	0	0	0	0	2
Total Volume	0	2	0	2	1	0	0	1	0	1	1	2	0	0	1	1	6
% App. Total	0	100	0		100	0	0		0	50	50		0	0	100		
PHF	.000	.500	.000	.500	.250	.000	.000	.250	.000	.250	.250	.500	.000	.000	.250	.250	.500

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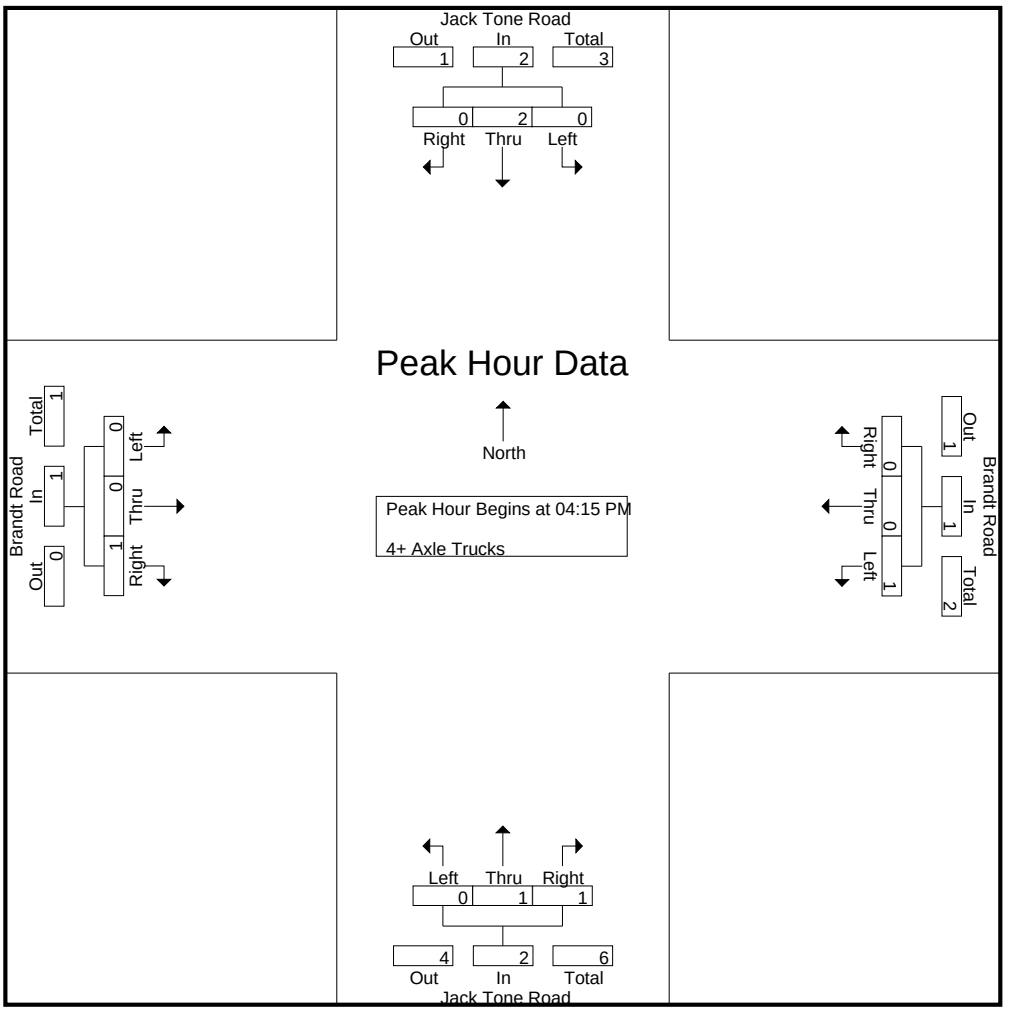
County of San Joaquin
N/S: Jack Tone Road
E/W: Brandt Road
Weather: Clear

File Name : 05_CSJ_Jack_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	0	0	**1**	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	**1**	0	0	**1**	0	0	**1**	1	0	0	0	0
Total Volume	0	2	0	2	1	0	0	1	0	1	1	2	0	0	1	1
% App. Total	0	100	0		100	0	0		0	50	50		0	0	100	
PHF	.000	.500	.000	.500	.250	.000	.000	.250	.000	.250	.250	.500	.000	.000	.250	.250

Location: County of San Joaquain
N/S: Jack Tone Road
E/W: Brandt Road

Date: 8/20/2024
Day: Tuesday

PEDESTRIANS

	North Leg Jack Tone Road	East Leg Brandt Road	South Leg Jack Tone Road	West Leg Brandt Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Jack Tone Road	East Leg Brandt Road	South Leg Jack Tone Road	West Leg Brandt Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: County of San Joaquain
N/S: Jack Tone Road
E/W: Brandt Road

Date: 8/20/2024
Day: Tuesday

BICYCLES

	Southbound Jack Tone Road			Westbound Brandt Road			Northbound Jack Tone Road			Eastbound Brandt Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	14	0	0	0	0	0	0	0	0	0	14
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	15	0	0	0	0	0	0	0	0	0	15

	Southbound Jack Tone Road			Westbound Brandt Road			Northbound Jack Tone Road			Eastbound Brandt Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	135	2	138	10	3	0	13	1	83	6	90	1	0	4	5	246
07:15 AM	0	136	3	139	19	0	5	24	1	84	3	88	1	0	2	3	254
07:30 AM	1	199	0	200	16	0	2	18	0	90	6	96	3	0	2	5	319
07:45 AM	2	149	4	155	30	1	7	38	4	94	3	101	1	0	0	1	295
Total	4	619	9	632	75	4	14	93	6	351	18	375	6	0	8	14	1114
08:00 AM	1	120	0	121	14	1	3	18	2	80	4	86	1	1	1	3	228
08:15 AM	2	120	3	125	6	0	4	10	4	100	7	111	1	0	2	3	249
08:30 AM	3	137	1	141	11	1	6	18	2	95	11	108	2	0	0	2	269
08:45 AM	1	101	1	103	14	0	3	17	2	78	11	91	4	0	0	4	215
Total	7	478	5	490	45	2	16	63	10	353	33	396	8	1	3	12	961
Grand Total	11	1097	14	1122	120	6	30	156	16	704	51	771	14	1	11	26	2075
Apprch %	1	97.8	1.2		76.9	3.8	19.2		2.1	91.3	6.6		53.8	3.8	42.3		
Total %	0.5	52.9	0.7	54.1	5.8	0.3	1.4	7.5	0.8	33.9	2.5	37.2	0.7	0	0.5	1.3	
Passenger Vehicles	10	1038	12	1060	117	6	28	151	12	640	46	698	14	1	5	20	1929
% Passenger Vehicles	90.9	94.6	85.7	94.5	97.5	100	93.3	96.8	75	90.9	90.2	90.5	100	100	45.5	76.9	93
Large 2 Axle Vehicles	1	20	1	22	1	0	1	2	0	22	4	26	0	0	1	1	51
% Large 2 Axle Vehicles	9.1	1.8	7.1	2	0.8	0	3.3	1.3	0	3.1	7.8	3.4	0	0	9.1	3.8	2.5
3 Axle Vehicles	0	3	0	3	0	0	0	0	0	9	0	9	0	0	0	0	12
% 3 Axle Vehicles	0	0.3	0	0.3	0	0	0	0	0	1.3	0	1.2	0	0	0	0	0.6
4+ Axle Trucks	0	36	1	37	2	0	1	3	4	33	1	38	0	0	5	5	83
% 4+ Axle Trucks	0	3.3	7.1	3.3	1.7	0	3.3	1.9	25	4.7	2	4.9	0	0	45.5	19.2	4

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	1	135	2	138	10	**3**	0	13	1	83	**6**	90	1	0	**4**	**5**	246
07:15 AM	0	136	3	139	19	0	5	24	1	84	3	88	1	0	2	3	254
07:30 AM	1	**199**	0	**200**	16	0	2	18	0	90	6	96	**3**	0	2	5	**319**
07:45 AM	**2**	149	**4**	155	**30**	1	**7**	**38**	**4**	**94**	3	**101**	1	0	0	1	295
Total Volume	4	619	9	632	75	4	14	93	6	351	18	375	6	0	8	14	1114
% App. Total	0.6	97.9	1.4		80.6	4.3	15.1		1.6	93.6	4.8		42.9	0	57.1		
PHF	.500	.778	.563	.790	.625	.333	.500	.612	.375	.934	.750	.928	.500	.000	.500	.700	.873

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
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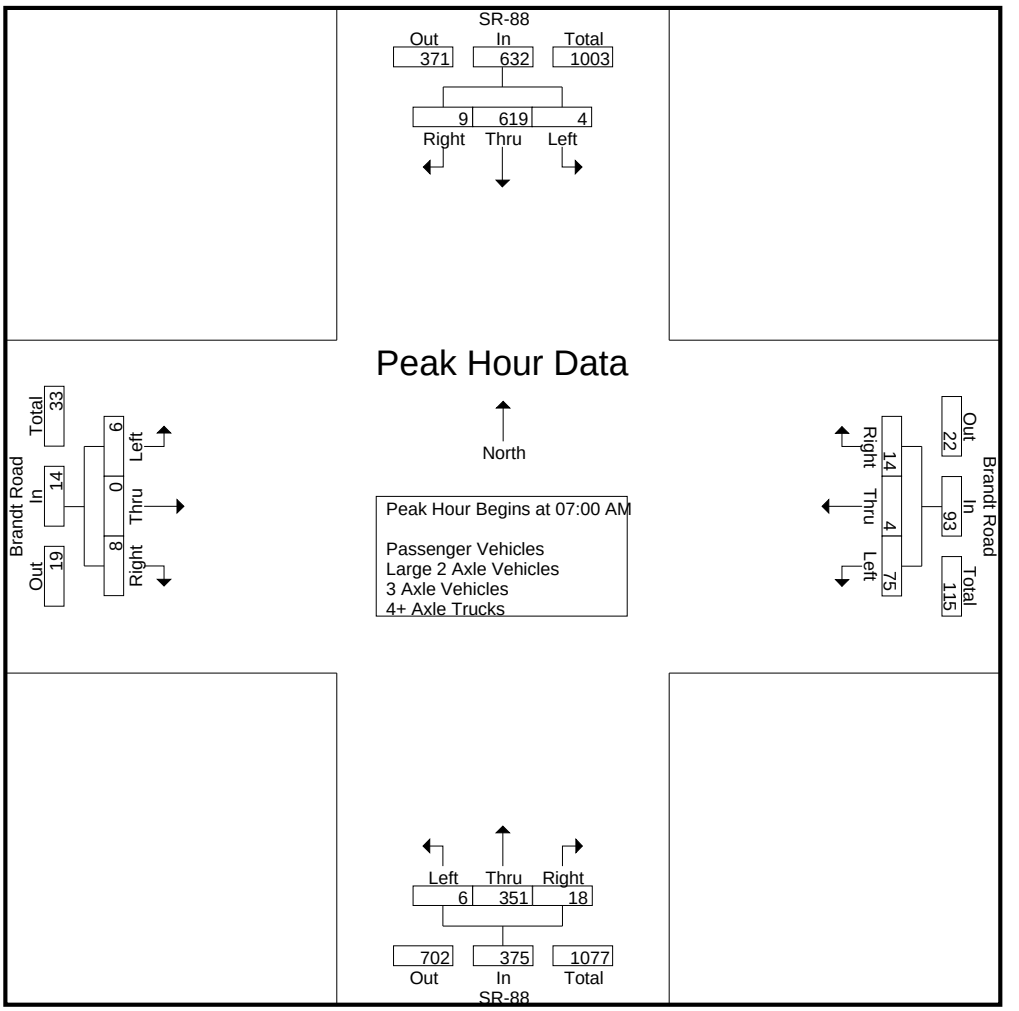

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:45 AM				07:00 AM			
+0 mins.	1	135	2	138	19	0	5	24	**4**	94	3	101	1	0	**4**	**5**
+15 mins.	0	136	3	139	16	0	2	18	2	80	4	86	1	0	2	3
+30 mins.	1	**199**	0	**200**	**30**	**1**	**7**	**38**	4	**100**	7	**111**	**3**	0	2	5
+45 mins.	**2**	149	**4**	155	14	1	3	18	2	95	**11**	108	1	0	0	1
Total Volume	4	619	9	632	79	2	17	98	12	369	25	406	6	0	8	14
% App. Total	0.6	97.9	1.4		80.6	2	17.3		3	90.9	6.2		42.9	0	57.1	
PHF	.500	.778	.563	.790	.658	.500	.607	.645	.750	.923	.568	.914	.500	.000	.500	.700

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	127	2	130	10	3	0	13	0	74	5	79	1	0	2	3	225
07:15 AM	0	130	3	133	19	0	4	23	1	72	3	76	1	0	0	1	233
07:30 AM	1	193	0	194	16	0	2	18	0	83	5	88	3	0	1	4	304
07:45 AM	1	136	3	140	28	1	6	35	3	84	3	90	1	0	0	1	266
Total	3	586	8	597	73	4	12	89	4	313	16	333	6	0	3	9	1028
08:00 AM	1	114	0	115	14	1	3	18	2	78	4	84	1	1	0	2	219
08:15 AM	2	116	3	121	6	0	4	10	3	92	7	102	1	0	2	3	236
08:30 AM	3	129	0	132	10	1	6	17	1	87	10	98	2	0	0	2	249
08:45 AM	1	93	1	95	14	0	3	17	2	70	9	81	4	0	0	4	197
Total	7	452	4	463	44	2	16	62	8	327	30	365	8	1	2	11	901
Grand Total	10	1038	12	1060	117	6	28	151	12	640	46	698	14	1	5	20	1929
Apprch %	0.9	97.9	1.1		77.5	4	18.5		1.7	91.7	6.6		70	5	25		
Total %	0.5	53.8	0.6	55	6.1	0.3	1.5	7.8	0.6	33.2	2.4	36.2	0.7	0.1	0.3	1	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**1**	127	2	130	10	**3**	0	13	0	74	**5**	79	1	0	**2**	3	225
07:15 AM	0	130	**3**	133	19	0	4	23	1	72	3	76	1	0	0	1	233
07:30 AM	1	**193**	0	**194**	16	0	2	18	0	83	5	88	**3**	0	1	**4**	**304**
07:45 AM	1	136	3	140	**28**	1	**6**	**35**	**3**	**84**	3	**90**	1	0	0	1	266
Total Volume	3	586	8	597	73	4	12	89	4	313	16	333	6	0	3	9	1028
% App. Total	0.5	98.2	1.3		82	4.5	13.5		1.2	94	4.8		66.7	0	33.3		
PHF	.750	.759	.667	.769	.652	.333	.500	.636	.333	.932	.800	.925	.500	.000	.375	.563	.845

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt AM
Site Code : 22524674
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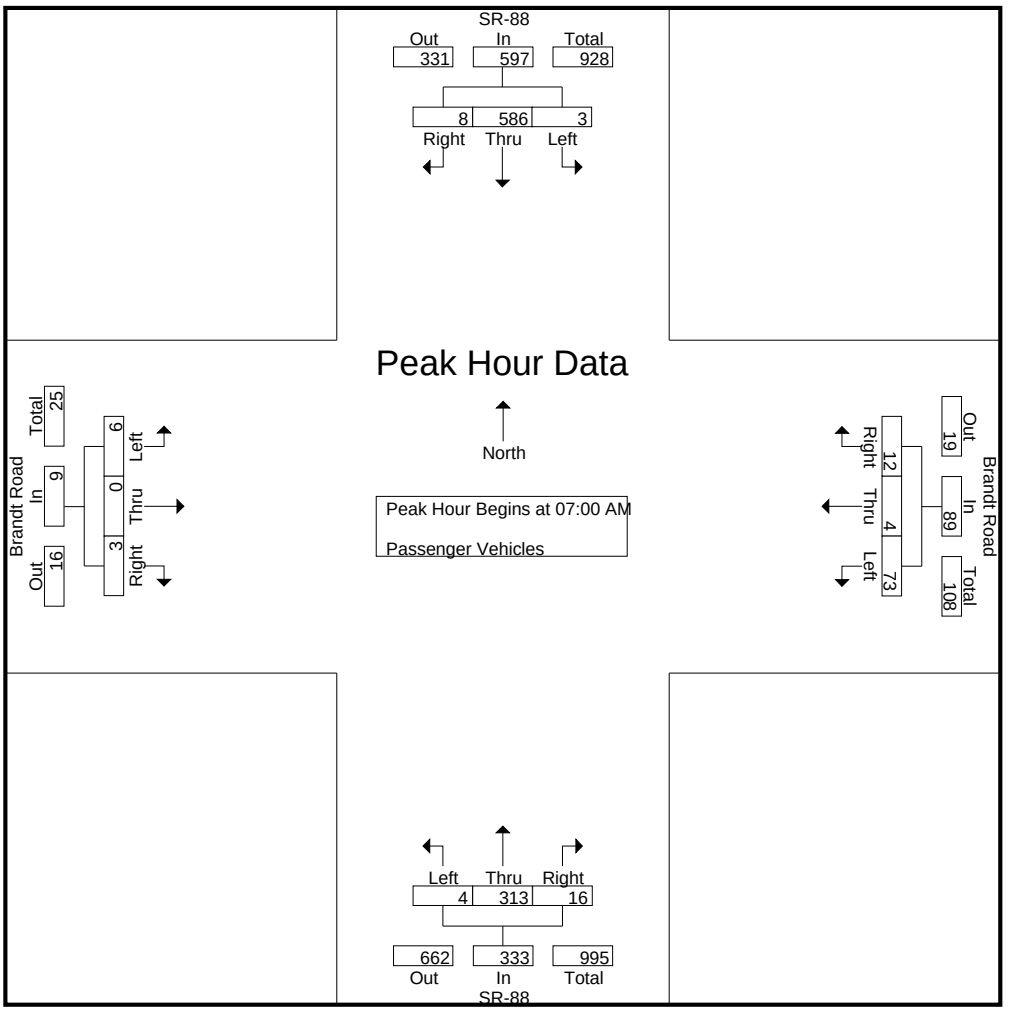

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**1**	127	2	130	10	**3**	0	13	0	74	**5**	79	1	0	**2**	3
+15 mins.	0	130	**3**	133	19	0	4	23	1	72	3	76	1	0	0	1
+30 mins.	1	**193**	0	**194**	16	0	2	18	0	83	5	88	**3**	0	1	**4**
+45 mins.	1	136	3	140	**28**	1	**6**	**35**	**3**	**84**	3	**90**	1	0	0	1
Total Volume	3	586	8	597	73	4	12	89	4	313	16	333	6	0	3	9
% App. Total	0.5	98.2	1.3		82	4.5	13.5		1.2	94	4.8		66.7	0	33.3	
PHF	.750	.759	.667	.769	.652	.333	.500	.636	.333	.932	.800	.925	.500	.000	.375	.563

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	1	1	4
07:15 AM	0	1	0	1	0	0	1	1	0	5	0	5	0	0	0	0	7
07:30 AM	0	3	0	3	0	0	0	0	0	2	1	3	0	0	0	0	6
07:45 AM	1	5	0	6	0	0	0	0	0	2	0	2	0	0	0	0	8
Total	1	11	0	12	0	0	1	1	0	10	1	11	0	0	1	1	25
08:00 AM	0	2	0	2	0	0	0	0	0	2	0	2	0	0	0	0	4
08:15 AM	0	1	0	1	0	0	0	0	0	5	0	5	0	0	0	0	6
08:30 AM	0	1	1	2	1	0	0	1	0	3	1	4	0	0	0	0	7
08:45 AM	0	5	0	5	0	0	0	0	0	2	2	4	0	0	0	0	9
Total	0	9	1	10	1	0	0	1	0	12	3	15	0	0	0	0	26
Grand Total	1	20	1	22	1	0	1	2	0	22	4	26	0	0	1	1	51
Apprch %	4.5	90.9	4.5		50	0	50		0	84.6	15.4		0	0	100		
Total %	2	39.2	2	43.1	2	0	2	3.9	0	43.1	7.8	51	0	0	2	2	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	**1**	**1**	4
07:15 AM	0	1	0	1	0	0	**1**	**1**	0	**5**	0	**5**	0	0	0	0	7
07:30 AM	0	3	0	3	0	0	0	0	0	2	**1**	3	0	0	0	0	6
07:45 AM	**1**	**5**	0	**6**	0	0	0	0	0	2	0	2	0	0	0	0	**8**
Total Volume	1	11	0	12	0	0	1	1	0	10	1	11	0	0	1	1	25
% App. Total	8.3	91.7	0		0	0	100		0	90.9	9.1		0	0	100		
PHF	.250	.550	.000	.500	.000	.000	.250	.250	.000	.500	.250	.550	.000	.000	.250	.250	.781

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E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt AM
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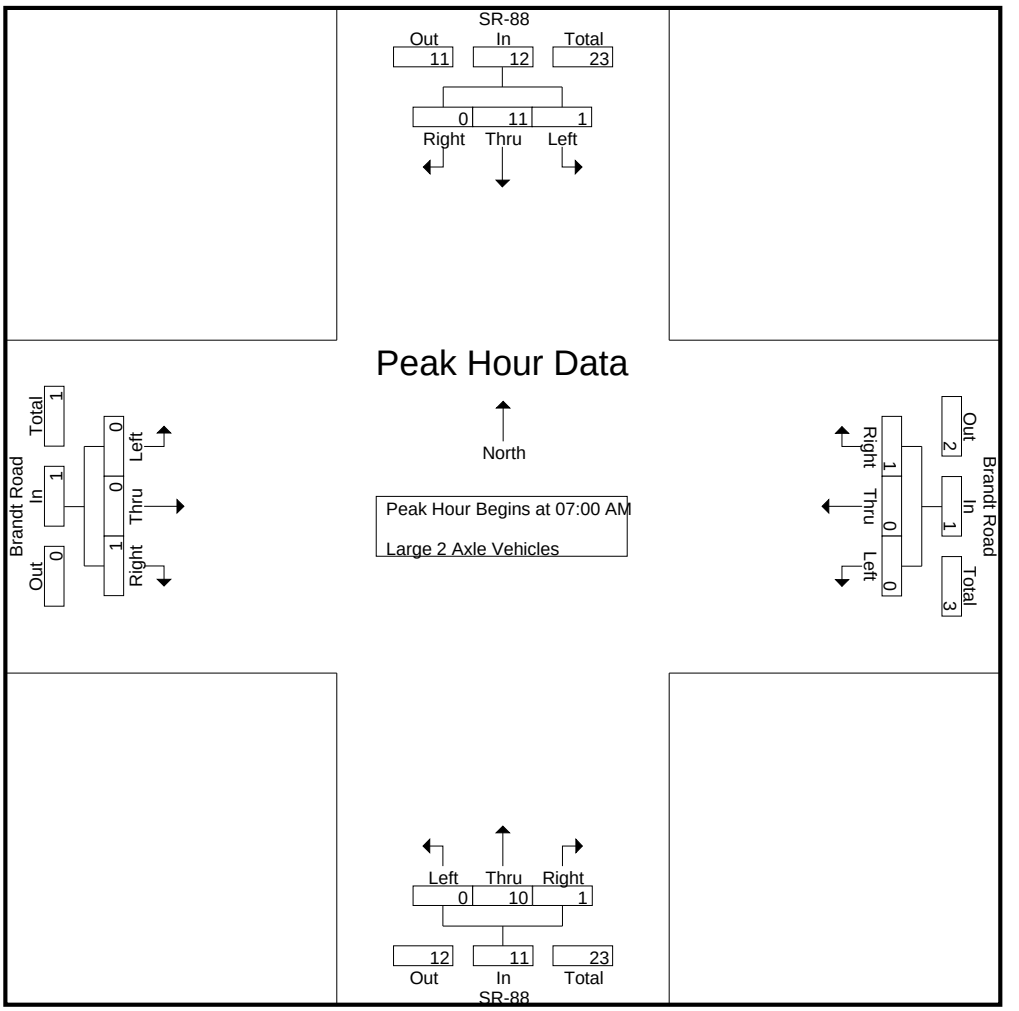

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	2	0	2	0	0	0	0	0	1	0	1	0	0	**1**	**1**
+15 mins.	0	1	0	1	0	0	**1**	**1**	0	**5**	0	**5**	0	0	0	0
+30 mins.	0	3	0	3	0	0	0	0	0	2	**1**	3	0	0	0	0
+45 mins.	**1**	**5**	0	**6**	0	0	0	0	0	2	0	2	0	0	0	0
Total Volume	1	11	0	12	0	0	1	1	0	10	1	11	0	0	1	1
% App. Total	8.3	91.7	0		0	0	100		0	90.9	9.1		0	0	100	
PHF	.250	.550	.000	.500	.000	.000	.250	.250	.000	.500	.250	.550	.000	.000	.250	.250

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Groups Printed- 3 Axle Vehicles

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
07:15 AM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
07:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
07:45 AM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
Total	0	3	0	3	0	0	0	0	0	9	0	9	0	0	0	0	12
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	3	0	3	0	0	0	0	0	9	0	9	0	0	0	0	12
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	25	0	25	0	0	0	0	0	75	0	75	0	0	0	0	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**1**	0	**1**	0	0	0	0	0	1	0	1	0	0	0	0	2
07:15 AM	0	1	0	1	0	0	0	0	0	**3**	0	**3**	0	0	0	0	**4**
07:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
07:45 AM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
Total Volume	0	3	0	3	0	0	0	0	0	9	0	9	0	0	0	0	12
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.000	.000	.750

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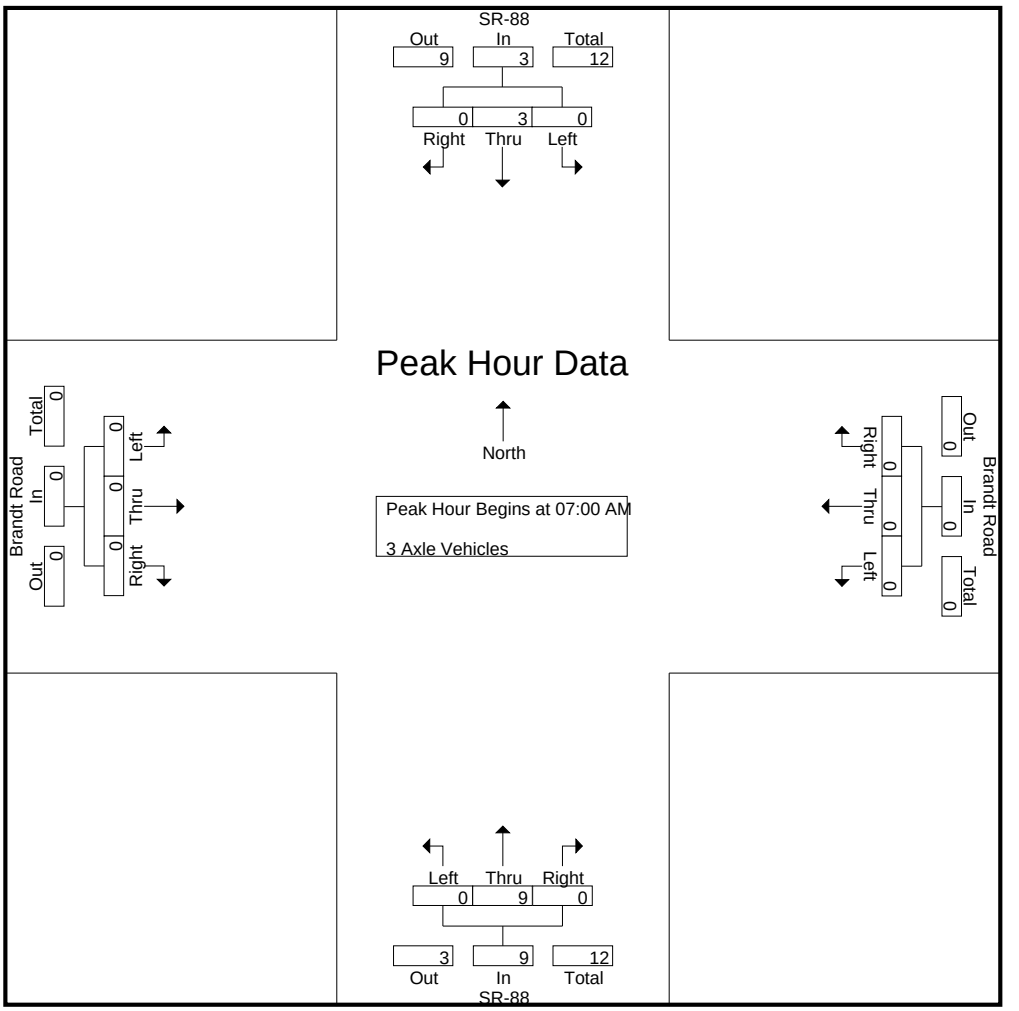

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	1	0	1	0	0	0	0
+15 mins.	0	1	0	1	0	0	0	0	0	**3**	0	**3**	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0
Total Volume	0	3	0	3	0	0	0	0	0	9	0	9	0	0	0	0
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	5	0	5	0	0	0	0	1	7	1	9	0	0	1	1	15
07:15 AM	0	4	0	4	0	0	0	0	0	4	0	4	0	0	2	2	10
07:30 AM	0	3	0	3	0	0	0	0	0	3	0	3	0	0	1	1	7
07:45 AM	0	7	1	8	2	0	1	3	1	5	0	6	0	0	0	0	17
Total	0	19	1	20	2	0	1	3	2	19	1	22	0	0	4	4	49
08:00 AM	0	4	0	4	0	0	0	0	0	0	0	0	0	0	1	1	5
08:15 AM	0	3	0	3	0	0	0	0	1	3	0	4	0	0	0	0	7
08:30 AM	0	7	0	7	0	0	0	0	1	5	0	6	0	0	0	0	13
08:45 AM	0	3	0	3	0	0	0	0	0	6	0	6	0	0	0	0	9
Total	0	17	0	17	0	0	0	0	2	14	0	16	0	0	1	1	34
Grand Total	0	36	1	37	2	0	1	3	4	33	1	38	0	0	5	5	83
Apprch %	0	97.3	2.7		66.7	0	33.3		10.5	86.8	2.6		0	0	100		
Total %	0	43.4	1.2	44.6	2.4	0	1.2	3.6	4.8	39.8	1.2	45.8	0	0	6	6	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	5	0	5	0	0	0	0	**1**	**7**	**1**	**9**	0	0	1	1	15
07:15 AM	0	4	0	4	0	0	0	0	0	4	0	4	0	0	**2**	**2**	10
07:30 AM	0	3	0	3	0	0	0	0	0	3	0	3	0	0	1	1	7
07:45 AM	0	**7**	**1**	**8**	**2**	0	**1**	**3**	1	5	0	6	0	0	0	0	**17**
Total Volume	0	19	1	20	2	0	1	3	2	19	1	22	0	0	4	4	49
% App. Total	0	95	5		66.7	0	33.3		9.1	86.4	4.5		0	0	100		
PHF	.000	.679	.250	.625	.250	.000	.250	.250	.500	.679	.250	.611	.000	.000	.500	.500	.721

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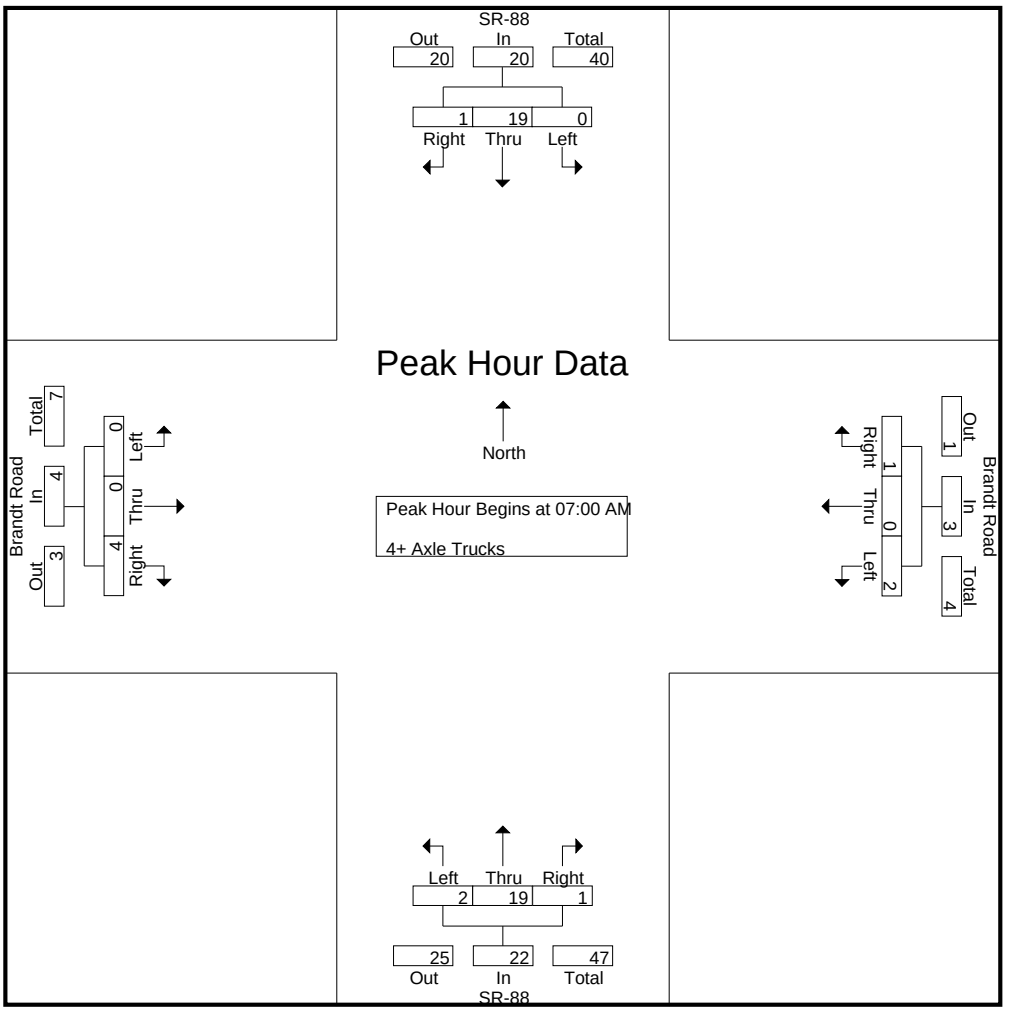

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	5	0	5	0	0	0	0	**1**	**7**	**1**	**9**	0	0	1	1
+15 mins.	0	4	0	4	0	0	0	0	0	4	0	4	0	0	**2**	**2**
+30 mins.	0	3	0	3	0	0	0	0	0	3	0	3	0	0	1	1
+45 mins.	0	**7**	**1**	**8**	**2**	0	**1**	**3**	1	5	0	6	0	0	0	0
Total Volume	0	19	1	20	2	0	1	3	2	19	1	22	0	0	4	4
% App. Total	0	95	5		66.7	0	33.3		9.1	86.4	4.5		0	0	100	
PHF	.000	.679	.250	.625	.250	.000	.250	.250	.500	.679	.250	.611	.000	.000	.500	.500

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County of San Joaquin
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	5	89	3	97	5	0	9	14	0	154	14	168	2	2	7	11	290
04:15 PM	5	128	4	137	5	2	4	11	2	244	10	256	4	1	2	7	411
04:30 PM	2	142	2	146	6	0	6	12	0	186	12	198	6	0	4	10	366
04:45 PM	3	145	1	149	2	1	3	6	2	172	13	187	3	2	8	13	355
Total	15	504	10	529	18	3	22	43	4	756	49	809	15	5	21	41	1422
05:00 PM	3	128	3	134	7	0	3	10	0	165	20	185	1	1	3	5	334
05:15 PM	2	122	0	124	8	0	1	9	0	173	12	185	1	0	3	4	322
05:30 PM	2	95	2	99	8	1	5	14	0	165	13	178	3	0	2	5	296
05:45 PM	2	80	1	83	5	0	7	12	0	150	13	163	1	0	2	3	261
Total	9	425	6	440	28	1	16	45	0	653	58	711	6	1	10	17	1213
Grand Total	24	929	16	969	46	4	38	88	4	1409	107	1520	21	6	31	58	2635
Apprch %	2.5	95.9	1.7		52.3	4.5	43.2		0.3	92.7	7		36.2	10.3	53.4		
Total %	0.9	35.3	0.6	36.8	1.7	0.2	1.4	3.3	0.2	53.5	4.1	57.7	0.8	0.2	1.2	2.2	
Passenger Vehicles	23	897	15	935	46	4	37	87	4	1378	105	1487	21	5	30	56	2565
% Passenger Vehicles	95.8	96.6	93.8	96.5	100	100	97.4	98.9	100	97.8	98.1	97.8	100	83.3	96.8	96.6	97.3
Large 2 Axle Vehicles	1	18	0	19	0	0	1	1	0	15	1	16	0	0	0	0	36
% Large 2 Axle Vehicles	4.2	1.9	0	2	0	0	2.6	1.1	0	1.1	0.9	1.1	0	0	0	0	1.4
3 Axle Vehicles	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
% 3 Axle Vehicles	0	0.1	0	0.1	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0.1
4+ Axle Trucks	0	13	1	14	0	0	0	0	0	15	1	16	0	1	1	2	32
% 4+ Axle Trucks	0	1.4	6.2	1.4	0	0	0	0	0	1.1	0.9	1.1	0	16.7	3.2	3.4	1.2

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**5**	128	**4**	137	5	**2**	4	11	**2**	**244**	10	**256**	4	1	2	7	**411**
04:30 PM	2	142	2	146	6	0	**6**	**12**	0	186	12	198	**6**	0	4	10	366
04:45 PM	3	**145**	1	**149**	2	1	3	6	2	172	13	187	3	**2**	**8**	**13**	355
05:00 PM	3	128	3	134	**7**	0	3	10	0	165	**20**	185	1	1	3	5	334
Total Volume	13	543	10	566	20	3	16	39	4	767	55	826	14	4	17	35	1466
% App. Total	2.3	95.9	1.8		51.3	7.7	41		0.5	92.9	6.7		40	11.4	48.6		
PHF	.650	.936	.625	.950	.714	.375	.667	.813	.500	.786	.688	.807	.583	.500	.531	.673	.892

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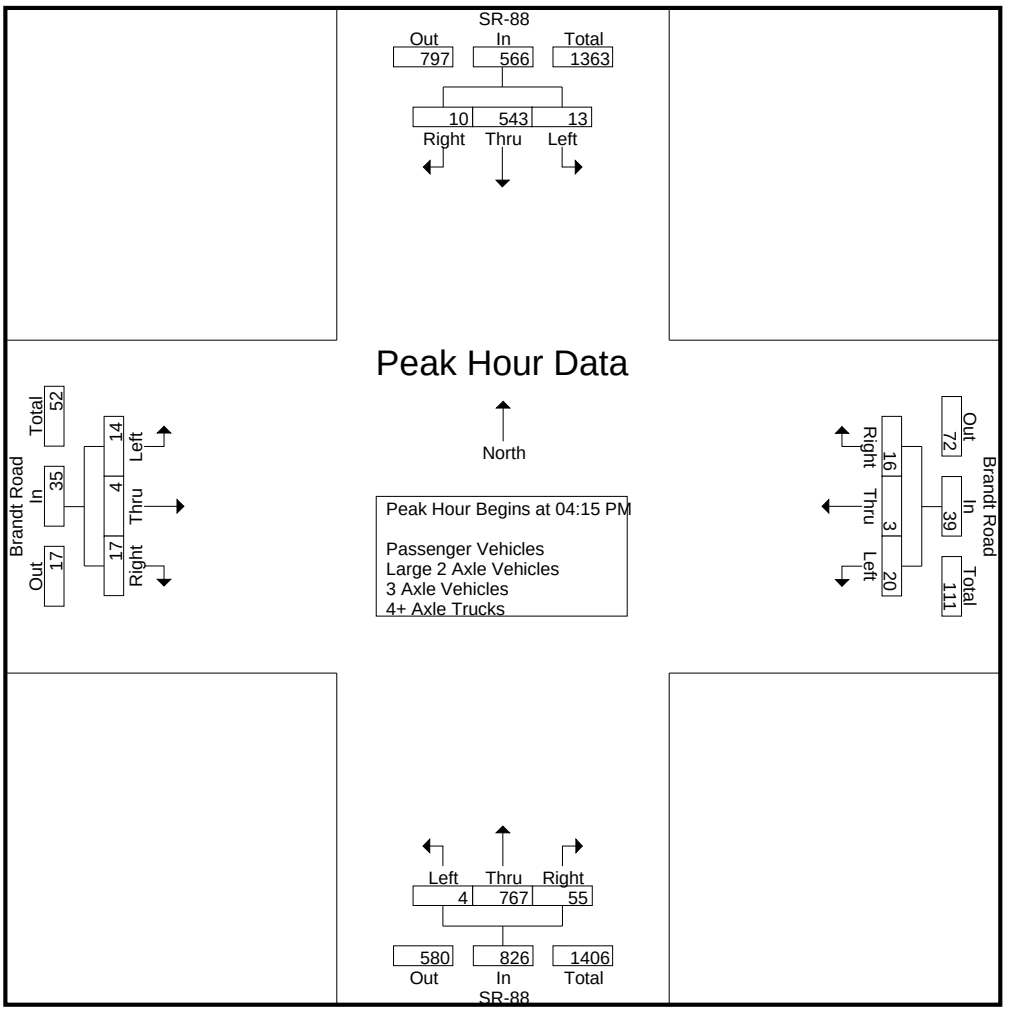

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				05:00 PM				04:15 PM				04:00 PM			
+0 mins.	**5**	128	**4**	137	7	0	3	10	**2**	**244**	10	**256**	2	**2**	7	11
+15 mins.	2	142	2	146	**8**	0	1	9	0	186	12	198	4	1	2	7
+30 mins.	3	**145**	1	**149**	8	**1**	5	**14**	2	172	13	187	**6**	0	4	10
+45 mins.	3	128	3	134	5	0	**7**	12	0	165	**20**	185	3	2	**8**	**13**
Total Volume	13	543	10	566	28	1	16	45	4	767	55	826	15	5	21	41
% App. Total	2.3	95.9	1.8		62.2	2.2	35.6		0.5	92.9	6.7		36.6	12.2	51.2	
PHF	.650	.936	.625	.950	.875	.250	.571	.804	.500	.786	.688	.807	.625	.625	.656	.788

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Groups Printed- Passenger Vehicles

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	5	87	3	95	5	0	8	13	0	149	13	162	2	1	7	10	280
04:15 PM	5	120	4	129	5	2	4	11	2	235	10	247	4	1	2	7	394
04:30 PM	2	136	2	140	6	0	6	12	0	185	12	197	6	0	4	10	359
04:45 PM	3	139	1	143	2	1	3	6	2	167	13	182	3	2	7	12	343
Total	15	482	10	507	18	3	21	42	4	736	48	788	15	4	20	39	1376
05:00 PM	2	127	2	131	7	0	3	10	0	163	20	183	1	1	3	5	329
05:15 PM	2	117	0	119	8	0	1	9	0	169	12	181	1	0	3	4	313
05:30 PM	2	92	2	96	8	1	5	14	0	162	13	175	3	0	2	5	290
05:45 PM	2	79	1	82	5	0	7	12	0	148	12	160	1	0	2	3	257
Total	8	415	5	428	28	1	16	45	0	642	57	699	6	1	10	17	1189
Grand Total	23	897	15	935	46	4	37	87	4	1378	105	1487	21	5	30	56	2565
Apprch %	2.5	95.9	1.6		52.9	4.6	42.5		0.3	92.7	7.1		37.5	8.9	53.6		
Total %	0.9	35	0.6	36.5	1.8	0.2	1.4	3.4	0.2	53.7	4.1	58	0.8	0.2	1.2	2.2	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**5**	120	**4**	129	5	**2**	4	11	**2**	**235**	10	**247**	4	1	2	7	**394**
04:30 PM	2	136	2	140	6	0	**6**	**12**	0	185	12	197	**6**	0	4	10	359
04:45 PM	3	**139**	1	**143**	2	1	3	6	2	167	13	182	3	**2**	**7**	**12**	343
05:00 PM	2	127	2	131	**7**	0	3	10	0	163	**20**	183	1	1	3	5	329
Total Volume	12	522	9	543	20	3	16	39	4	750	55	809	14	4	16	34	1425
% App. Total	2.2	96.1	1.7		51.3	7.7	41		0.5	92.7	6.8		41.2	11.8	47.1		
PHF	.600	.939	.563	.949	.714	.375	.667	.813	.500	.798	.688	.819	.583	.500	.571	.708	.904

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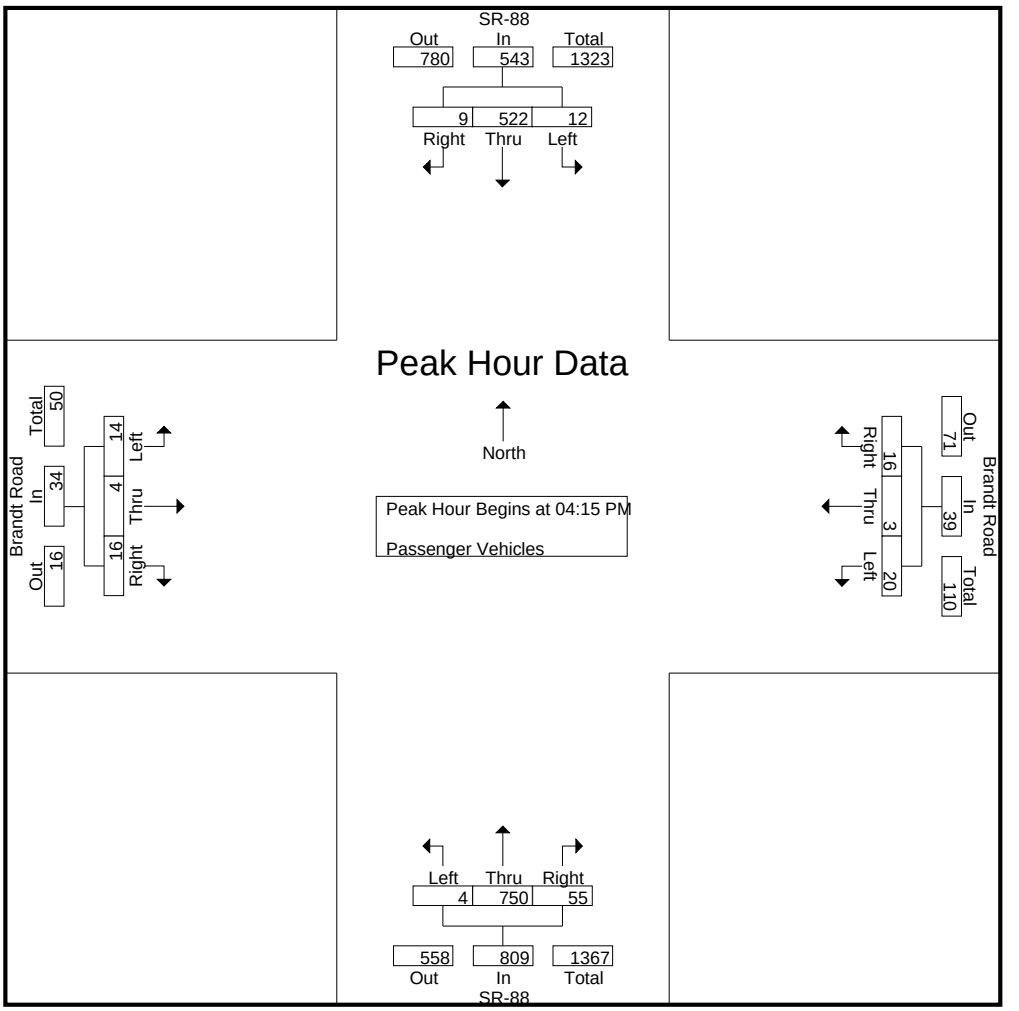

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	**5**	120	**4**	129	5	**2**	4	11	**2**	**235**	10	**247**	4	1	2	7
+15 mins.	2	136	2	140	6	0	**6**	**12**	0	185	12	197	**6**	0	4	10
+30 mins.	3	**139**	1	**143**	2	1	3	6	2	167	13	182	3	**2**	**7**	**12**
+45 mins.	2	127	2	131	**7**	0	3	10	0	163	**20**	183	1	1	3	5
Total Volume	12	522	9	543	20	3	16	39	4	750	55	809	14	4	16	34
% App. Total	2.2	96.1	1.7		51.3	7.7	41		0.5	92.7	6.8		41.2	11.8	47.1	
PHF	.600	.939	.563	.949	.714	.375	.667	.813	.500	.798	.688	.819	.583	.500	.571	.708

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	0	0	1	1	0	3	1	4	0	0	0	0	6
04:15 PM	0	4	0	4	0	0	0	0	0	4	0	4	0	0	0	0	8
04:30 PM	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
04:45 PM	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0	5
Total	0	12	0	12	0	0	1	1	0	9	1	10	0	0	0	0	23
05:00 PM	1	1	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
05:15 PM	0	3	0	3	0	0	0	0	0	3	0	3	0	0	0	0	6
05:30 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
05:45 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Total	1	6	0	7	0	0	0	0	0	6	0	6	0	0	0	0	13
Grand Total	1	18	0	19	0	0	1	1	0	15	1	16	0	0	0	0	36
Apprch %	5.3	94.7	0		0	0	100		0	93.8	6.2		0	0	0		
Total %	2.8	50	0	52.8	0	0	2.8	2.8	0	41.7	2.8	44.4	0	0	0	0	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**4**	0	**4**	0	0	0	0	0	**4**	0	**4**	0	0	0	0	**8**
04:30 PM	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
04:45 PM	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0	5
05:00 PM	**1**	1	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
Total Volume	1	12	0	13	0	0	0	0	0	7	0	7	0	0	0	0	20
% App. Total	7.7	92.3	0		0	0	0		0	100	0		0	0	0		
PHF	.250	.750	.000	.813	.000	.000	.000	.000	.000	.438	.000	.438	.000	.000	.000	.000	.625

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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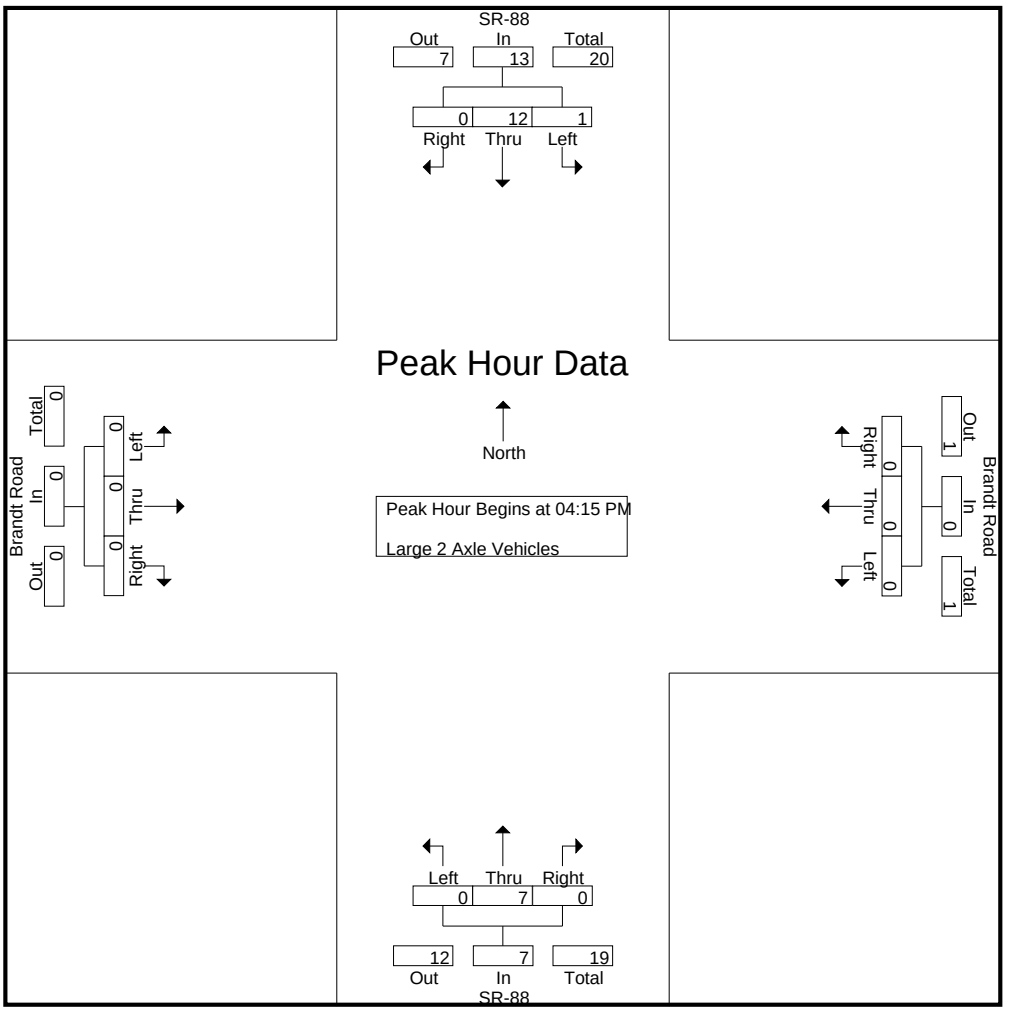

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	**4**	0	**4**	0	0	0	0	0	**4**	0	**4**	0	0	0	0
+15 mins.	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0
+45 mins.	**1**	1	0	2	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	1	12	0	13	0	0	0	0	0	7	0	7	0	0	0	0
% App. Total	7.7	92.3	0		0	0	0		0	100	0		0	0	0	
PHF	.250	.750	.000	.813	.000	.000	.000	.000	.000	.438	.000	.438	.000	.000	.000	.000

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 3 Axle Vehicles

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	50	0	50	0	0	0	0	0	50	0	50	0	0	0	0	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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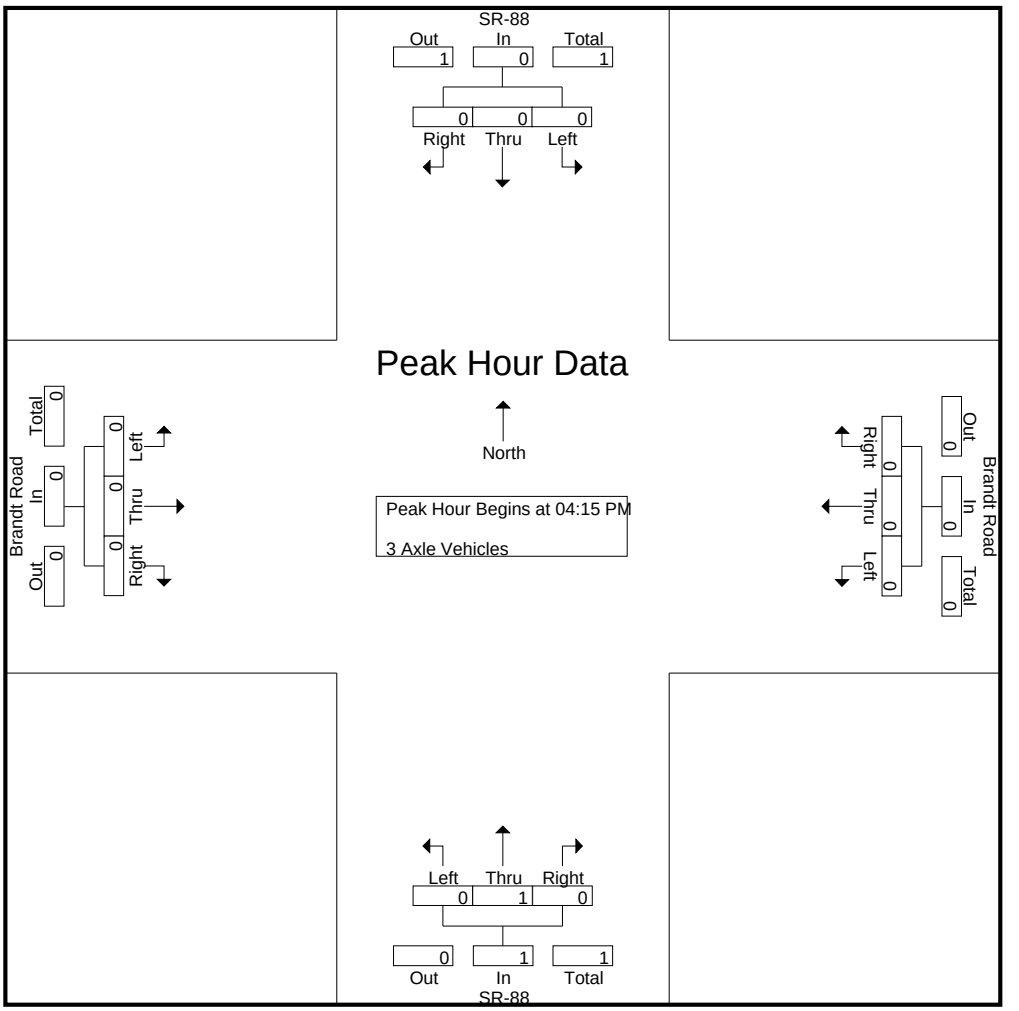

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 4+ Axle Trucks

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	0	0	0	0	0	2	0	2	0	1	0	1	4
04:15 PM	0	4	0	4	0	0	0	0	0	4	0	4	0	0	0	0	8
04:30 PM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
04:45 PM	0	3	0	3	0	0	0	0	0	3	0	3	0	0	1	1	7
Total	0	10	0	10	0	0	0	0	0	10	0	10	0	1	1	2	22
05:00 PM	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	2
05:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
05:30 PM	0	2	0	2	0	0	0	0	0	2	0	2	0	0	0	0	4
05:45 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	2
Total	0	3	1	4	0	0	0	0	0	5	1	6	0	0	0	0	10
Grand Total	0	13	1	14	0	0	0	0	0	15	1	16	0	1	1	2	32
Apprch %	0	92.9	7.1		0	0	0		0	93.8	6.2		0	50	50		
Total %	0	40.6	3.1	43.8	0	0	0	0	0	46.9	3.1	50	0	3.1	3.1	6.2	

	SR-88 Southbound				Brandt Road Westbound				SR-88 Northbound				Brandt Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**4**	0	**4**	0	0	0	0	0	**4**	0	**4**	0	0	0	0	**8**
04:30 PM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
04:45 PM	0	3	0	3	0	0	0	0	0	3	0	3	0	0	**1**	**1**	7
05:00 PM	0	0	**1**	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Total Volume	0	9	1	10	0	0	0	0	0	9	0	9	0	0	1	1	20
% App. Total	0	90	10		0	0	0		0	100	0		0	0	100		
PHF	.000	.563	.250	.625	.000	.000	.000	.000	.000	.563	.000	.563	.000	.000	.250	.250	.625

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County of San Joaquin
N/S: SR-88
E/W: Brandt Road
Weather: Clear

File Name : 06_CSJ_SR88_Brandt PM
Site Code : 22524674
Start Date : 8/20/2024
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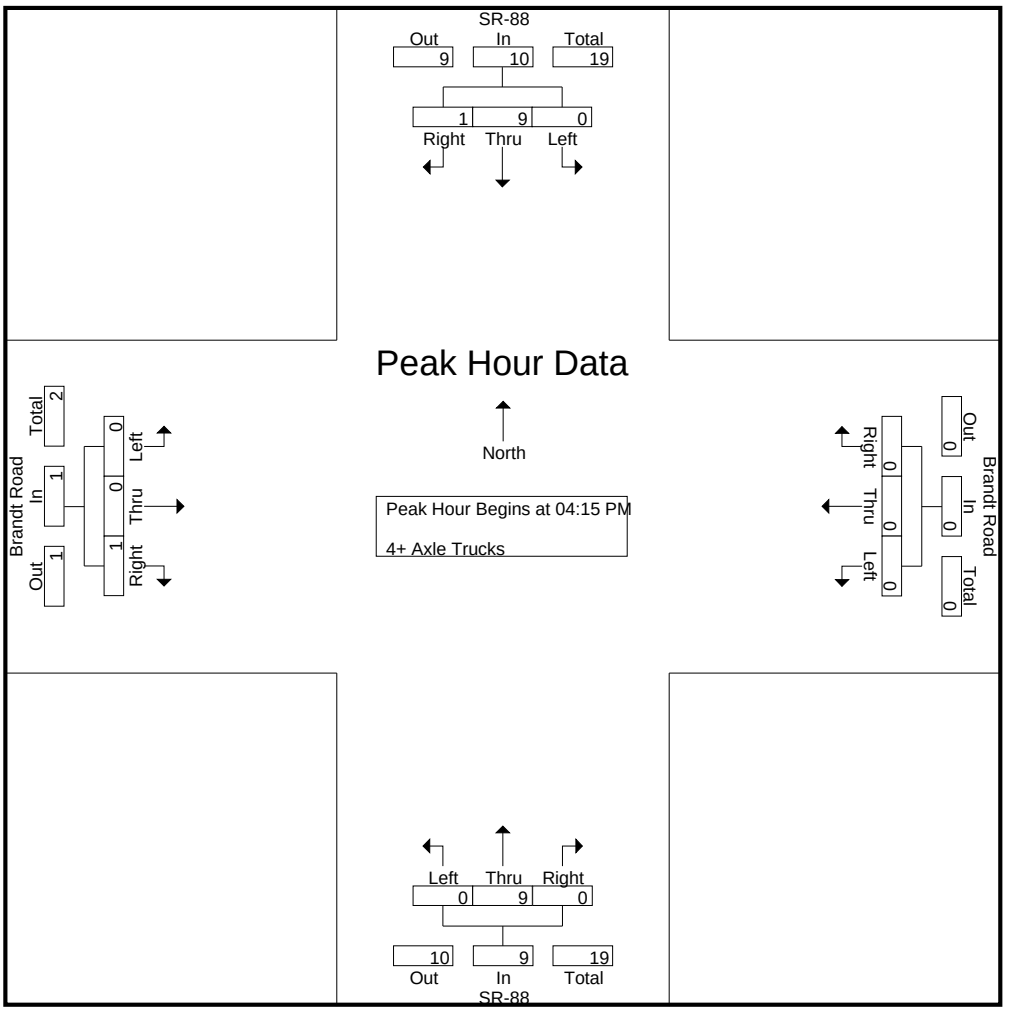

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	**4**	0	**4**	0	0	0	0	0	**4**	0	**4**	0	0	0	0
+15 mins.	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0
+30 mins.	0	3	0	3	0	0	0	0	0	3	0	3	0	0	**1**	**1**
+45 mins.	0	0	**1**	1	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	0	9	1	10	0	0	0	0	0	9	0	9	0	0	1	1
% App. Total	0	90	10		0	0	0		0	100	0		0	0	100	
PHF	.000	.563	.250	.625	.000	.000	.000	.000	.000	.563	.000	.563	.000	.000	.250	.250

Location: County of San Joaquain
N/S: SR-88
E/W: Brandt Road

Date: 8/20/2024
Day: Tuesday

PEDESTRIANS

	North Leg SR-88	East Leg Brandt Road	South Leg SR-88	West Leg Brandt Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	1	0	1
8:15 AM	0	0	1	1	2
8:30 AM	1	0	0	1	2
8:45 AM	1	0	1	0	2
TOTAL VOLUMES:	2	0	3	2	7

	North Leg SR-88	East Leg Brandt Road	South Leg SR-88	West Leg Brandt Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: County of San Joaquain
N/S: SR-88
E/W: Brandt Road

Date: 8/20/2024
Day: Tuesday

BICYCLES

	Southbound SR-88			Westbound Brandt Road			Northbound SR-88			Eastbound Brandt Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound SR-88			Westbound Brandt Road			Northbound SR-88			Eastbound Brandt Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	6	6	102	2	104	2	69	71	181
07:15 AM	0	1	1	149	2	151	0	76	76	228
07:30 AM	0	4	4	142	0	142	2	78	80	226
07:45 AM	0	3	3	120	0	120	1	64	65	188
Total	0	14	14	513	4	517	5	287	292	823
08:00 AM	3	4	7	101	0	101	2	69	71	179
08:15 AM	2	3	5	93	0	93	3	65	68	166
08:30 AM	1	3	4	112	1	113	4	75	79	196
08:45 AM	0	4	4	97	1	98	3	67	70	172
Total	6	14	20	403	2	405	12	276	288	713
Grand Total	6	28	34	916	6	922	17	563	580	1536
Apprch %	17.6	82.4		99.3	0.7		2.9	97.1		
Total %	0.4	1.8	2.2	59.6	0.4	60	1.1	36.7	37.8	
Passenger Vehicles	6	27	33	859	6	865	15	507	522	1420
% Passenger Vehicles	100	96.4	97.1	93.8	100	93.8	88.2	90.1	90	92.4
Large 2 Axle Vehicles	0	0	0	15	0	15	1	16	17	32
% Large 2 Axle Vehicles	0	0	0	1.6	0	1.6	5.9	2.8	2.9	2.1
3 Axle Vehicles	0	0	0	5	0	5	0	8	8	13
% 3 Axle Vehicles	0	0	0	0.5	0	0.5	0	1.4	1.4	0.8
4+ Axle Trucks	0	1	1	37	0	37	1	32	33	71
% 4+ Axle Trucks	0	3.6	2.9	4	0	4	5.9	5.7	5.7	4.6

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	**6**	**6**	102	**2**	104	**2**	69	71	181
07:15 AM	0	1	1	**149**	2	**151**	0	76	76	**228**
07:30 AM	0	4	4	142	0	142	2	**78**	**80**	226
07:45 AM	0	3	3	120	0	120	1	64	65	188
Total Volume	0	14	14	513	4	517	5	287	292	823
% App. Total	0	100		99.2	0.8		1.7	98.3		
PHF	.000	.583	.583	.861	.500	.856	.625	.920	.913	.902

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County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 AM
Site Code : 22524674
Start Date : 8/20/2024
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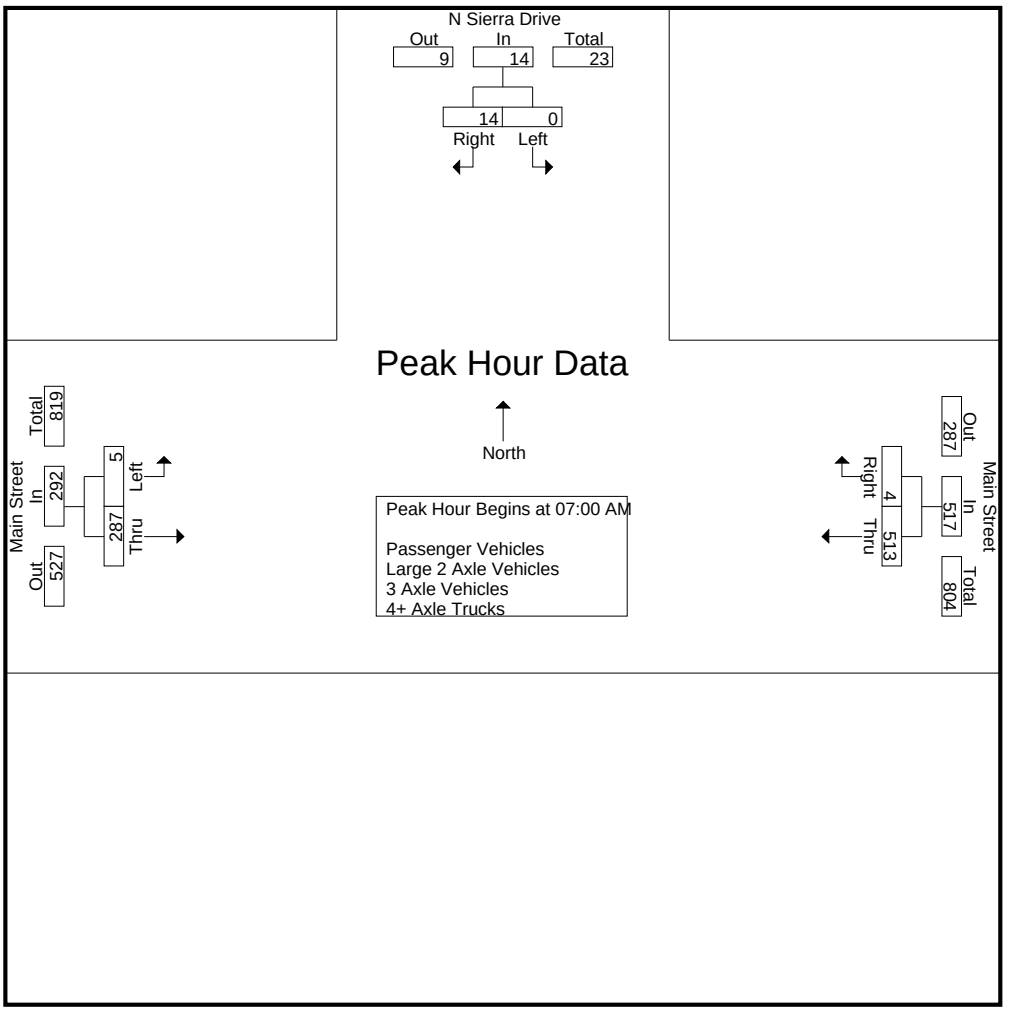

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:00 AM		
+0 mins.	**3**	**4**	**7**	102	**2**	104	**2**	69	71
+15 mins.	2	3	5	**149**	2	**151**	0	76	76
+30 mins.	1	3	4	142	0	142	2	**78**	**80**
+45 mins.	0	4	4	120	0	120	1	64	65
Total Volume	6	14	20	513	4	517	5	287	292
% App. Total	30	70		99.2	0.8		1.7	98.3	
PHF	.500	.875	.714	.861	.500	.856	.625	.920	.913

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County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 AM
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Groups Printed- Passenger Vehicles

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	6	6	94	2	96	2	61	63	165
07:15 AM	0	1	1	144	2	146	0	64	64	211
07:30 AM	0	3	3	137	0	137	2	67	69	209
07:45 AM	0	3	3	111	0	111	1	60	61	175
Total	0	13	13	486	4	490	5	252	257	760
08:00 AM	3	4	7	92	0	92	2	65	67	166
08:15 AM	2	3	5	88	0	88	3	61	64	157
08:30 AM	1	3	4	103	1	104	2	69	71	179
08:45 AM	0	4	4	90	1	91	3	60	63	158
Total	6	14	20	373	2	375	10	255	265	660
Grand Total	6	27	33	859	6	865	15	507	522	1420
Apprch %	18.2	81.8		99.3	0.7		2.9	97.1		
Total %	0.4	1.9	2.3	60.5	0.4	60.9	1.1	35.7	36.8	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	**6**	**6**	94	**2**	96	**2**	61	63	165
07:15 AM	0	1	1	**144**	2	**146**	0	64	64	**211**
07:30 AM	0	3	3	137	0	137	2	**67**	**69**	209
07:45 AM	0	3	3	111	0	111	1	60	61	175
Total Volume	0	13	13	486	4	490	5	252	257	760
% App. Total	0	100		99.2	0.8		1.9	98.1		
PHF	.000	.542	.542	.844	.500	.839	.625	.940	.931	.900

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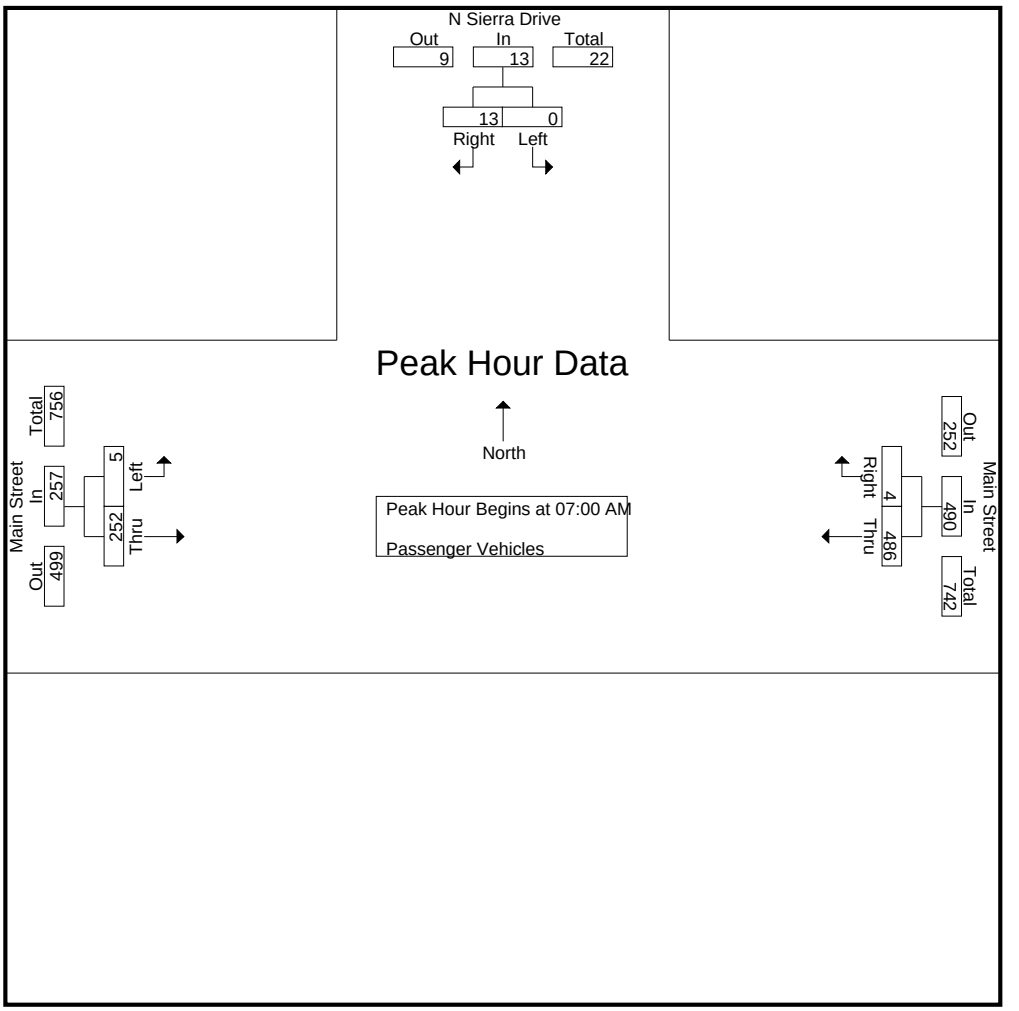

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	**6**	**6**	94	**2**	96	**2**	61	63
+15 mins.	0	1	1	**144**	2	**146**	0	64	64
+30 mins.	0	3	3	137	0	137	2	**67**	**69**
+45 mins.	0	3	3	111	0	111	1	60	61
Total Volume	0	13	13	486	4	490	5	252	257
% App. Total	0	100		99.2	0.8		1.9	98.1	
PHF	.000	.542	.542	.844	.500	.839	.625	.940	.931

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Groups Printed- Large 2 Axle Vehicles

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	1	0	1	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	6	6	6
07:30 AM	0	0	0	2	0	2	0	2	2	4
07:45 AM	0	0	0	2	0	2	0	3	3	5
Total	0	0	0	5	0	5	0	11	11	16
08:00 AM	0	0	0	3	0	3	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	3	3	3
08:30 AM	0	0	0	3	0	3	1	1	2	5
08:45 AM	0	0	0	4	0	4	0	1	1	5
Total	0	0	0	10	0	10	1	5	6	16
Grand Total	0	0	0	15	0	15	1	16	17	32
Apprch %	0	0		100	0		5.9	94.1		
Total %	0	0	0	46.9	0	46.9	3.1	50	53.1	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	1	0	1	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	**6**	**6**	**6**
07:30 AM	0	0	0	**2**	0	**2**	0	2	2	4
07:45 AM	0	0	0	2	0	2	0	3	3	5
Total Volume	0	0	0	5	0	5	0	11	11	16
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.625	.000	.625	.000	.458	.458	.667

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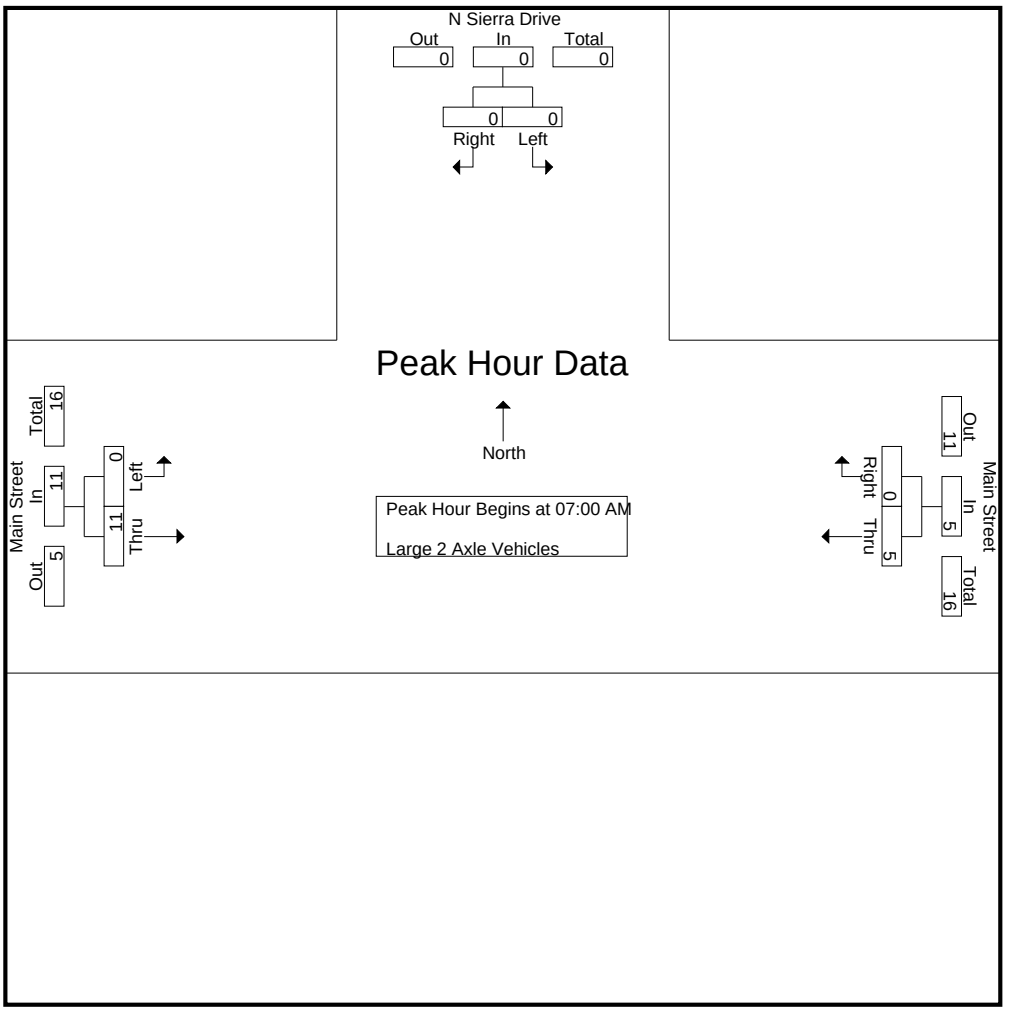

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	1	0	1	0	0	0
+15 mins.	0	0	0	0	0	0	0	**6**	**6**
+30 mins.	0	0	0	**2**	0	**2**	0	2	2
+45 mins.	0	0	0	2	0	2	0	3	3
Total Volume	0	0	0	5	0	5	0	11	11
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.625	.000	.625	.000	.458	.458

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Groups Printed- 3 Axle Vehicles

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	1	0	1	0	1	1	2
07:15 AM	0	0	0	1	0	1	0	3	3	4
07:30 AM	0	0	0	0	0	0	0	4	4	4
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	2	0	8	8	10
08:00 AM	0	0	0	1	0	1	0	0	0	1
08:15 AM	0	0	0	1	0	1	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	3	0	3	0	0	0	3
Grand Total	0	0	0	5	0	5	0	8	8	13
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	38.5	0	38.5	0	61.5	61.5	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	**1**	0	**1**	0	1	1	2
07:15 AM	0	0	0	1	0	1	0	3	3	**4**
07:30 AM	0	0	0	0	0	0	0	**4**	**4**	4
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	2	0	8	8	10
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.500	.000	.500	.000	.500	.500	.625

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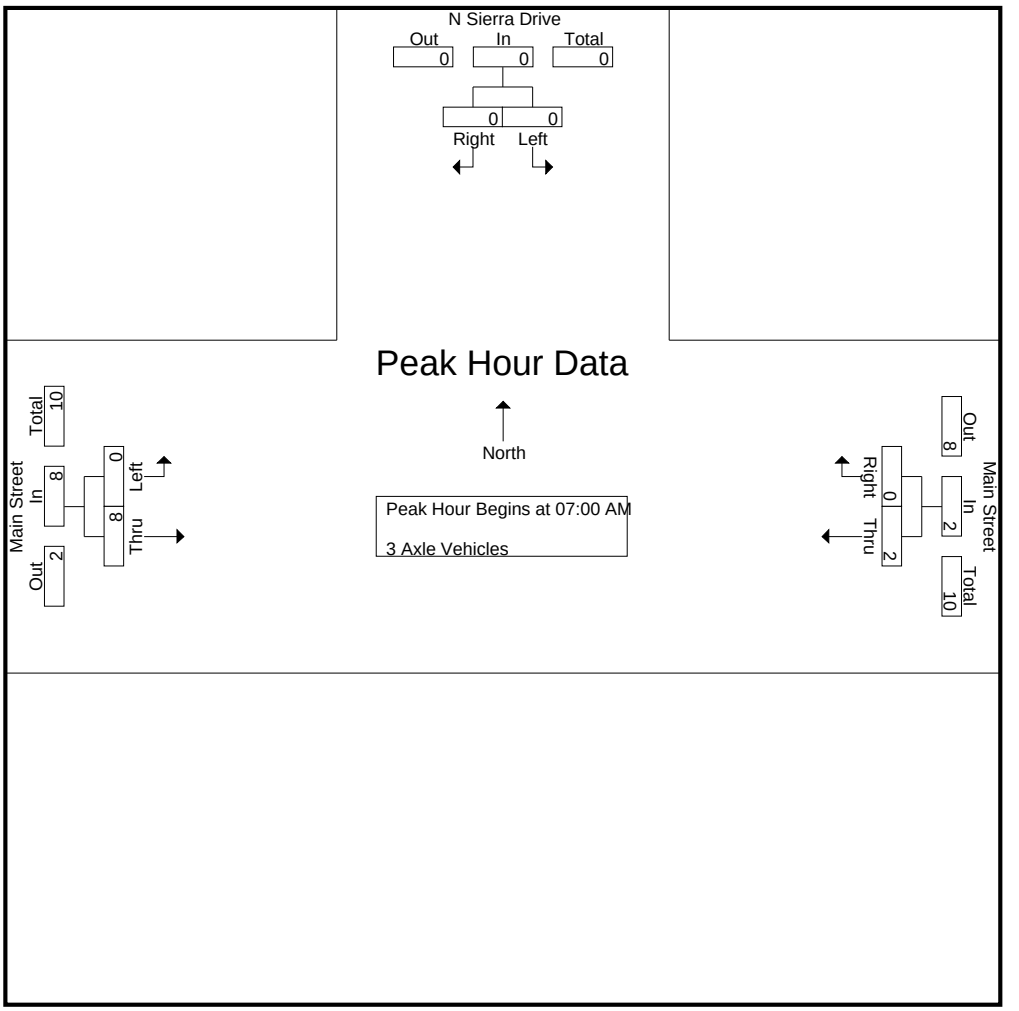

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	**1**	0	**1**	0	1	1
+15 mins.	0	0	0	1	0	1	0	3	3
+30 mins.	0	0	0	0	0	0	0	**4**	**4**
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	2	0	8	8
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.500	.000	.500	.000	.500	.500

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Groups Printed- 4+ Axle Trucks

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	6	0	6	0	7	7	13
07:15 AM	0	0	0	4	0	4	0	3	3	7
07:30 AM	0	1	1	3	0	3	0	5	5	9
07:45 AM	0	0	0	7	0	7	0	1	1	8
Total	0	1	1	20	0	20	0	16	16	37
08:00 AM	0	0	0	5	0	5	0	4	4	9
08:15 AM	0	0	0	4	0	4	0	1	1	5
08:30 AM	0	0	0	6	0	6	1	5	6	12
08:45 AM	0	0	0	2	0	2	0	6	6	8
Total	0	0	0	17	0	17	1	16	17	34
Grand Total	0	1	1	37	0	37	1	32	33	71
Apprch %	0	100		100	0		3	97		
Total %	0	1.4	1.4	52.1	0	52.1	1.4	45.1	46.5	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	6	0	6	0	**7**	**7**	**13**
07:15 AM	0	0	0	4	0	4	0	3	3	7
07:30 AM	0	**1**	**1**	3	0	3	0	5	5	9
07:45 AM	0	0	0	**7**	0	**7**	0	1	1	8
Total Volume	0	1	1	20	0	20	0	16	16	37
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.714	.000	.714	.000	.571	.571	.712

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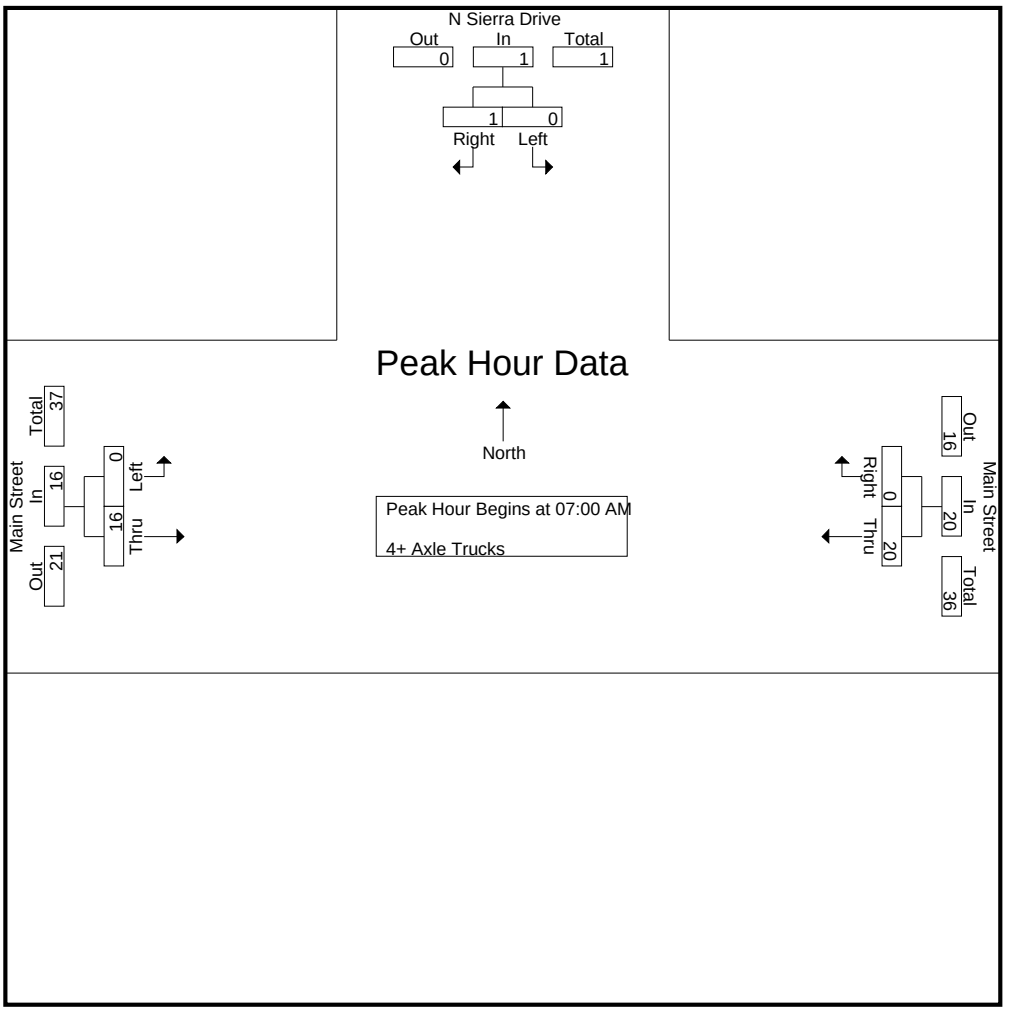

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	6	0	6	0	**7**	**7**
+15 mins.	0	0	0	4	0	4	0	3	3
+30 mins.	0	**1**	**1**	3	0	3	0	5	5
+45 mins.	0	0	0	**7**	0	**7**	0	1	1
Total Volume	0	1	1	20	0	20	0	16	16
% App. Total	0	100		100	0		0	100	
PHF	.000	.250	.250	.714	.000	.714	.000	.571	.571

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	2	2	85	1	86	2	129	131	219
04:15 PM	0	2	2	106	2	108	7	189	196	306
04:30 PM	1	2	3	108	1	109	2	161	163	275
04:45 PM	0	1	1	125	0	125	5	151	156	282
Total	1	7	8	424	4	428	16	630	646	1082
05:00 PM	0	3	3	107	1	108	5	129	134	245
05:15 PM	0	3	3	83	0	83	7	146	153	239
05:30 PM	0	1	1	93	1	94	3	147	150	245
05:45 PM	2	2	4	75	2	77	3	126	129	210
Total	2	9	11	358	4	362	18	548	566	939
Grand Total	3	16	19	782	8	790	34	1178	1212	2021
Apprch %	15.8	84.2		99	1		2.8	97.2		
Total %	0.1	0.8	0.9	38.7	0.4	39.1	1.7	58.3	60	
Passenger Vehicles	3	15	18	742	8	750	32	1155	1187	1955
% Passenger Vehicles	100	93.8	94.7	94.9	100	94.9	94.1	98	97.9	96.7
Large 2 Axle Vehicles	0	1	1	17	0	17	2	12	14	32
% Large 2 Axle Vehicles	0	6.2	5.3	2.2	0	2.2	5.9	1	1.2	1.6
3 Axle Vehicles	0	0	0	3	0	3	0	0	0	3
% 3 Axle Vehicles	0	0	0	0.4	0	0.4	0	0	0	0.1
4+ Axle Trucks	0	0	0	20	0	20	0	11	11	31
% 4+ Axle Trucks	0	0	0	2.6	0	2.5	0	0.9	0.9	1.5

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	2	2	106	**2**	108	**7**	**189**	**196**	**306**
04:30 PM	**1**	2	**3**	108	1	109	2	161	163	275
04:45 PM	0	1	1	**125**	0	**125**	5	151	156	282
05:00 PM	0	**3**	3	107	1	108	5	129	134	245
Total Volume	1	8	9	446	4	450	19	630	649	1108
% App. Total	11.1	88.9		99.1	0.9		2.9	97.1		
PHF	.250	.667	.750	.892	.500	.900	.679	.833	.828	.905

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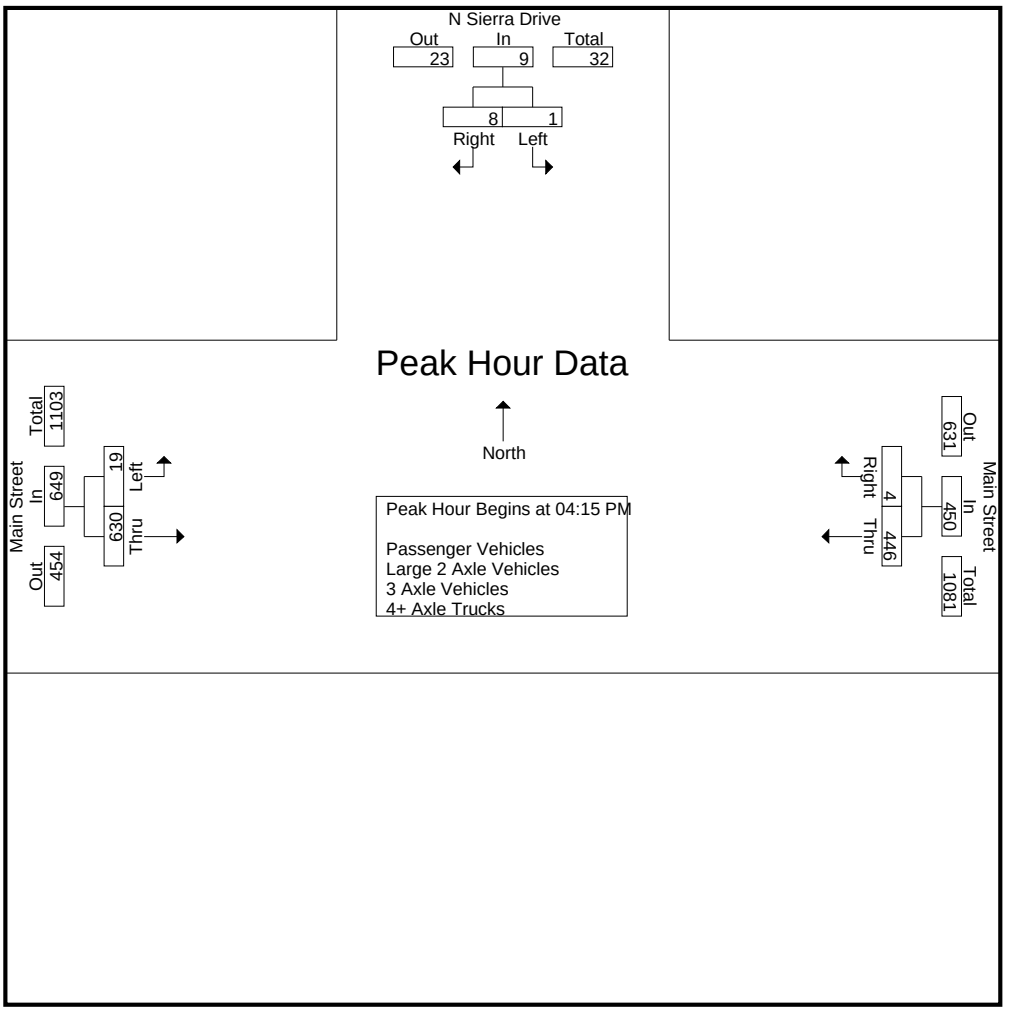

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:15 PM			04:15 PM		
+0 mins.	0	**3**	3	106	**2**	108	**7**	**189**	**196**
+15 mins.	0	3	3	108	1	109	2	161	163
+30 mins.	0	1	1	**125**	0	**125**	5	151	156
+45 mins.	**2**	2	**4**	107	1	108	5	129	134
Total Volume	2	9	11	446	4	450	19	630	649
% App. Total	18.2	81.8		99.1	0.9		2.9	97.1	
PHF	.250	.750	.688	.892	.500	.900	.679	.833	.828

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Groups Printed- Passenger Vehicles

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	2	2	80	1	81	2	123	125	208
04:15 PM	0	2	2	97	2	99	7	184	191	292
04:30 PM	1	2	3	101	1	102	2	160	162	267
04:45 PM	0	1	1	121	0	121	4	148	152	274
Total	1	7	8	399	4	403	15	615	630	1041
05:00 PM	0	2	2	101	1	102	5	129	134	238
05:15 PM	0	3	3	81	0	81	6	143	149	233
05:30 PM	0	1	1	90	1	91	3	143	146	238
05:45 PM	2	2	4	71	2	73	3	125	128	205
Total	2	8	10	343	4	347	17	540	557	914
Grand Total	3	15	18	742	8	750	32	1155	1187	1955
Apprch %	16.7	83.3		98.9	1.1		2.7	97.3		
Total %	0.2	0.8	0.9	38	0.4	38.4	1.6	59.1	60.7	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	**2**	2	97	**2**	99	**7**	**184**	**191**	**292**
04:30 PM	**1**	2	**3**	101	1	102	2	160	162	267
04:45 PM	0	1	1	**121**	0	**121**	4	148	152	274
05:00 PM	0	2	2	101	1	102	5	129	134	238
Total Volume	1	7	8	420	4	424	18	621	639	1071
% App. Total	12.5	87.5		99.1	0.9		2.8	97.2		
PHF	.250	.875	.667	.868	.500	.876	.643	.844	.836	.917

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Start Date : 8/20/2024
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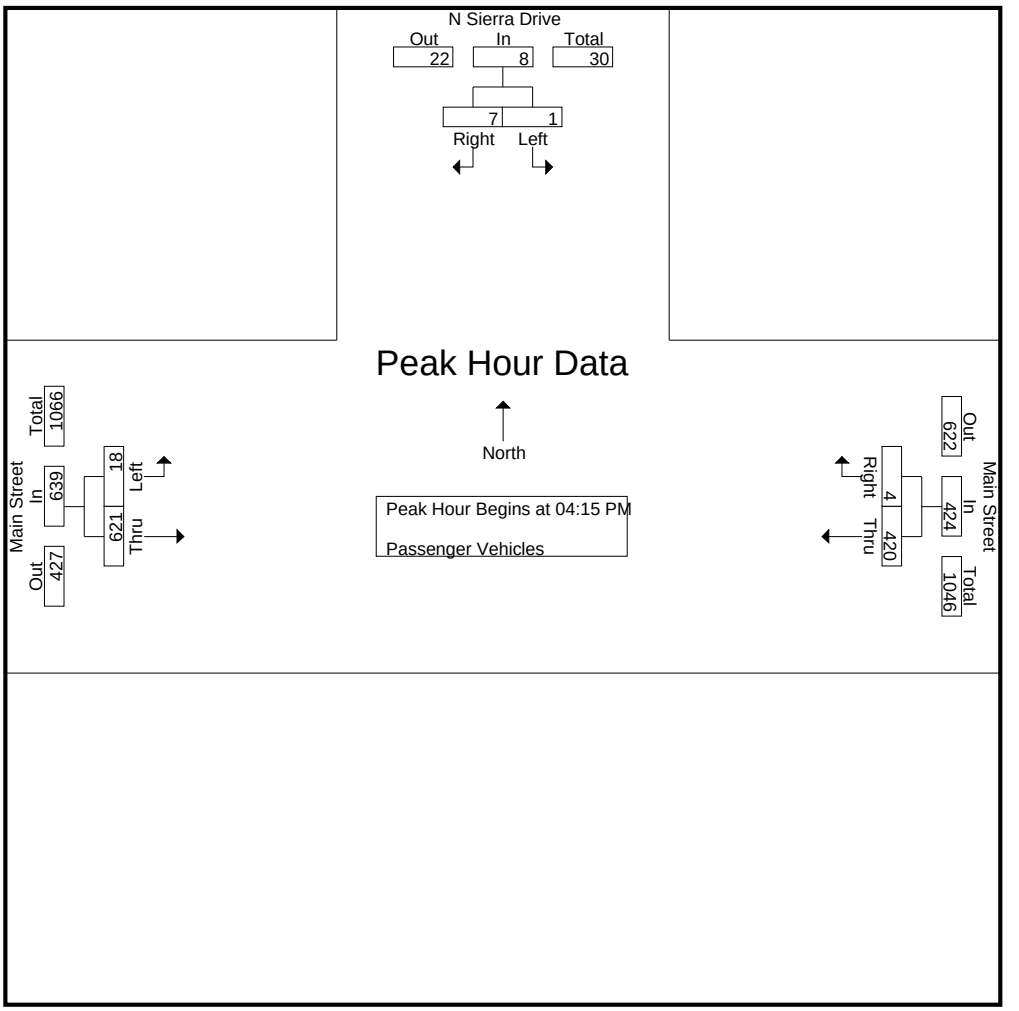

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	0	**2**	2	97	**2**	99	**7**	**184**	**191**
+15 mins.	**1**	2	**3**	101	1	102	2	160	162
+30 mins.	0	1	1	**121**	0	**121**	4	148	152
+45 mins.	0	2	2	101	1	102	5	129	134
Total Volume	1	7	8	420	4	424	18	621	639
% App. Total	12.5	87.5		99.1	0.9		2.8	97.2	
PHF	.250	.875	.667	.868	.500	.876	.643	.844	.836

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	2	0	2	0	4	4	6
04:15 PM	0	0	0	3	0	3	0	1	1	4
04:30 PM	0	0	0	4	0	4	0	0	0	4
04:45 PM	0	0	0	1	0	1	1	1	2	3
Total	0	0	0	10	0	10	1	6	7	17
05:00 PM	0	1	1	4	0	4	0	0	0	5
05:15 PM	0	0	0	1	0	1	1	3	4	5
05:30 PM	0	0	0	1	0	1	0	2	2	3
05:45 PM	0	0	0	1	0	1	0	1	1	2
Total	0	1	1	7	0	7	1	6	7	15
Grand Total	0	1	1	17	0	17	2	12	14	32
Apprch %	0	100		100	0		14.3	85.7		
Total %	0	3.1	3.1	53.1	0	53.1	6.2	37.5	43.8	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	0	0	3	0	3	0	**1**	1	4
04:30 PM	0	0	0	**4**	0	**4**	0	0	0	4
04:45 PM	0	0	0	1	0	1	**1**	1	**2**	3
05:00 PM	0	**1**	**1**	4	0	4	0	0	0	**5**
Total Volume	0	1	1	12	0	12	1	2	3	16
% App. Total	0	100		100	0		33.3	66.7		
PHF	.000	.250	.250	.750	.000	.750	.250	.500	.375	.800

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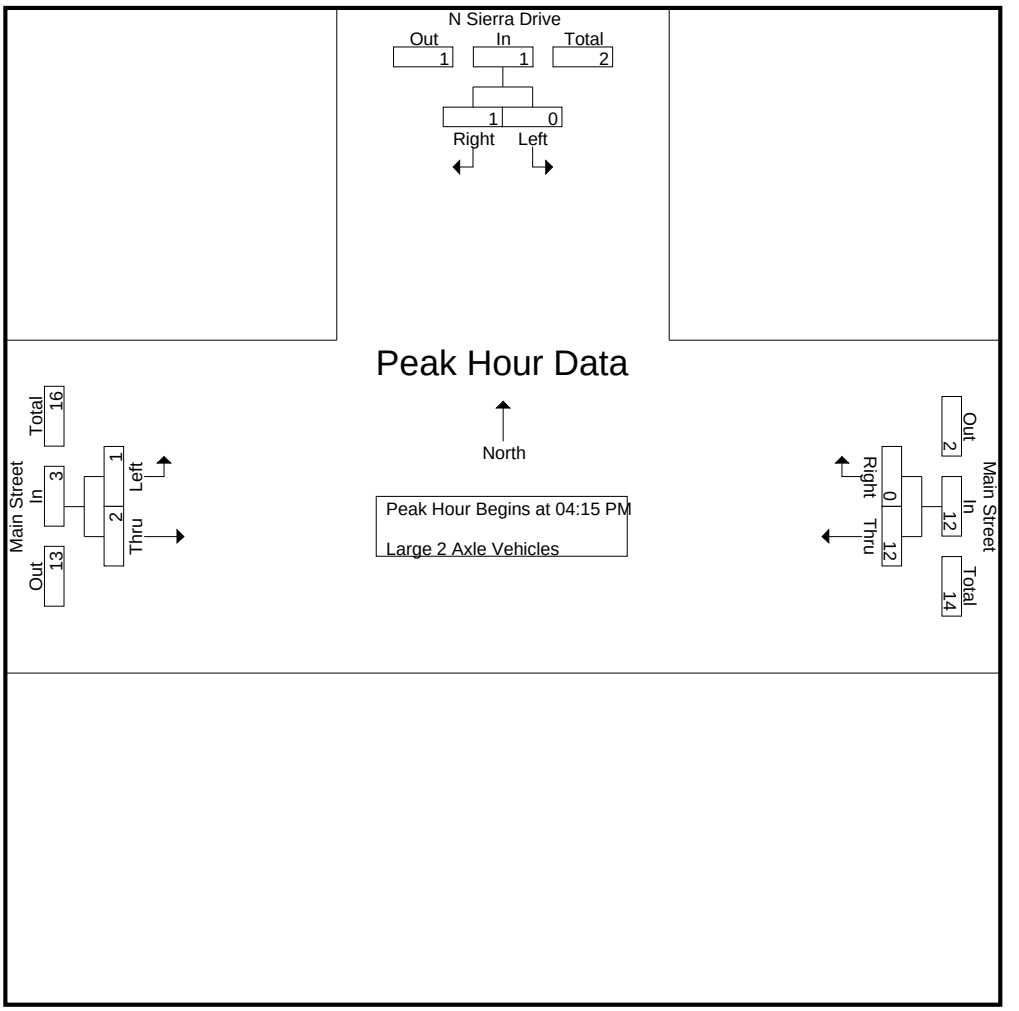
County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	0	0	0	3	0	3	0	**1**	1
+15 mins.	0	0	0	**4**	0	**4**	0	0	0
+30 mins.	0	0	0	1	0	1	**1**	1	**2**
+45 mins.	0	**1**	**1**	4	0	4	0	0	0
Total Volume	0	1	1	12	0	12	1	2	3
% App. Total	0	100		100	0		33.3	66.7	
PHF	.000	.250	.250	.750	.000	.750	.250	.500	.375

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County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 3 Axle Vehicles

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	1	0	1	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	0	0	0	1
05:00 PM	0	0	0	2	0	2	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	2	0	0	0	2
Grand Total	0	0	0	3	0	3	0	0	0	3
Apprch %	0	0		100	0		0	0		
Total %	0	0	0	100	0	100	0	0	0	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	0	0	1	0	1	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	**2**	0	**2**	0	0	0	**2**
Total Volume	0	0	0	3	0	3	0	0	0	3
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.375	.000	.375	.000	.000	.000	.375

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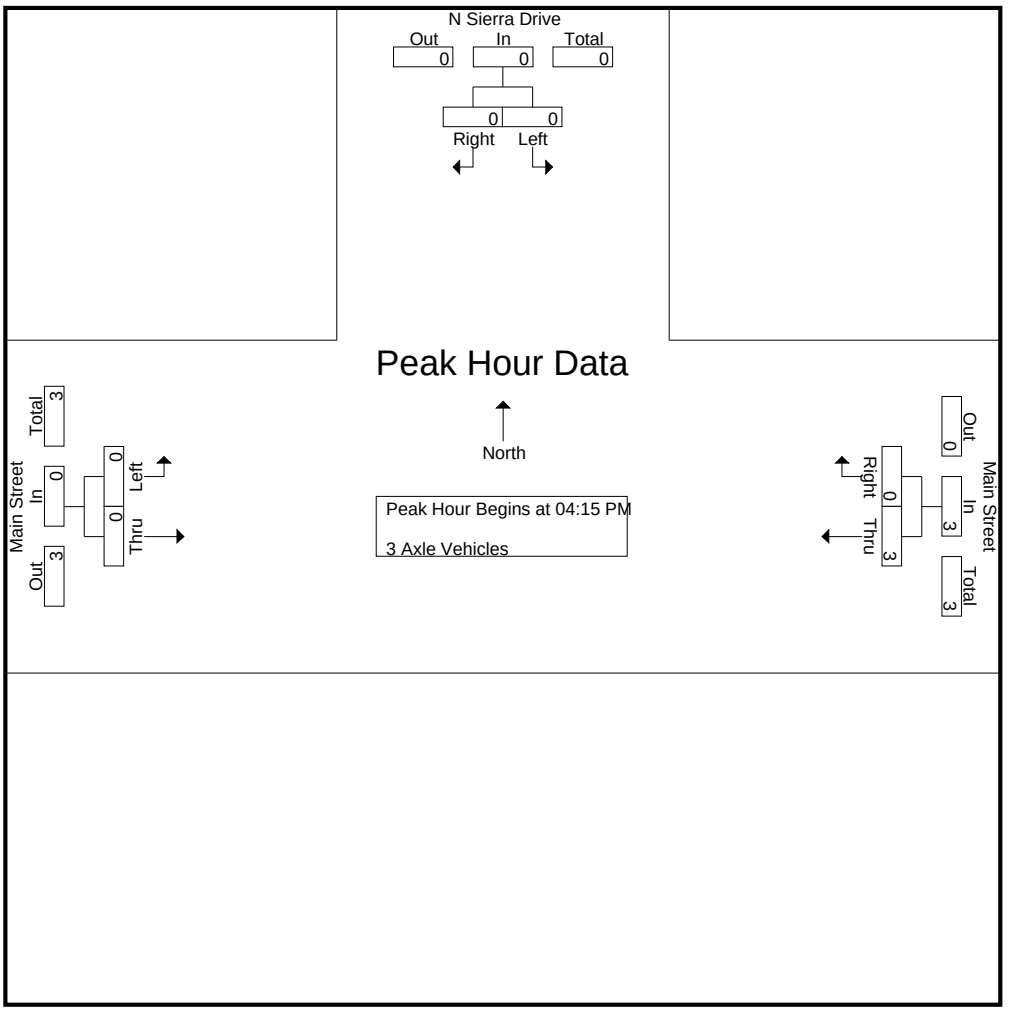
County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	0	0	0	1	0	1	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	**2**	0	**2**	0	0	0
Total Volume	0	0	0	3	0	3	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.375	.000	.375	.000	.000	.000

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County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 1

Groups Printed- 4+ Axle Trucks

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	3	0	3	0	2	2	5
04:15 PM	0	0	0	5	0	5	0	4	4	9
04:30 PM	0	0	0	3	0	3	0	1	1	4
04:45 PM	0	0	0	3	0	3	0	2	2	5
Total	0	0	0	14	0	14	0	9	9	23
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	1	0	1	0	0	0	1
05:30 PM	0	0	0	2	0	2	0	2	2	4
05:45 PM	0	0	0	3	0	3	0	0	0	3
Total	0	0	0	6	0	6	0	2	2	8
Grand Total	0	0	0	20	0	20	0	11	11	31
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	64.5	0	64.5	0	35.5	35.5	

	N Sierra Drive Southbound			Main Street Westbound			Main Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	0	0	**5**	0	**5**	0	**4**	**4**	**9**
04:30 PM	0	0	0	3	0	3	0	1	1	4
04:45 PM	0	0	0	3	0	3	0	2	2	5
05:00 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	11	0	11	0	7	7	18
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.550	.000	.550	.000	.438	.438	.500

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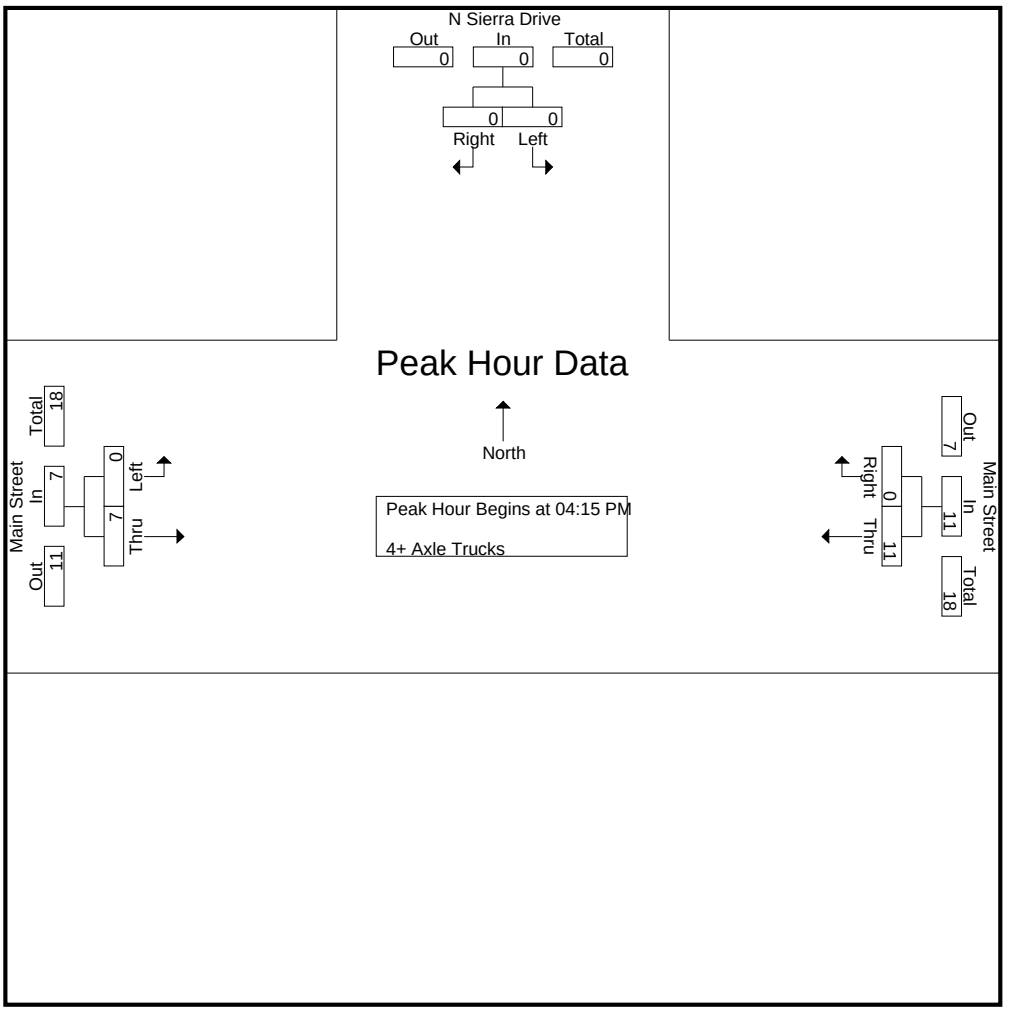
County of San Joaquin
N/S: N Sierra Drive
E/W: Main Street (SR-88)
Weather: Clear

File Name : 07_CSJ_Sier_SR88 PM
Site Code : 22524674
Start Date : 8/20/2024
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	0	0	0	**5**	0	**5**	0	**4**	**4**
+15 mins.	0	0	0	3	0	3	0	1	1
+30 mins.	0	0	0	3	0	3	0	2	2
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	11	0	11	0	7	7
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.550	.000	.550	.000	.438	.438

Location: County of San Joaquain
N/S: N Sierra Drive
E/W: Main Street

Date: 8/20/2024
Day: Tuesday

PEDESTRIANS

	North Leg N Sierra Drive	East Leg Main Street	South Leg Dead End	West Leg Main Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg N Sierra Drive	East Leg Main Street	South Leg Dead End	West Leg Main Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: County of San Joaquain
N/S: N Sierra Drive
E/W: Main Street

Date: 8/20/2024
Day: Tuesday

BICYCLES

	Southbound N Sierra Drive			Westbound Main Street			Northbound Dead End			Eastbound Main Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound N Sierra Drive			Westbound Main Street			Northbound Dead End			Eastbound Main Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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951-268-6268

Counts Unlimited, Inc

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email: counts@countsunlimited.com

County of San Joaquin
Jack Tone Road
W/ Tully Road
24 Hour Directional Volume Count

CSJ002
Site Code: 223-24722

Start Time	8/20/24 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	11			1	6				
12:15		0	10			0	5				
12:30		0	9			2	2				
12:45		0	9	1	39	0	2	3	15	4	54
01:00		1	10			1	8				
01:15		0	11			0	6				
01:30		0	11			0	**13**				
01:45		2	**15**	3	47	1	**9**	2	36	5	83
02:00		0	**18**			2	**15**				
02:15		1	**22**			0	**29**				
02:30		0	**18**			0	5				
02:45		0	12	1	70	0	10	2	59	3	129
03:00		0	13			0	10				
03:15		0	8			0	6				
03:30		1	15			1	6				
03:45		2	17	3	53	0	12	1	34	4	87
04:00		1	11			0	10				
04:15		1	17			1	15				
04:30		1	16			0	10				
04:45		5	14	8	58	2	8	3	43	11	101
05:00		1	19			1	12				
05:15		4	10			0	9				
05:30		4	15			0	5				
05:45		1	6	10	50	3	5	4	31	14	81
06:00		3	14			3	9				
06:15		8	3			1	4				
06:30		5	6			2	5				
06:45		5	5	21	28	6	3	12	21	33	49
07:00		9	4			2	7				
07:15		6	5			**9**	4				
07:30		**20**	6			**18**	5				
07:45		**19**	8	54	23	**24**	1	53	17	107	40
08:00		**6**	5			**10**	1				
08:15		**10**	5			6	2				
08:30		7	8			5	3				
08:45		7	1	30	19	7	1	28	7	58	26
09:00		8	6			2	2				
09:15		2	5			3	3				
09:30		12	1			8	0				
09:45		12	1	34	13	5	0	18	5	52	18
10:00		14	3			6	1				
10:15		6	2			4	0				
10:30		9	0			4	0				
10:45		8	3	37	8	2	2	16	3	53	11
11:00		7	0			7	0				
11:15		8	1			3	0				
11:30		14	0			12	1				
11:45		12	1	41	2	13	0	35	1	76	3
Total		243	410	243	410	177	272	177	272	420	682
Combined Total		653		653		449		449		1102	
AM Peak	-	07:30	-	-	-	07:15	-	-	-	-	-
Vol.	-	55	-	-	-	61	-	-	-	-	-
P.H.F.		0.688				0.635					
PM Peak	-	-	01:45	-	-	-	01:30	-	-	-	-
Vol.	-	-	73	-	-	-	66	-	-	-	-
P.H.F.			0.830				0.569				
Percentage		37.2%	62.8%			39.4%	60.6%				
ADT/AADT		ADT 1,102		AADT 1,102							

Counts Unlimited, Inc

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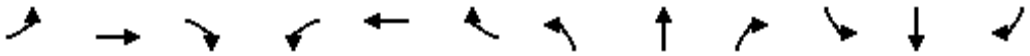
County of San Joaquin
Tully Road
S/ Hammond Street
24 Hour Directional Volume Count

CSJ001
Site Code: 223-24722

Start Time	8/20/24 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	22			1	21				
12:15		0	20			3	27				
12:30		0	12			1	21				
12:45		2	11	4	65	2	14	7	83	11	148
01:00		2	20			2	22				
01:15		4	21			0	24				
01:30		0	21			2	**44**				
01:45		2	12	8	74	4	**42**	8	132	16	206
02:00		2	**30**			1	**52**				
02:15		0	**78**			2	**44**				
02:30		2	**25**			2	23				
02:45		3	**25**	7	158	0	28	5	147	12	305
03:00		3	19			2	24				
03:15		1	26			4	24				
03:30		4	33			1	26				
03:45		1	26	9	104	2	32	9	106	18	210
04:00		4	22			1	19				
04:15		11	30			2	30				
04:30		4	30			2	27				
04:45		16	14	35	96	5	27	10	103	45	199
05:00		6	22			1	34				
05:15		4	17			5	25				
05:30		19	20			8	23				
05:45		17	9	46	68	11	17	25	99	71	167
06:00		13	17			3	25				
06:15		20	12			9	21				
06:30		20	13			18	19				
06:45		21	16	74	58	12	21	42	86	116	144
07:00		19	12			**18**	28				
07:15		**32**	11			**30**	25				
07:30		**71**	19			**63**	11				
07:45		**69**	6	191	48	**67**	16	178	80	369	128
08:00		**42**	9			18	13				
08:15		27	7			14	12				
08:30		20	12			14	19				
08:45		15	11	104	39	16	9	62	53	166	92
09:00		15	4			17	8				
09:15		16	8			14	11				
09:30		23	3			12	7				
09:45		30	4	84	19	21	14	64	40	148	59
10:00		17	3			15	11				
10:15		22	4			12	3				
10:30		18	1			18	5				
10:45		15	2	72	10	20	2	65	21	137	31
11:00		23	2			21	2				
11:15		24	2			19	2				
11:30		38	1			32	1				
11:45		29	3	114	8	30	2	102	7	216	15
Total		748	747	748	747	577	957	577	957	1325	1704
Combined Total		1495		1495		1534		1534		3029	
AM Peak	-	07:15	-	-	-	07:00	-	-	-	-	-
Vol.	-	214	-	-	-	178	-	-	-	-	-
P.H.F.		0.754				0.664					
PM Peak	-	-	02:00	-	-	-	01:30	-	-	-	-
Vol.	-	-	158	-	-	-	182	-	-	-	-
P.H.F.			0.506				0.875				
Percentage		50.0%	50.0%			37.6%	62.4%				
ADT/AADT		ADT 3,029		AADT 3,029							

Appendix B

Synchro Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	262	42	26	499	44	69	82	28	28	72	62
Future Volume (veh/h)	58	262	42	26	499	44	69	82	28	28	72	62
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1884	1884	1884	1884	1884	1945
Adj Flow Rate, veh/h	64	291	47	29	554	49	77	91	31	31	80	69
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	2
Cap, veh/h	90	693	112	48	636	56	221	147	43	144	143	108
Arrive On Green	0.05	0.46	0.46	0.03	0.43	0.43	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1725	1521	246	1725	1476	131	484	817	240	173	796	602
Grp Volume(v), veh/h	64	0	338	29	0	603	199	0	0	180	0	0
Grp Sat Flow(s),veh/h/ln	1725	0	1767	1725	0	1606	1540	0	0	1571	0	0
Q Serve(g_s), s	1.4	0.0	4.8	0.6	0.0	12.8	0.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	4.8	0.6	0.0	12.8	4.3	0.0	0.0	3.8	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.08	0.39		0.16	0.17		0.38
Lane Grp Cap(c), veh/h	90	0	804	48	0	693	410	0	0	395	0	0
V/C Ratio(X)	0.71	0.00	0.42	0.60	0.00	0.87	0.48	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	969	0	5199	738	0	4727	1087	0	0	1155	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.4	0.0	6.9	18.0	0.0	9.7	14.3	0.0	0.0	14.2	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	0.1	4.5	0.0	1.4	0.3	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.1	0.3	0.0	3.0	1.4	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.3	0.0	7.0	22.4	0.0	11.0	14.6	0.0	0.0	14.5	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		402			632			199			180	
Approach Delay, s/veh		9.3			11.6			14.6			14.5	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	21.9		10.9	5.4	21.0		10.9				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.6	6.8		5.8	3.4	14.8		6.3				
Green Ext Time (p_c), s	0.0	0.7		0.5	0.0	1.3		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		11.7	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	2	31	20	4	5	37	158	19	1	125	20
Future Vol, veh/h	18	2	31	20	4	5	37	158	19	1	125	20
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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	3	43	28	6	7	51	219	26	1	174	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	531	537	188	547	538	232	202	0	0	245	0	0
Stage 1	190	190	-	334	334	-	-	-	-	-	-	-
Stage 2	341	347	-	213	204	-	-	-	-	-	-	-
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	459	450	854	448	450	807	1370	-	-	1321	-	-
Stage 1	812	743	-	680	643	-	-	-	-	-	-	-
Stage 2	674	635	-	789	733	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	436	430	854	409	430	807	1370	-	-	1321	-	-
Mov Cap-2 Maneuver	436	430	-	409	430	-	-	-	-	-	-	-
Stage 1	777	742	-	651	615	-	-	-	-	-	-	-
Stage 2	634	608	-	746	732	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	13.8	1.3	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	620	450	1321	-	-
HCM Lane V/C Ratio	0.038	-	-	0.114	0.09	0.001	-	-
HCM Control Delay (s)	7.7	0	-	11.6	13.8	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	1	166	114	4
Future Vol, veh/h	3	2	1	166	114	4
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	1	231	158	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	394	161	164	0	-	0
Stage 1	161	-	-	-	-	-
Stage 2	233	-	-	-	-	-
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	611	884	1414	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	610	884	1414	-	-	-
Mov Cap-2 Maneuver	610	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	696	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	169	0	0	118
Future Vol, veh/h	0	0	169	0	0	118
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	235	0	0	164

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	399	235	0	0	235	0
Stage 1	235	-	-	-	-	-
Stage 2	164	-	-	-	-	-
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	607	804	-	-	1332	-
Stage 1	804	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	607	804	-	-	1332	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	865	-	-	-	-	-

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)	-	-	-	1332	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	15	3	3	40	21	3	18	2	17	32	45
Future Vol, veh/h	13	15	3	3	40	21	3	18	2	17	32	45
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	19	21	4	4	57	30	4	26	3	24	46	64
Number of Lanes	0	1	0	0	1	0	0	1	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	7.7	7.7	7.5	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	42%	5%	18%
Vol Thru, %	78%	48%	62%	34%
Vol Right, %	9%	10%	33%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	31	64	94
LT Vol	3	13	3	17
Through Vol	18	15	40	32
RT Vol	2	3	21	45
Lane Flow Rate	33	44	91	134
Geometry Grp	1	1	1	1
Degree of Util (X)	0.039	0.053	0.104	0.148
Departure Headway (Hd)	4.264	4.338	4.086	3.958
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	826	812	864	893
Service Time	2.363	2.435	2.174	2.039
HCM Lane V/C Ratio	0.04	0.054	0.105	0.15
HCM Control Delay	7.5	7.7	7.7	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.3	0.5

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	12	3	35	49	8	22	83	13	4	76	22
Future Vol, veh/h	5	12	3	35	49	8	22	83	13	4	76	22
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	17	4	50	70	11	31	119	19	6	109	31
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.1	8.8	9.1	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	21%	0%	25%	38%	5%	0%
Vol Thru, %	79%	0%	60%	53%	95%	0%
Vol Right, %	0%	100%	15%	9%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	13	20	92	80	22
LT Vol	22	0	5	35	4	0
Through Vol	83	0	12	49	76	0
RT Vol	0	13	3	8	0	22
Lane Flow Rate	150	19	29	131	114	31
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.215	0.022	0.038	0.174	0.162	0.038
Departure Headway (Hd)	5.165	4.356	4.833	4.761	5.109	4.38
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	695	821	740	754	702	817
Service Time	2.895	2.085	2.867	2.786	2.839	2.11
HCM Lane V/C Ratio	0.216	0.023	0.039	0.174	0.162	0.038
HCM Control Delay	9.3	7.2	8.1	8.8	8.8	7.3
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.8	0.1	0.1	0.6	0.6	0.1

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	6	1	5	79	2	17	7	348	16	4	604	7
Future Vol, veh/h	6	1	5	79	2	17	7	348	16	4	604	7
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	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	7	1	6	92	2	20	8	405	19	5	702	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1158	1156	706	1151	1151	415	710	0	0	424	0	0
Stage 1	716	716	-	431	431	-	-	-	-	-	-	-
Stage 2	442	440	-	720	720	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	169	192	427	171	194	627	866	-	-	1109	-	-
Stage 1	413	427	-	593	574	-	-	-	-	-	-	-
Stage 2	585	569	-	411	425	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	160	189	427	166	191	627	866	-	-	1109	-	-
Mov Cap-2 Maneuver	160	189	-	166	191	-	-	-	-	-	-	-
Stage 1	409	425	-	588	569	-	-	-	-	-	-	-
Stage 2	559	564	-	402	423	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.5	48.4	0.2	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	866	-	-	220	191	1109	-	-
HCM Lane V/C Ratio	0.009	-	-	0.063	0.597	0.004	-	-
HCM Control Delay (s)	9.2	-	-	22.5	48.4	8.3	-	-
HCM Lane LOS	A	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	3.3	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	287	0	0	512	2	0	0	0	3	0	12
Future Vol, veh/h	5	287	0	0	512	2	0	0	0	3	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	6	319	0	0	569	2	0	0	0	3	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	571	0	-	319	0	0	908	902	319	901	901	570
Stage 1	-	-	-	-	-	-	331	331	-	570	570	-
Stage 2	-	-	-	-	-	-	577	571	-	331	331	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	977	-	0	1213	-	-	251	272	710	254	273	512
Stage 1	-	-	0	-	-	-	672	636	-	498	497	-
Stage 2	-	-	0	-	-	-	493	497	-	672	636	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	977	-	-	1213	-	-	243	270	710	253	271	512
Mov Cap-2 Maneuver	-	-	-	-	-	-	243	270	-	253	271	-
Stage 1	-	-	-	-	-	-	668	632	-	495	497	-
Stage 2	-	-	-	-	-	-	480	497	-	668	632	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	13.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	977	-	1213	-	-	425
HCM Lane V/C Ratio	-	0.006	-	-	-	-	0.039
HCM Control Delay (s)	0	8.7	-	0	-	-	13.8
HCM Lane LOS	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	214	0	0	178
Future Vol, veh/h	0	0	214	0	0	178
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	297	0	0	247

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	544	297	0	0	297	0
Stage 1	297	-	-	-	-	-
Stage 2	247	-	-	-	-	-
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	500	742	-	-	1264	-
Stage 1	754	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	742	-	-	1264	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	794	-	-	-	-	-

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)	-	-	-	1264	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	613	36	9	447	29	43	35	24	55	51	90
Future Volume (veh/h)	67	613	36	9	447	29	43	35	24	55	51	90
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1930	1930	1930	1930	1930	1930
Adj Flow Rate, veh/h	70	639	38	9	466	30	45	36	25	57	53	94
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	100	752	45	17	600	39	237	142	71	192	96	132
Arrive On Green	0.06	0.43	0.43	0.01	0.39	0.39	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1767	1734	103	1767	1552	100	460	747	373	307	503	692
Grp Volume(v), veh/h	70	0	677	9	0	496	106	0	0	204	0	0
Grp Sat Flow(s),veh/h/ln	1767	0	1837	1767	0	1652	1580	0	0	1503	0	0
Q Serve(g_s), s	1.3	0.0	11.4	0.2	0.0	9.1	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	1.3	0.0	11.4	0.2	0.0	9.1	1.9	0.0	0.0	4.3	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.06	0.42		0.24	0.28		0.46
Lane Grp Cap(c), veh/h	100	0	796	17	0	638	450	0	0	420	0	0
V/C Ratio(X)	0.70	0.00	0.85	0.53	0.00	0.78	0.24	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	1079	0	5875	822	0	5284	1191	0	0	1243	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.9	0.0	8.7	17.0	0.0	9.3	12.0	0.0	0.0	13.0	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	1.0	9.2	0.0	0.8	0.1	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.7	0.1	0.0	2.1	0.6	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	9.8	26.2	0.0	10.0	12.1	0.0	0.0	13.3	0.0	0.0
LnGrp LOS	B	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		747			505			106			204	
Approach Delay, s/veh		10.6			10.3			12.1			13.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.8	19.8		10.8	5.5	18.2		10.8				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.2	13.4		6.3	3.3	11.1		3.9				
Green Ext Time (p_c), s	0.0	1.5		0.6	0.0	1.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		11.0
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	27	5	34	7	3	6	25	65	6	2	77	17
Future Vol, veh/h	27	5	34	7	3	6	25	65	6	2	77	17
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	5	37	8	3	7	27	71	7	2	85	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	233	231	95	249	237	75	104	0	0	78	0	0
Stage 1	99	99	-	129	129	-	-	-	-	-	-	-
Stage 2	134	132	-	120	108	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	720	667	959	702	662	984	1481	-	-	1514	-	-
Stage 1	905	811	-	872	787	-	-	-	-	-	-	-
Stage 2	867	785	-	882	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	701	654	959	660	649	984	1481	-	-	1514	-	-
Mov Cap-2 Maneuver	701	654	-	660	649	-	-	-	-	-	-	-
Stage 1	888	810	-	855	772	-	-	-	-	-	-	-
Stage 2	841	770	-	841	803	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.9	1.9	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1481	-	-	809	750	1514	-	-
HCM Lane V/C Ratio	0.019	-	-	0.09	0.023	0.001	-	-
HCM Control Delay (s)	7.5	0	-	9.9	9.9	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	70	105	1
Future Vol, veh/h	1	0	1	70	105	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	1	77	115	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	195	116	116	0	-	0
Stage 1	116	-	-	-	-	-
Stage 2	79	-	-	-	-	-
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	794	936	1473	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	793	936	1473	-	-	-
Mov Cap-2 Maneuver	793	-	-	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1473	-	793	-	-
HCM Lane V/C Ratio	0.001	-	0.001	-	-
HCM Control Delay (s)	7.4	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	71	0	0	106
Future Vol, veh/h	0	0	71	0	0	106
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	78	0	0	116

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	194	78	0	0	78	0
Stage 1	78	-	-	-	-	-
Stage 2	116	-	-	-	-	-
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	795	983	-	-	1520	-
Stage 1	945	-	-	-	-	-
Stage 2	909	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	795	983	-	-	1520	-
Mov Cap-2 Maneuver	795	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	909	-	-	-	-	-

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)	-	-	-	1520	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	43	2	1	33	7	1	18	4	15	12	11
Future Vol, veh/h	29	43	2	1	33	7	1	18	4	15	12	11
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	51	2	1	39	8	1	21	5	18	14	13
Number of Lanes	0	1	0	0	1	0	0	1	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	7.7	7.3	7.3	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	39%	2%	39%
Vol Thru, %	78%	58%	80%	32%
Vol Right, %	17%	3%	17%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	74	41	38
LT Vol	1	29	1	15
Through Vol	18	43	33	12
RT Vol	4	2	7	11
Lane Flow Rate	27	87	48	45
Geometry Grp	1	1	1	1
Degree of Util (X)	0.031	0.101	0.054	0.051
Departure Headway (Hd)	4.107	4.158	4.027	4.093
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	861	858	882	865
Service Time	2.184	2.203	2.084	2.167
HCM Lane V/C Ratio	0.031	0.101	0.054	0.052
HCM Control Delay	7.3	7.7	7.3	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0.2

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	46	14	18	22	6	9	60	23	12	78	9
Future Vol, veh/h	11	46	14	18	22	6	9	60	23	12	78	9
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	55	17	21	26	7	11	71	27	14	93	11
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8	8	8.1	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	13%	0%	15%	39%	13%	0%
Vol Thru, %	87%	0%	65%	48%	87%	0%
Vol Right, %	0%	100%	20%	13%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	23	71	46	90	9
LT Vol	9	0	11	18	12	0
Through Vol	60	0	46	22	78	0
RT Vol	0	23	14	6	0	9
Lane Flow Rate	82	27	85	55	107	11
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.115	0.033	0.105	0.07	0.15	0.013
Departure Headway (Hd)	5.049	4.28	4.483	4.605	5.042	4.272
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	711	838	801	779	714	839
Service Time	2.767	1.998	2.502	2.625	2.759	1.989
HCM Lane V/C Ratio	0.115	0.032	0.106	0.071	0.15	0.013
HCM Control Delay	8.4	7.1	8	8	8.6	7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.4	0.2	0.5	0

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	4	17	20	3	16	4	767	55	13	543	10
Future Vol, veh/h	14	4	17	20	3	16	4	767	55	13	543	10
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	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	4	19	22	3	18	4	862	62	15	610	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1558	1578	616	1558	1552	893	621	0	0	924	0	0
Stage 1	646	646	-	901	901	-	-	-	-	-	-	-
Stage 2	912	932	-	657	651	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	91	109	489	91	113	339	955	-	-	735	-	-
Stage 1	459	465	-	331	356	-	-	-	-	-	-	-
Stage 2	327	344	-	452	463	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	83	106	489	83	110	339	955	-	-	735	-	-
Mov Cap-2 Maneuver	83	106	-	83	110	-	-	-	-	-	-	-
Stage 1	457	456	-	330	355	-	-	-	-	-	-	-
Stage 2	305	343	-	421	454	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.8	49.1	0	0.2
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	955	-	-	145	124	735	-	-
HCM Lane V/C Ratio	0.005	-	-	0.271	0.353	0.02	-	-
HCM Control Delay (s)	8.8	-	-	38.8	49.1	10	-	-
HCM Lane LOS	A	-	-	E	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1	1.4	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	630	0	0	446	4	0	0	0	1	0	8
Future Vol, veh/h	19	630	0	0	446	4	0	0	0	1	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	21	692	0	0	490	4	0	0	0	1	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	494	0	-	692	0	0	1231	1228	692	1226	1226	492
Stage 1	-	-	-	-	-	-	734	734	-	492	492	-
Stage 2	-	-	-	-	-	-	497	494	-	734	734	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1064	-	0	898	-	-	153	177	442	155	178	575
Stage 1	-	-	0	-	-	-	410	424	-	557	546	-
Stage 2	-	-	0	-	-	-	553	545	-	410	424	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1064	-	-	898	-	-	148	173	442	153	174	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	173	-	153	174	-
Stage 1	-	-	-	-	-	-	402	416	-	546	546	-
Stage 2	-	-	-	-	-	-	545	545	-	402	416	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	13.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1064	-	898	-	-	440
HCM Lane V/C Ratio	-	0.02	-	-	-	-	0.022
HCM Control Delay (s)	0	8.5	-	0	-	-	13.4
HCM Lane LOS	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0.1	-	0	-	-	0.1

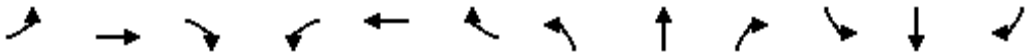
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	96	0	0	118
Future Vol, veh/h	0	0	96	0	0	118
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	108	0	0	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	241	108	0	0	108	0
Stage 1	108	-	-	-	-	-
Stage 2	133	-	-	-	-	-
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	747	946	-	-	1483	-
Stage 1	916	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	747	946	-	-	1483	-
Mov Cap-2 Maneuver	747	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	893	-	-	-	-	-

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)	-	-	-	1483	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	262	58	29	499	44	116	105	36	28	80	62
Future Volume (veh/h)	58	262	58	29	499	44	116	105	36	28	80	62
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1884	1884	1884	1884	1884	1945
Adj Flow Rate, veh/h	64	291	64	32	554	49	129	117	40	31	89	69
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	2
Cap, veh/h	85	637	140	51	624	55	256	168	50	131	207	139
Arrive On Green	0.05	0.44	0.44	0.03	0.42	0.42	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1725	1438	316	1725	1476	131	570	701	207	146	861	579
Grp Volume(v), veh/h	64	0	355	32	0	603	286	0	0	189	0	0
Grp Sat Flow(s),veh/h/ln	1725	0	1754	1725	0	1606	1478	0	0	1585	0	0
Q Serve(g_s), s	1.6	0.0	6.2	0.8	0.0	15.2	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	6.2	0.8	0.0	15.2	7.7	0.0	0.0	4.5	0.0	0.0
Prop In Lane	1.00		0.18	1.00		0.08	0.45		0.14	0.16		0.37
Lane Grp Cap(c), veh/h	85	0	777	51	0	680	474	0	0	476	0	0
V/C Ratio(X)	0.75	0.00	0.46	0.63	0.00	0.89	0.60	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	827	0	4404	630	0	4033	918	0	0	997	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.6	0.0	8.5	21.0	0.0	11.7	15.4	0.0	0.0	14.4	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.0	0.2	4.7	0.0	1.6	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.7	0.3	0.0	4.1	2.3	0.0	0.0	1.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	0.0	8.7	25.7	0.0	13.3	15.9	0.0	0.0	14.6	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		419			635			286			189	
Approach Delay, s/veh		11.2			13.9			15.9			14.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	24.3		14.7	5.7	23.4		14.7				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.8	8.2		6.5	3.6	17.2		9.7				
Green Ext Time (p_c), s	0.0	0.7		0.6	0.0	1.3		0.9				

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	18	2	37	20	4	5	52	236	19	1	152	20
Future Vol, veh/h	18	2	37	20	4	5	52	236	19	1	152	20
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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	3	51	28	6	7	72	328	26	1	211	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	719	725	225	739	726	341	239	0	0	354	0	0
Stage 1	227	227	-	485	485	-	-	-	-	-	-	-
Stage 2	492	498	-	254	241	-	-	-	-	-	-	-
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	344	352	814	333	351	701	1328	-	-	1205	-	-
Stage 1	776	716	-	563	552	-	-	-	-	-	-	-
Stage 2	558	544	-	750	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	319	328	814	294	327	701	1328	-	-	1205	-	-
Mov Cap-2 Maneuver	319	328	-	294	327	-	-	-	-	-	-	-
Stage 1	723	715	-	525	514	-	-	-	-	-	-	-
Stage 2	509	507	-	699	705	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	17.3	1.3	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1328	-	-	528	332	1205	-	-
HCM Lane V/C Ratio	0.054	-	-	0.15	0.121	0.001	-	-
HCM Control Delay (s)	7.9	0	-	13	17.3	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.4	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	1	187	176	4
Future Vol, veh/h	3	2	1	187	176	4
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	1	260	244	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	509	247	250	0	-	0
Stage 1	247	-	-	-	-	-
Stage 2	262	-	-	-	-	-
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	524	792	1316	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	523	792	1316	-	-	-
Mov Cap-2 Maneuver	523	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1316	-	605	-	-
HCM Lane V/C Ratio	0.001	-	0.011	-	-
HCM Control Delay (s)	7.7	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	54	177	21	18	141
Future Vol, veh/h	39	54	177	21	18	141
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	75	246	29	25	196

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	507	261	0	0	275	0
Stage 1	261	-	-	-	-	-
Stage 2	246	-	-	-	-	-
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	525	778	-	-	1288	-
Stage 1	783	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	513	778	-	-	1288	-
Mov Cap-2 Maneuver	513	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	778	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	639	1288	-
HCM Lane V/C Ratio	-	-	0.202	0.019	-
HCM Control Delay (s)	-	-	12.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	15	3	3	40	21	3	21	2	17	40	99
Future Vol, veh/h	31	15	3	3	40	21	3	21	2	17	40	99
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	44	21	4	4	57	30	4	30	3	24	57	141
Number of Lanes	0	1	0	0	1	0	0	1	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	8.2	8	7.8	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	63%	5%	11%
Vol Thru, %	81%	31%	62%	26%
Vol Right, %	8%	6%	33%	63%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	26	49	64	156
LT Vol	3	31	3	17
Through Vol	21	15	40	40
RT Vol	2	3	21	99
Lane Flow Rate	37	70	91	223
Geometry Grp	1	1	1	1
Degree of Util (X)	0.047	0.091	0.112	0.248
Departure Headway (Hd)	4.531	4.699	4.402	4.012
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	792	764	816	898
Service Time	2.55	2.721	2.421	2.025
HCM Lane V/C Ratio	0.047	0.092	0.112	0.248
HCM Control Delay	7.8	8.2	8	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.4	1

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	27	3	43	95	8	22	86	16	4	76	30
Future Vol, veh/h	8	27	3	43	95	8	22	86	16	4	76	30
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	39	4	61	136	11	31	123	23	6	109	43
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.5	9.8	9.6	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	0%	21%	29%	5%	0%
Vol Thru, %	80%	0%	71%	65%	95%	0%
Vol Right, %	0%	100%	8%	5%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	16	38	146	80	30
LT Vol	22	0	8	43	4	0
Through Vol	86	0	27	95	76	0
RT Vol	0	16	3	8	0	30
Lane Flow Rate	154	23	54	209	114	43
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.234	0.03	0.076	0.282	0.172	0.056
Departure Headway (Hd)	5.456	4.647	5.048	4.868	5.406	4.674
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	656	765	705	734	661	761
Service Time	3.215	2.406	3.115	2.918	3.166	2.434
HCM Lane V/C Ratio	0.235	0.03	0.077	0.285	0.172	0.057
HCM Control Delay	9.9	7.6	8.5	9.8	9.3	7.7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.9	0.1	0.2	1.2	0.6	0.2

Intersection	
Int Delay, s/veh	18

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	5	133	2	17	7	364	34	4	620	7
Future Vol, veh/h	6	1	5	133	2	17	7	364	34	4	620	7
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	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	7	1	6	155	2	20	8	423	40	5	721	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1205	1214	725	1198	1198	443	729	0	0	463	0	0
Stage 1	735	735	-	459	459	-	-	-	-	-	-	-
Stage 2	470	479	-	739	739	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	157	178	417	159	182	604	852	-	-	1072	-	-
Stage 1	403	418	-	572	558	-	-	-	-	-	-	-
Stage 2	565	547	-	401	416	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	149	176	417	~ 154	179	604	852	-	-	1072	-	-
Mov Cap-2 Maneuver	149	176	-	~ 154	179	-	-	-	-	-	-	-
Stage 1	399	416	-	567	553	-	-	-	-	-	-	-
Stage 2	539	542	-	392	414	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.6	139.5	0.2	0.1
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	852	-	-	207	168	1072	-	-
HCM Lane V/C Ratio	0.01	-	-	0.067	1.052	0.004	-	-
HCM Control Delay (s)	9.3	-	-	23.6	139.5	8.4	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	8.7	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	295	0	0	515	2	0	0	0	3	0	12
Future Vol, veh/h	5	295	0	0	515	2	0	0	0	3	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	6	328	0	0	572	2	0	0	0	3	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	574	0	-	328	0	0	920	914	328	913	913	573
Stage 1	-	-	-	-	-	-	340	340	-	573	573	-
Stage 2	-	-	-	-	-	-	580	574	-	340	340	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	975	-	0	1204	-	-	246	268	702	249	268	510
Stage 1	-	-	0	-	-	-	664	630	-	496	496	-
Stage 2	-	-	0	-	-	-	491	495	-	664	630	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	975	-	-	1204	-	-	238	266	702	248	266	510
Mov Cap-2 Maneuver	-	-	-	-	-	-	238	266	-	248	266	-
Stage 1	-	-	-	-	-	-	660	626	-	493	496	-
Stage 2	-	-	-	-	-	-	478	495	-	660	626	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	13.9
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	975	-	1204	-	-	421
HCM Lane V/C Ratio	-	0.006	-	-	-	-	0.04
HCM Control Delay (s)	0	8.7	-	0	-	-	13.9
HCM Lane LOS	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	0	-	-	0.1

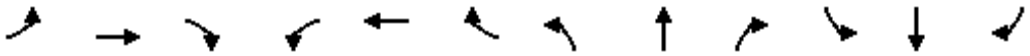
Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	39	268	8	13	196
Future Vol, veh/h	23	39	268	8	13	196
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	54	372	11	18	272

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	686	378	0	0	383	0
Stage 1	378	-	-	-	-	-
Stage 2	308	-	-	-	-	-
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	413	669	-	-	1175	-
Stage 1	693	-	-	-	-	-
Stage 2	745	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	406	669	-	-	1175	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	732	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	539	1175	-
HCM Lane V/C Ratio	-	-	0.16	0.015	-
HCM Control Delay (s)	-	-	12.9	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	613	89	18	447	29	74	50	29	55	77	90
Future Volume (veh/h)	67	613	89	18	447	29	74	50	29	55	77	90
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1930	1930	1930	1930	1930	1930
Adj Flow Rate, veh/h	70	639	93	19	466	30	77	52	30	57	80	94
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	96	729	106	34	659	42	255	139	60	168	131	127
Arrive On Green	0.05	0.46	0.46	0.02	0.42	0.42	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1767	1584	230	1767	1552	100	592	687	297	271	646	630
Grp Volume(v), veh/h	70	0	732	19	0	496	159	0	0	231	0	0
Grp Sat Flow(s),veh/h/ln	1767	0	1814	1767	0	1652	1576	0	0	1547	0	0
Q Serve(g_s), s	1.5	0.0	14.4	0.4	0.0	9.8	0.0	0.0	0.0	2.1	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	14.4	0.4	0.0	9.8	3.3	0.0	0.0	5.4	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.06	0.48		0.19	0.25		0.41
Lane Grp Cap(c), veh/h	96	0	835	34	0	702	454	0	0	426	0	0
V/C Ratio(X)	0.73	0.00	0.88	0.56	0.00	0.71	0.35	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	939	0	5049	715	0	4598	1030	0	0	1099	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.4	0.0	9.7	19.2	0.0	9.3	13.9	0.0	0.0	14.7	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	1.2	5.4	0.0	0.5	0.2	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	3.8	0.2	0.0	2.4	1.1	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	0.0	10.9	24.6	0.0	9.8	14.1	0.0	0.0	15.1	0.0	0.0
LnGrp LOS	C	A	B	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h		802			515			159			231	
Approach Delay, s/veh		11.9			10.4			14.1			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	23.1		12.2	5.6	21.7		12.2				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.4	16.4		7.4	3.5	11.8		5.3				
Green Ext Time (p_c), s	0.0	1.7		0.7	0.0	1.0		0.5				

Intersection Summary		
HCM 6th Ctrl Delay		12.1
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	27	5	52	7	3	6	35	117	6	2	165	17
Future Vol, veh/h	27	5	52	7	3	6	35	117	6	2	165	17
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	5	57	8	3	7	38	129	7	2	181	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	409	407	191	435	413	133	200	0	0	136	0	0
Stage 1	195	195	-	209	209	-	-	-	-	-	-	-
Stage 2	214	212	-	226	204	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	551	532	848	530	528	913	1366	-	-	1442	-	-
Stage 1	804	737	-	791	727	-	-	-	-	-	-	-
Stage 2	786	725	-	774	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	531	515	848	479	511	913	1366	-	-	1442	-	-
Mov Cap-2 Maneuver	531	515	-	479	511	-	-	-	-	-	-	-
Stage 1	780	736	-	767	705	-	-	-	-	-	-	-
Stage 2	753	703	-	715	730	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	11.3	1.7	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1366	-	-	689	591	1442	-	-
HCM Lane V/C Ratio	0.028	-	-	0.134	0.03	0.002	-	-
HCM Control Delay (s)	7.7	0	-	11	11.3	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	140	146	1
Future Vol, veh/h	1	0	1	140	146	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	1	154	160	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	317	161	161	0	-	0
Stage 1	161	-	-	-	-	-
Stage 2	156	-	-	-	-	-
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	676	884	1418	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	675	884	1418	-	-	-
Mov Cap-2 Maneuver	675	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1418	-	675	-	-
HCM Lane V/C Ratio	0.001	-	0.002	-	-
HCM Control Delay (s)	7.5	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	36	97	70	61	121
Future Vol, veh/h	26	36	97	70	61	121
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	40	107	77	67	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	413	146	0	0	184	0
Stage 1	146	-	-	-	-	-
Stage 2	267	-	-	-	-	-
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	595	901	-	-	1391	-
Stage 1	881	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	564	901	-	-	1391	-
Mov Cap-2 Maneuver	564	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	720	1391	-
HCM Lane V/C Ratio	-	-	0.095	0.048	-
HCM Control Delay (s)	-	-	10.5	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	43	2	1	33	7	1	27	4	15	17	47
Future Vol, veh/h	90	43	2	1	33	7	1	27	4	15	17	47
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	106	51	2	1	39	8	1	32	5	18	20	55
Number of Lanes	0	1	0	0	1	0	0	1	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	8.4	7.6	7.7	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	67%	2%	19%
Vol Thru, %	84%	32%	80%	22%
Vol Right, %	12%	1%	17%	59%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	135	41	79
LT Vol	1	90	1	15
Through Vol	27	43	33	17
RT Vol	4	2	7	47
Lane Flow Rate	38	159	48	93
Geometry Grp	1	1	1	1
Degree of Util (X)	0.046	0.191	0.058	0.107
Departure Headway (Hd)	4.44	4.322	4.295	4.133
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	810	820	837	872
Service Time	2.447	2.408	2.305	2.138
HCM Lane V/C Ratio	0.047	0.194	0.057	0.107
HCM Control Delay	7.7	8.4	7.6	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.7	0.2	0.4

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	98	14	23	53	6	9	69	32	12	78	14
Future Vol, veh/h	20	98	14	23	53	6	9	69	32	12	78	14
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	24	117	17	27	63	7	11	82	38	14	93	17
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.9	8.6	8.6	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	12%	0%	15%	28%	13%	0%
Vol Thru, %	88%	0%	74%	65%	87%	0%
Vol Right, %	0%	100%	11%	7%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	32	132	82	90	14
LT Vol	9	0	20	23	12	0
Through Vol	69	0	98	53	78	0
RT Vol	0	32	14	6	0	14
Lane Flow Rate	93	38	157	98	107	17
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.138	0.049	0.204	0.13	0.16	0.021
Departure Headway (Hd)	5.351	4.588	4.677	4.796	5.365	4.592
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	669	778	765	746	667	777
Service Time	3.096	2.332	2.716	2.838	3.11	2.337
HCM Lane V/C Ratio	0.139	0.049	0.205	0.131	0.16	0.022
HCM Control Delay	9	7.6	8.9	8.6	9.1	7.4
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.2	0.8	0.4	0.6	0.1

Intersection	
Int Delay, s/veh	11.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	4	17	56	3	16	4	820	116	13	596	10
Future Vol, veh/h	14	4	17	56	3	16	4	820	116	13	596	10
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	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	4	19	63	3	18	4	921	130	15	670	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1711	1765	676	1711	1705	986	681	0	0	1051	0	0
Stage 1	706	706	-	994	994	-	-	-	-	-	-	-
Stage 2	1005	1059	-	717	711	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	71	83	452	71	91	299	907	-	-	658	-	-
Stage 1	425	437	-	294	322	-	-	-	-	-	-	-
Stage 2	290	300	-	419	435	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	81	452	64	89	299	907	-	-	658	-	-
Mov Cap-2 Maneuver	63	81	-	64	89	-	-	-	-	-	-	-
Stage 1	423	427	-	293	321	-	-	-	-	-	-	-
Stage 2	269	299	-	388	425	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	53	220.1	0	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	907	-	-	113	78	658	-	-
HCM Lane V/C Ratio	0.005	-	-	0.348	1.08	0.022	-	-
HCM Control Delay (s)	9	-	-	53	220.1	10.6	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.4	6	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	635	0	0	455	4	0	0	0	1	0	8
Future Vol, veh/h	19	635	0	0	455	4	0	0	0	1	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	21	698	0	0	500	4	0	0	0	1	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	504	0	-	698	0	0	1247	1244	698	1242	1242	502
Stage 1	-	-	-	-	-	-	740	740	-	502	502	-
Stage 2	-	-	-	-	-	-	507	504	-	740	740	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1055	-	0	894	-	-	150	173	439	151	174	567
Stage 1	-	-	0	-	-	-	407	422	-	550	540	-
Stage 2	-	-	0	-	-	-	546	539	-	407	422	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1055	-	-	894	-	-	146	170	439	149	171	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	146	170	-	149	171	-
Stage 1	-	-	-	-	-	-	399	414	-	539	540	-
Stage 2	-	-	-	-	-	-	538	539	-	399	414	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	13.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1055	-	894	-	-	432
HCM Lane V/C Ratio	-	0.02	-	-	-	-	0.023
HCM Control Delay (s)	0	8.5	-	0	-	-	13.5
HCM Lane LOS	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0.1	-	0	-	-	0.1

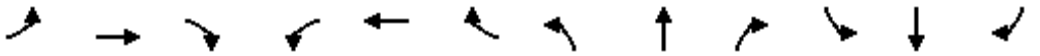
Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	26	132	26	44	179
Future Vol, veh/h	15	26	132	26	44	179
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	29	148	29	49	201

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	462	163	0	0	177	0
Stage 1	163	-	-	-	-	-
Stage 2	299	-	-	-	-	-
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	558	882	-	-	1399	-
Stage 1	866	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	536	882	-	-	1399	-
Mov Cap-2 Maneuver	536	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	723	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	713	1399	-
HCM Lane V/C Ratio	-	-	0.065	0.035	-
HCM Control Delay (s)	-	-	10.4	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	301	45	31	582	52	71	82	28	31	72	64
Future Volume (veh/h)	61	301	45	31	582	52	71	82	28	31	72	64
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1884	1884	1884	1884	1884	1945
Adj Flow Rate, veh/h	68	334	50	34	647	58	79	91	31	34	80	71
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	2
Cap, veh/h	89	780	117	53	716	64	202	141	42	130	136	105
Arrive On Green	0.05	0.51	0.51	0.03	0.49	0.49	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1725	1539	230	1725	1474	132	500	811	239	188	783	605
Grp Volume(v), veh/h	68	0	384	34	0	705	201	0	0	185	0	0
Grp Sat Flow(s),veh/h/ln	1725	0	1770	1725	0	1606	1550	0	0	1576	0	0
Q Serve(g_s), s	1.7	0.0	6.0	0.8	0.0	17.5	0.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	6.0	0.8	0.0	17.5	5.0	0.0	0.0	4.6	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.08	0.39		0.15	0.18		0.38
Lane Grp Cap(c), veh/h	89	0	896	53	0	781	384	0	0	371	0	0
V/C Ratio(X)	0.77	0.00	0.43	0.64	0.00	0.90	0.52	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	831	0	4464	633	0	4052	935	0	0	991	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.4	0.0	6.8	20.9	0.0	10.3	16.9	0.0	0.0	16.8	0.0	0.0
Incr Delay (d2), s/veh	5.1	0.0	0.1	4.6	0.0	1.7	0.4	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.4	0.4	0.0	4.3	1.7	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.5	0.0	6.9	25.5	0.0	11.9	17.4	0.0	0.0	17.2	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		452			739			201			185	
Approach Delay, s/veh		9.7			12.6			17.4			17.2	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	27.0		11.8	5.7	26.1		11.8				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.8	8.0		6.6	3.7	19.5		7.0				
Green Ext Time (p_c), s	0.0	0.8		0.5	0.0	1.7		0.6				

Intersection Summary		
HCM 6th Ctrl Delay		12.9
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	2	31	20	4	5	37	160	19	1	125	20
Future Vol, veh/h	18	2	31	20	4	5	37	160	19	1	125	20
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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	3	43	28	6	7	51	222	26	1	174	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	534	540	188	550	541	235	202	0	0	248	0	0
Stage 1	190	190	-	337	337	-	-	-	-	-	-	-
Stage 2	344	350	-	213	204	-	-	-	-	-	-	-
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	457	449	854	446	448	804	1370	-	-	1318	-	-
Stage 1	812	743	-	677	641	-	-	-	-	-	-	-
Stage 2	671	633	-	789	733	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	434	429	854	407	428	804	1370	-	-	1318	-	-
Mov Cap-2 Maneuver	434	429	-	407	428	-	-	-	-	-	-	-
Stage 1	777	742	-	648	613	-	-	-	-	-	-	-
Stage 2	631	606	-	746	732	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	13.8	1.3	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	619	448	1318	-	-
HCM Lane V/C Ratio	0.038	-	-	0.114	0.09	0.001	-	-
HCM Control Delay (s)	7.7	0	-	11.6	13.8	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	1	166	114	4
Future Vol, veh/h	3	2	1	166	114	4
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	1	231	158	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	394	161	164	0	-	0
Stage 1	161	-	-	-	-	-
Stage 2	233	-	-	-	-	-
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	611	884	1414	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	610	884	1414	-	-	-
Mov Cap-2 Maneuver	610	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	696	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	169	0	0	118
Future Vol, veh/h	0	0	169	0	0	118
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	235	0	0	164

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	399	235	0	0	235	0
Stage 1	235	-	-	-	-	-
Stage 2	164	-	-	-	-	-
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	607	804	-	-	1332	-
Stage 1	804	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	607	804	-	-	1332	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	865	-	-	-	-	-

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)	-	-	-	1332	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	15	3	3	40	21	3	18	2	17	32	45
Future Vol, veh/h	13	15	3	3	40	21	3	18	2	17	32	45
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	19	21	4	4	57	30	4	26	3	24	46	64
Number of Lanes	0	1	0	0	1	0	0	1	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	7.7	7.7	7.5	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	42%	5%	18%
Vol Thru, %	78%	48%	62%	34%
Vol Right, %	9%	10%	33%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	31	64	94
LT Vol	3	13	3	17
Through Vol	18	15	40	32
RT Vol	2	3	21	45
Lane Flow Rate	33	44	91	134
Geometry Grp	1	1	1	1
Degree of Util (X)	0.039	0.053	0.104	0.148
Departure Headway (Hd)	4.264	4.338	4.086	3.958
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	826	812	864	893
Service Time	2.363	2.435	2.174	2.039
HCM Lane V/C Ratio	0.04	0.054	0.105	0.15
HCM Control Delay	7.5	7.7	7.7	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.3	0.5

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	12	3	35	49	8	22	83	13	4	76	22
Future Vol, veh/h	5	12	3	35	49	8	22	83	13	4	76	22
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	17	4	50	70	11	31	119	19	6	109	31
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.1	8.8	9.1	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	21%	0%	25%	38%	5%	0%
Vol Thru, %	79%	0%	60%	53%	95%	0%
Vol Right, %	0%	100%	15%	9%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	13	20	92	80	22
LT Vol	22	0	5	35	4	0
Through Vol	83	0	12	49	76	0
RT Vol	0	13	3	8	0	22
Lane Flow Rate	150	19	29	131	114	31
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.215	0.022	0.038	0.174	0.162	0.038
Departure Headway (Hd)	5.165	4.356	4.833	4.761	5.109	4.38
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	695	821	740	754	702	817
Service Time	2.895	2.085	2.867	2.786	2.839	2.11
HCM Lane V/C Ratio	0.216	0.023	0.039	0.174	0.162	0.038
HCM Control Delay	9.3	7.2	8.1	8.8	8.8	7.3
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.8	0.1	0.1	0.6	0.6	0.1

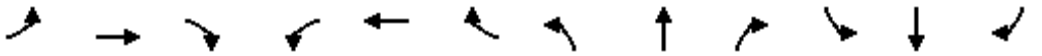
Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	7	1	5	79	2	20	7	399	16	4	619	7
Future Vol, veh/h	7	1	5	79	2	20	7	399	16	4	619	7
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	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	8	1	6	92	2	23	8	464	19	5	720	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1236	1233	724	1228	1228	474	728	0	0	483	0	0
Stage 1	734	734	-	490	490	-	-	-	-	-	-	-
Stage 2	502	499	-	738	738	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	149	173	417	151	174	580	853	-	-	1054	-	-
Stage 1	404	419	-	551	540	-	-	-	-	-	-	-
Stage 2	542	535	-	402	417	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	140	171	417	146	172	580	853	-	-	1054	-	-
Mov Cap-2 Maneuver	140	171	-	146	172	-	-	-	-	-	-	-
Stage 1	400	417	-	546	535	-	-	-	-	-	-	-
Stage 2	513	530	-	393	415	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.3	61.9	0.2	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	853	-	-	192	172	1054	-	-
HCM Lane V/C Ratio	0.01	-	-	0.079	0.683	0.004	-	-
HCM Control Delay (s)	9.3	-	-	25.3	61.9	8.4	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	4.1	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	308	22	4	542	2	66	0	12	3	0	12
Future Volume (veh/h)	5	308	22	4	542	2	66	0	12	3	0	12
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1868	1796	1796	1796	1796	1868	1796	1868	1796	1868	1868	1868
Adj Flow Rate, veh/h	6	342	24	4	602	2	73	0	13	3	0	13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	14	813	689	9	809	713	338	0	21	165	6	129
Arrive On Green	0.01	0.45	0.45	0.01	0.45	0.45	0.10	0.00	0.10	0.10	0.00	0.10
Sat Flow, veh/h	1779	1796	1522	1711	1796	1583	1238	0	221	246	68	1361
Grp Volume(v), veh/h	6	342	24	4	602	2	86	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	1779	1796	1522	1711	1796	1583	1459	0	0	1675	0	0
Q Serve(g_s), s	0.1	3.9	0.3	0.1	8.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	3.9	0.3	0.1	8.4	0.0	1.7	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.85		0.15	0.19		0.81
Lane Grp Cap(c), veh/h	14	813	689	9	809	713	359	0	0	301	0	0
V/C Ratio(X)	0.41	0.42	0.03	0.43	0.74	0.00	0.24	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	294	1396	1183	283	1396	1231	1071	0	0	1074	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.9	5.6	4.6	15.0	6.9	4.6	13.1	0.0	0.0	12.5	0.0	0.0
Incr Delay (d2), s/veh	17.9	0.3	0.0	28.1	1.4	0.0	0.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.7	0.0	0.1	1.7	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	5.9	4.6	43.1	8.3	4.6	13.5	0.0	0.0	12.6	0.0	0.0
LnGrp LOS	C	A	A	D	A	A	B	A	A	B	A	A
Approach Vol, veh/h		372			608			86			16	
Approach Delay, s/veh		6.3			8.5			13.5			12.6	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		7.4	4.7	18.2		7.4	4.7	18.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		3.7	2.1	5.9		2.3	2.1	10.4				
Green Ext Time (p_c), s		0.3	0.0	1.9		0.0	0.0	3.2				

Intersection Summary	
HCM 6th Ctrl Delay	8.2
HCM 6th LOS	A

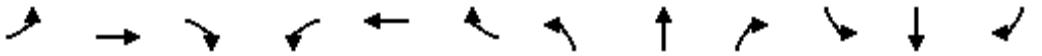
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	214	0	0	178
Future Vol, veh/h	0	0	214	0	0	178
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	297	0	0	247

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	544	297	0	0	297	0
Stage 1	297	-	-	-	-	-
Stage 2	247	-	-	-	-	-
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	500	742	-	-	1264	-
Stage 1	754	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	742	-	-	1264	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	794	-	-	-	-	-

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)	-	-	-	1264	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	650	37	14	526	37	44	35	24	65	51	93
Future Volume (veh/h)	68	650	37	14	526	37	44	35	24	65	51	93
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1930	1930	1930	1930	1930	1930
Adj Flow Rate, veh/h	71	677	39	15	548	39	46	36	25	68	53	97
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	98	785	45	27	634	45	227	150	73	195	95	132
Arrive On Green	0.06	0.45	0.45	0.02	0.41	0.41	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1767	1737	100	1767	1541	110	458	757	370	350	479	665
Grp Volume(v), veh/h	71	0	716	15	0	587	107	0	0	218	0	0
Grp Sat Flow(s),veh/h/ln	1767	0	1838	1767	0	1650	1586	0	0	1494	0	0
Q Serve(g_s), s	1.5	0.0	13.2	0.3	0.0	12.2	0.0	0.0	0.0	3.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	13.2	0.3	0.0	12.2	2.1	0.0	0.0	5.1	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.07	0.43		0.23	0.31		0.44
Lane Grp Cap(c), veh/h	98	0	831	27	0	679	451	0	0	422	0	0
V/C Ratio(X)	0.72	0.00	0.86	0.55	0.00	0.86	0.24	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	985	0	5363	750	0	4816	1091	0	0	1131	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.5	0.0	9.3	18.4	0.0	10.1	12.9	0.0	0.0	14.1	0.0	0.0
Incr Delay (d2), s/veh	3.7	0.0	1.1	6.3	0.0	1.3	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	3.3	0.2	0.0	3.0	0.7	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	0.0	10.3	24.7	0.0	11.4	13.0	0.0	0.0	14.4	0.0	0.0
LnGrp LOS	C	A	B	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		787			602			107			218	
Approach Delay, s/veh		11.3			11.8			13.0			14.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	21.9		11.7	5.6	20.4		11.7				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.3	15.2		7.1	3.5	14.2		4.1				
Green Ext Time (p_c), s	0.0	1.7		0.7	0.0	1.3		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		12.0
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	27	5	34	7	3	6	25	66	6	2	77	17
Future Vol, veh/h	27	5	34	7	3	6	25	66	6	2	77	17
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	5	37	8	3	7	27	73	7	2	85	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	235	233	95	251	239	77	104	0	0	80	0	0
Stage 1	99	99	-	131	131	-	-	-	-	-	-	-
Stage 2	136	134	-	120	108	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	717	665	959	700	660	981	1481	-	-	1512	-	-
Stage 1	905	811	-	870	786	-	-	-	-	-	-	-
Stage 2	865	784	-	882	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	698	652	959	658	647	981	1481	-	-	1512	-	-
Mov Cap-2 Maneuver	698	652	-	658	647	-	-	-	-	-	-	-
Stage 1	888	810	-	853	771	-	-	-	-	-	-	-
Stage 2	839	769	-	841	803	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.9	1.9	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1481	-	-	807	748	1512	-	-
HCM Lane V/C Ratio	0.019	-	-	0.09	0.024	0.001	-	-
HCM Control Delay (s)	7.5	0	-	9.9	9.9	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	70	105	1
Future Vol, veh/h	1	0	1	70	105	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	1	77	115	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	195	116	116	0	-	0
Stage 1	116	-	-	-	-	-
Stage 2	79	-	-	-	-	-
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	794	936	1473	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	793	936	1473	-	-	-
Mov Cap-2 Maneuver	793	-	-	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1473	-	793	-	-
HCM Lane V/C Ratio	0.001	-	0.001	-	-
HCM Control Delay (s)	7.4	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	71	0	0	106
Future Vol, veh/h	0	0	71	0	0	106
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	78	0	0	116

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	194	78	0	0	78	0
Stage 1	78	-	-	-	-	-
Stage 2	116	-	-	-	-	-
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	795	983	-	-	1520	-
Stage 1	945	-	-	-	-	-
Stage 2	909	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	795	983	-	-	1520	-
Mov Cap-2 Maneuver	795	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	909	-	-	-	-	-

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)	-	-	-	1520	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	43	2	1	33	7	1	18	4	15	12	11
Future Vol, veh/h	29	43	2	1	33	7	1	18	4	15	12	11
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	51	2	1	39	8	1	21	5	18	14	13
Number of Lanes	0	1	0	0	1	0	0	1	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	7.7	7.3	7.3	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	39%	2%	39%
Vol Thru, %	78%	58%	80%	32%
Vol Right, %	17%	3%	17%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	74	41	38
LT Vol	1	29	1	15
Through Vol	18	43	33	12
RT Vol	4	2	7	11
Lane Flow Rate	27	87	48	45
Geometry Grp	1	1	1	1
Degree of Util (X)	0.031	0.101	0.054	0.051
Departure Headway (Hd)	4.107	4.158	4.027	4.093
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	861	858	882	865
Service Time	2.184	2.203	2.084	2.167
HCM Lane V/C Ratio	0.031	0.101	0.054	0.052
HCM Control Delay	7.3	7.7	7.3	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0.2

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	46	14	18	22	6	9	60	23	12	78	9
Future Vol, veh/h	11	46	14	18	22	6	9	60	23	12	78	9
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	55	17	21	26	7	11	71	27	14	93	11
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8	8	8.1	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	13%	0%	15%	39%	13%	0%
Vol Thru, %	87%	0%	65%	48%	87%	0%
Vol Right, %	0%	100%	20%	13%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	23	71	46	90	9
LT Vol	9	0	11	18	12	0
Through Vol	60	0	46	22	78	0
RT Vol	0	23	14	6	0	9
Lane Flow Rate	82	27	85	55	107	11
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.115	0.033	0.105	0.07	0.15	0.013
Departure Headway (Hd)	5.049	4.28	4.483	4.605	5.042	4.272
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	711	838	801	779	714	839
Service Time	2.767	1.998	2.502	2.625	2.759	1.989
HCM Lane V/C Ratio	0.115	0.032	0.106	0.071	0.15	0.013
HCM Control Delay	8.4	7.1	8	8	8.6	7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.4	0.2	0.5	0

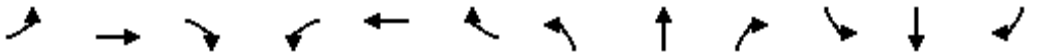
Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑		↰	↑	
Traffic Vol, veh/h	15	4	17	20	3	17	4	815	55	13	554	10
Future Vol, veh/h	15	4	17	20	3	17	4	815	55	13	554	10
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	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	4	19	22	3	19	4	916	62	15	622	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1624	1644	628	1624	1618	947	633	0	0	978	0	0
Stage 1	658	658	-	955	955	-	-	-	-	-	-	-
Stage 2	966	986	-	669	663	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	82	99	481	82	103	315	945	-	-	702	-	-
Stage 1	452	460	-	309	336	-	-	-	-	-	-	-
Stage 2	305	325	-	445	457	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	97	481	74	100	315	945	-	-	702	-	-
Mov Cap-2 Maneuver	74	97	-	74	100	-	-	-	-	-	-	-
Stage 1	450	450	-	308	335	-	-	-	-	-	-	-
Stage 2	282	324	-	414	447	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	45.2	56.5	0	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	945	-	-	129	113	702	-	-
HCM Lane V/C Ratio	0.005	-	-	0.314	0.398	0.021	-	-
HCM Control Delay (s)	8.8	-	-	45.2	56.5	10.2	-	-
HCM Lane LOS	A	-	-	E	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.2	1.7	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	649	22	4	472	4	66	0	8	1	0	8
Future Volume (veh/h)	19	649	22	4	472	4	66	0	8	1	0	8
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1856	1856	1856	1856	1930	1856	1930	1856	1930	1930	1930
Adj Flow Rate, veh/h	21	713	24	4	519	4	73	0	9	1	0	9
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	49	914	775	10	875	771	325	0	14	133	4	136
Arrive On Green	0.03	0.49	0.49	0.01	0.47	0.47	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1838	1856	1572	1767	1856	1635	1329	0	164	132	41	1562
Grp Volume(v), veh/h	21	713	24	4	519	4	82	0	0	10	0	0
Grp Sat Flow(s),veh/h/ln	1838	1856	1572	1767	1856	1635	1493	0	0	1735	0	0
Q Serve(g_s), s	0.4	10.3	0.3	0.1	6.7	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	10.3	0.3	0.1	6.7	0.0	1.7	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.89		0.11	0.10		0.90
Lane Grp Cap(c), veh/h	49	914	775	10	875	771	339	0	0	272	0	0
V/C Ratio(X)	0.43	0.78	0.03	0.41	0.59	0.01	0.24	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	283	1341	1136	272	1341	1182	1024	0	0	1026	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.6	6.8	4.3	16.1	6.3	4.6	14.3	0.0	0.0	13.6	0.0	0.0
Incr Delay (d2), s/veh	5.9	1.8	0.0	26.0	0.6	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.2	0.0	0.1	1.4	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	8.6	4.3	42.1	7.0	4.6	14.7	0.0	0.0	13.7	0.0	0.0
LnGrp LOS	C	A	A	D	A	A	B	A	A	B	A	A
Approach Vol, veh/h		758			527			82			10	
Approach Delay, s/veh		8.8			7.2			14.7			13.7	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		7.3	4.7	20.5		7.3	5.4	19.8				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		3.7	2.1	12.3		2.2	2.4	8.7				
Green Ext Time (p_c), s		0.3	0.0	3.7		0.0	0.0	2.8				

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

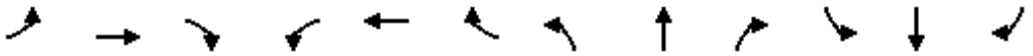
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	96	0	0	118
Future Vol, veh/h	0	0	96	0	0	118
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	108	0	0	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	241	108	0	0	108	0
Stage 1	108	-	-	-	-	-
Stage 2	133	-	-	-	-	-
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	747	946	-	-	1483	-
Stage 1	916	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	747	946	-	-	1483	-
Mov Cap-2 Maneuver	747	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	893	-	-	-	-	-

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)	-	-	-	1483	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	309	55	31	605	60	102	98	28	34	78	64
Future Volume (veh/h)	61	309	55	31	605	60	102	98	28	34	78	64
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1884	1884	1884	1884	1884	1945
Adj Flow Rate, veh/h	68	343	61	34	672	67	113	109	31	38	87	71
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	2
Cap, veh/h	84	776	138	51	729	73	219	153	38	123	172	121
Arrive On Green	0.05	0.52	0.52	0.03	0.50	0.50	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1725	1497	266	1725	1458	145	566	730	181	193	818	574
Grp Volume(v), veh/h	68	0	404	34	0	739	253	0	0	196	0	0
Grp Sat Flow(s),veh/h/ln	1725	0	1763	1725	0	1604	1477	0	0	1584	0	0
Q Serve(g_s), s	2.0	0.0	7.5	1.0	0.0	22.3	2.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	7.5	1.0	0.0	22.3	8.2	0.0	0.0	5.7	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.09	0.45		0.12	0.19		0.36
Lane Grp Cap(c), veh/h	84	0	915	51	0	802	410	0	0	415	0	0
V/C Ratio(X)	0.81	0.00	0.44	0.66	0.00	0.92	0.62	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	694	0	3716	529	0	3380	773	0	0	836	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.6	0.0	7.8	25.1	0.0	12.1	19.4	0.0	0.0	18.6	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.0	0.1	5.3	0.0	2.0	0.6	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	2.1	0.5	0.0	6.2	2.7	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	0.0	8.0	30.3	0.0	14.1	20.0	0.0	0.0	18.9	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		472			773			253			196	
Approach Delay, s/veh		11.3			14.8			20.0			18.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	32.0		15.2	6.0	31.0		15.2				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	3.0	9.5		7.7	4.0	24.3		10.2				
Green Ext Time (p_c), s	0.0	0.8		0.6	0.0	1.8		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	15.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	18	2	37	20	4	5	53	207	19	1	141	20
Future Vol, veh/h	18	2	37	20	4	5	53	207	19	1	141	20
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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	3	51	28	6	7	74	288	26	1	196	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	668	674	210	688	675	301	224	0	0	314	0	0
Stage 1	212	212	-	449	449	-	-	-	-	-	-	-
Stage 2	456	462	-	239	226	-	-	-	-	-	-	-
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	372	376	830	360	376	739	1345	-	-	1246	-	-
Stage 1	790	727	-	589	572	-	-	-	-	-	-	-
Stage 2	584	565	-	764	717	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	345	350	830	318	350	739	1345	-	-	1246	-	-
Mov Cap-2 Maneuver	345	350	-	318	350	-	-	-	-	-	-	-
Stage 1	737	726	-	550	534	-	-	-	-	-	-	-
Stage 2	534	527	-	713	716	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	16.3	1.5	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1345	-	-	556	358	1246	-	-
HCM Lane V/C Ratio	0.055	-	-	0.142	0.113	0.001	-	-
HCM Control Delay (s)	7.8	0	-	12.5	16.3	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.4	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	1	185	169	4
Future Vol, veh/h	3	2	1	185	169	4
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	1	257	235	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	497	238	241	0	-	0
Stage 1	238	-	-	-	-	-
Stage 2	259	-	-	-	-	-
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	532	801	1326	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	531	801	1326	-	-	-
Mov Cap-2 Maneuver	531	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1326	-	614	-	-
HCM Lane V/C Ratio	0.001	-	0.011	-	-
HCM Control Delay (s)	7.7	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	47	47	172	16	16	126
Future Vol, veh/h	47	47	172	16	16	126
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	65	239	22	22	175

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	469	250	0	0	261	0
Stage 1	250	-	-	-	-	-
Stage 2	219	-	-	-	-	-
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	553	789	-	-	1303	-
Stage 1	792	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	542	789	-	-	1303	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	801	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	643	1303	-
HCM Lane V/C Ratio	-	-	0.203	0.017	-
HCM Control Delay (s)	-	-	12	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	15	3	3	40	21	3	21	2	17	40	92
Future Vol, veh/h	29	15	3	3	40	21	3	21	2	17	40	92
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	41	21	4	4	57	30	4	30	3	24	57	131
Number of Lanes	0	1	0	0	1	0	0	1	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	8.1	7.9	7.8	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	62%	5%	11%
Vol Thru, %	81%	32%	62%	27%
Vol Right, %	8%	6%	33%	62%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	26	47	64	149
LT Vol	3	29	3	17
Through Vol	21	15	40	40
RT Vol	2	3	21	92
Lane Flow Rate	37	67	91	213
Geometry Grp	1	1	1	1
Degree of Util (X)	0.047	0.087	0.111	0.237
Departure Headway (Hd)	4.514	4.675	4.378	4.016
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	796	768	820	896
Service Time	2.529	2.693	2.396	2.027
HCM Lane V/C Ratio	0.046	0.087	0.111	0.238
HCM Control Delay	7.8	8.1	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.4	0.9

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	25	3	43	88	8	22	86	16	4	84	30
Future Vol, veh/h	8	25	3	43	88	8	22	86	16	4	84	30
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	36	4	61	126	11	31	123	23	6	120	43
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.5	9.8	9.6	9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	0%	22%	31%	5%	0%
Vol Thru, %	80%	0%	69%	63%	95%	0%
Vol Right, %	0%	100%	8%	6%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	16	36	139	88	30
LT Vol	22	0	8	43	4	0
Through Vol	86	0	25	88	84	0
RT Vol	0	16	3	8	0	30
Lane Flow Rate	154	23	51	199	126	43
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.233	0.029	0.072	0.27	0.188	0.055
Departure Headway (Hd)	5.436	4.628	5.061	4.89	5.371	4.642
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	657	769	703	733	665	767
Service Time	3.194	2.385	3.126	2.938	3.129	2.4
HCM Lane V/C Ratio	0.234	0.03	0.073	0.271	0.189	0.056
HCM Control Delay	9.9	7.5	8.5	9.8	9.4	7.7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.9	0.1	0.2	1.1	0.7	0.2

Intersection	
Int Delay, s/veh	20

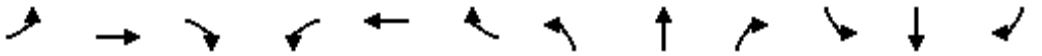
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	1	5	126	2	20	7	417	32	4	629	7
Future Vol, veh/h	7	1	5	126	2	20	7	417	32	4	629	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	8	1	6	147	2	23	8	485	37	5	731	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1277	1283	735	1269	1269	504	739	0	0	522	0	0
Stage 1	745	745	-	520	520	-	-	-	-	-	-	-
Stage 2	532	538	-	749	749	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	140	161	411	~ 142	164	558	845	-	-	1019	-	-
Stage 1	398	414	-	530	524	-	-	-	-	-	-	-
Stage 2	522	514	-	396	412	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	131	159	411	~ 138	162	558	845	-	-	1019	-	-
Mov Cap-2 Maneuver	131	159	-	~ 138	162	-	-	-	-	-	-	-
Stage 1	394	412	-	525	519	-	-	-	-	-	-	-
Stage 2	493	509	-	387	410	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.7	166.4	0.1	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	845	-	-	181	154	1019	-	-
HCM Lane V/C Ratio	0.01	-	-	0.084	1.117	0.005	-	-
HCM Control Delay (s)	9.3	-	-	26.7	166.4	8.5	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	9.2	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	308	33	7	542	2	97	0	20	3	0	12
Future Volume (veh/h)	5	308	33	7	542	2	97	0	20	3	0	12
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1868	1796	1796	1796	1796	1868	1796	1868	1796	1868	1868	1868
Adj Flow Rate, veh/h	6	342	37	8	602	2	108	0	22	3	0	13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	14	793	672	18	798	703	353	0	29	159	14	163
Arrive On Green	0.01	0.44	0.44	0.01	0.44	0.44	0.12	0.00	0.12	0.12	0.00	0.12
Sat Flow, veh/h	1779	1796	1522	1711	1796	1583	1208	0	246	197	118	1364
Grp Volume(v), veh/h	6	342	37	8	602	2	130	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	1779	1796	1522	1711	1796	1583	1454	0	0	1678	0	0
Q Serve(g_s), s	0.1	4.1	0.4	0.1	8.8	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	4.1	0.4	0.1	8.8	0.0	2.7	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.83		0.17	0.19		0.81
Lane Grp Cap(c), veh/h	14	793	672	18	798	703	383	0	0	336	0	0
V/C Ratio(X)	0.42	0.43	0.06	0.44	0.75	0.00	0.34	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	282	1339	1134	271	1339	1180	1027	0	0	1032	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.6	6.1	5.0	15.5	7.3	4.9	13.4	0.0	0.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	17.9	0.4	0.0	15.4	1.5	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.8	0.1	0.1	1.9	0.0	0.8	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	6.4	5.1	30.9	8.8	4.9	13.9	0.0	0.0	12.4	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h		385			612			130			16	
Approach Delay, s/veh		6.7			9.1			13.9			12.4	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		8.3	4.8	18.4		8.3	4.8	18.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		4.7	2.1	6.1		2.3	2.1	10.8				
Green Ext Time (p_c), s		0.5	0.0	1.9		0.0	0.0	3.2				

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

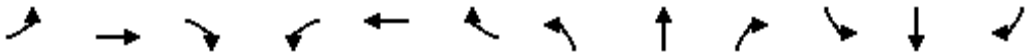
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	16	261	3	5	194
Future Vol, veh/h	8	16	261	3	5	194
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	22	363	4	7	269

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	648	365	0	0	367	0
Stage 1	365	-	-	-	-	-
Stage 2	283	-	-	-	-	-
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	435	680	-	-	1192	-
Stage 1	702	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	432	680	-	-	1192	-
Mov Cap-2 Maneuver	432	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	760	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	1192	-
HCM Lane V/C Ratio	-	-	0.058	0.006	-
HCM Control Delay (s)	-	-	11.7	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	676	72	14	541	42	65	45	24	74	69	93
Future Volume (veh/h)	68	676	72	14	541	42	65	45	24	74	69	93
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1930	1930	1930	1930	1930	1930
Adj Flow Rate, veh/h	71	704	75	15	564	44	68	47	25	77	72	97
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	94	790	84	27	675	53	245	148	58	187	118	126
Arrive On Green	0.05	0.48	0.48	0.02	0.44	0.44	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1767	1648	176	1767	1529	119	569	701	276	363	557	599
Grp Volume(v), veh/h	71	0	779	15	0	608	140	0	0	246	0	0
Grp Sat Flow(s),veh/h/ln	1767	0	1824	1767	0	1649	1546	0	0	1519	0	0
Q Serve(g_s), s	1.7	0.0	16.6	0.4	0.0	14.0	0.0	0.0	0.0	3.3	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	16.6	0.4	0.0	14.0	3.1	0.0	0.0	6.4	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.07	0.49		0.18	0.31		0.39
Lane Grp Cap(c), veh/h	94	0	874	27	0	727	451	0	0	431	0	0
V/C Ratio(X)	0.75	0.00	0.89	0.56	0.00	0.84	0.31	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	867	0	4689	661	0	4238	952	0	0	1006	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.0	0.0	10.1	20.9	0.0	10.6	14.5	0.0	0.0	15.7	0.0	0.0
Incr Delay (d2), s/veh	4.5	0.0	1.3	6.5	0.0	1.0	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	4.5	0.2	0.0	3.6	1.0	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.5	0.0	11.4	27.4	0.0	11.6	14.7	0.0	0.0	16.2	0.0	0.0
LnGrp LOS	C	A	B	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		850			623			140			246	
Approach Delay, s/veh		12.5			12.0			14.7			16.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	25.4		13.2	5.8	23.8		13.2				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.4	18.6		8.4	3.7	16.0		5.1				
Green Ext Time (p_c), s	0.0	1.9		0.7	0.0	1.3		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		13.0	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	27	5	52	7	3	6	35	97	6	2	130	17
Future Vol, veh/h	27	5	52	7	3	6	35	97	6	2	130	17
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	5	57	8	3	7	38	107	7	2	143	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	349	347	153	375	353	111	162	0	0	114	0	0
Stage 1	157	157	-	187	187	-	-	-	-	-	-	-
Stage 2	192	190	-	188	166	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	604	575	890	580	570	940	1411	-	-	1469	-	-
Stage 1	843	766	-	812	743	-	-	-	-	-	-	-
Stage 2	807	741	-	811	759	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	583	558	890	527	553	940	1411	-	-	1469	-	-
Mov Cap-2 Maneuver	583	558	-	527	553	-	-	-	-	-	-	-
Stage 1	819	765	-	788	721	-	-	-	-	-	-	-
Stage 2	775	720	-	753	758	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	10.8	1.9	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1411	-	-	739	638	1469	-	-
HCM Lane V/C Ratio	0.027	-	-	0.125	0.028	0.001	-	-
HCM Control Delay (s)	7.6	0	-	10.6	10.8	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	132	141	1
Future Vol, veh/h	1	0	1	132	141	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	1	145	155	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	303	156	156	0	-	0
Stage 1	156	-	-	-	-	-
Stage 2	147	-	-	-	-	-
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	689	890	1424	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	688	890	1424	-	-	-
Mov Cap-2 Maneuver	688	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1424	-	688	-	-
HCM Lane V/C Ratio	0.001	-	0.002	-	-
HCM Control Delay (s)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	31	80	53	53	111
Future Vol, veh/h	31	31	80	53	53	111
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	34	88	58	58	122

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	355	117	0	0	146	0
Stage 1	117	-	-	-	-	-
Stage 2	238	-	-	-	-	-
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	643	935	-	-	1436	-
Stage 1	908	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	615	935	-	-	1436	-
Mov Cap-2 Maneuver	615	-	-	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	768	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	2.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	742	1436	-
HCM Lane V/C Ratio	-	-	0.092	0.041	-
HCM Control Delay (s)	-	-	10.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	43	2	1	33	7	1	27	4	15	17	42
Future Vol, veh/h	82	43	2	1	33	7	1	27	4	15	17	42
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	96	51	2	1	39	8	1	32	5	18	20	49
Number of Lanes	0	1	0	0	1	0	0	1	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	8.3	7.5	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	65%	2%	20%
Vol Thru, %	84%	34%	80%	23%
Vol Right, %	12%	2%	17%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	127	41	74
LT Vol	1	82	1	15
Through Vol	27	43	33	17
RT Vol	4	2	7	42
Lane Flow Rate	38	149	48	87
Geometry Grp	1	1	1	1
Degree of Util (X)	0.046	0.179	0.057	0.1
Departure Headway (Hd)	4.41	4.306	4.272	4.129
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	816	823	842	872
Service Time	2.415	2.388	2.28	2.132
HCM Lane V/C Ratio	0.047	0.181	0.057	0.1
HCM Control Delay	7.6	8.3	7.5	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.6	0.2	0.3

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	90	14	23	48	6	9	69	32	12	83	14
Future Vol, veh/h	20	90	14	23	48	6	9	69	32	12	83	14
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	24	107	17	27	57	7	11	82	38	14	99	17
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.8	8.5	8.5	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	12%	0%	16%	30%	13%	0%
Vol Thru, %	88%	0%	73%	62%	87%	0%
Vol Right, %	0%	100%	11%	8%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	32	124	77	95	14
LT Vol	9	0	20	23	12	0
Through Vol	69	0	90	48	83	0
RT Vol	0	32	14	6	0	14
Lane Flow Rate	93	38	148	92	113	17
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.137	0.048	0.192	0.122	0.167	0.021
Departure Headway (Hd)	5.319	4.556	4.683	4.799	5.323	4.554
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	673	784	766	746	673	784
Service Time	3.061	2.297	2.715	2.836	3.064	2.295
HCM Lane V/C Ratio	0.138	0.048	0.193	0.123	0.168	0.022
HCM Control Delay	8.9	7.5	8.8	8.5	9.1	7.4
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.2	0.7	0.4	0.6	0.1

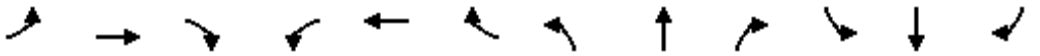
Intersection	
Int Delay, s/veh	11

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	4	17	51	3	17	4	876	108	13	589	10
Future Vol, veh/h	15	4	17	51	3	17	4	876	108	13	589	10
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	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	4	19	57	3	19	4	984	121	15	662	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1762	1811	668	1762	1756	1045	673	0	0	1105	0	0
Stage 1	698	698	-	1053	1053	-	-	-	-	-	-	-
Stage 2	1064	1113	-	709	703	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	65	78	456	65	84	277	913	-	-	628	-	-
Stage 1	429	441	-	272	302	-	-	-	-	-	-	-
Stage 2	268	283	-	423	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	57	76	456	58	82	277	913	-	-	628	-	-
Mov Cap-2 Maneuver	57	76	-	58	82	-	-	-	-	-	-	-
Stage 1	427	430	-	271	301	-	-	-	-	-	-	-
Stage 2	246	282	-	391	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	61.8	232.3	0	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	913	-	-	102	73	628	-	-
HCM Lane V/C Ratio	0.005	-	-	0.397	1.093	0.023	-	-
HCM Control Delay (s)	9	-	-	61.8	232.3	10.9	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	5.9	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	649	57	13	472	4	87	0	13	1	0	8
Future Volume (veh/h)	19	649	57	13	472	4	87	0	13	1	0	8
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1856	1856	1856	1856	1930	1856	1930	1856	1930	1930	1930
Adj Flow Rate, veh/h	21	713	63	14	519	4	96	0	14	1	0	9
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	49	904	766	32	888	783	327	0	19	127	6	156
Arrive On Green	0.03	0.49	0.49	0.02	0.48	0.48	0.10	0.00	0.10	0.10	0.00	0.10
Sat Flow, veh/h	1838	1856	1572	1767	1856	1635	1303	0	190	113	61	1564
Grp Volume(v), veh/h	21	713	63	14	519	4	110	0	0	10	0	0
Grp Sat Flow(s),veh/h/ln	1838	1856	1572	1767	1856	1635	1493	0	0	1738	0	0
Q Serve(g_s), s	0.4	10.9	0.7	0.3	6.9	0.0	2.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	10.9	0.7	0.3	6.9	0.0	2.4	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.87		0.13	0.10		0.90
Lane Grp Cap(c), veh/h	49	904	766	32	888	783	346	0	0	289	0	0
V/C Ratio(X)	0.43	0.79	0.08	0.44	0.58	0.01	0.32	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	269	1277	1082	259	1277	1125	975	0	0	979	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.4	7.3	4.7	16.6	6.4	4.7	14.9	0.0	0.0	13.9	0.0	0.0
Incr Delay (d2), s/veh	5.9	2.2	0.0	9.0	0.6	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.6	0.1	0.2	1.5	0.0	0.7	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	9.5	4.7	25.6	7.1	4.7	15.4	0.0	0.0	14.0	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h		797			537			110			10	
Approach Delay, s/veh		9.5			7.5			15.4			14.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		7.9	5.1	21.1		7.9	5.4	20.8				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		4.4	2.3	12.9		2.2	2.4	8.9				
Green Ext Time (p_c), s		0.4	0.0	3.7		0.0	0.0	2.8				

Intersection Summary	
HCM 6th Ctrl Delay	9.2
HCM 6th LOS	A

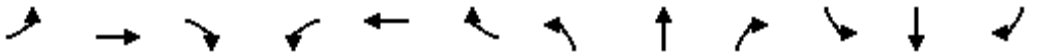
Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	10	127	9	18	171
Future Vol, veh/h	5	10	127	9	18	171
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	11	143	10	20	192

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	380	148	0	0	153	0
Stage 1	148	-	-	-	-	-
Stage 2	232	-	-	-	-	-
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	622	899	-	-	1428	-
Stage 1	880	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	612	899	-	-	1428	-
Mov Cap-2 Maneuver	612	-	-	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	777	1428	-
HCM Lane V/C Ratio	-	-	0.022	0.014	-
HCM Control Delay (s)	-	-	9.7	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	330	50	35	635	60	80	95	35	35	80	75
Future Volume (veh/h)	70	330	50	35	635	60	80	95	35	35	80	75
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1884	1884	1884	1884	1884	1945
Adj Flow Rate, veh/h	76	359	54	38	690	65	87	103	38	38	87	82
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, %	6	6	6	6	6	6	6	6	6	6	6	2
Cap, veh/h	95	818	123	56	748	70	186	150	48	119	146	119
Arrive On Green	0.05	0.53	0.53	0.03	0.51	0.51	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1725	1538	231	1725	1467	138	470	788	252	189	769	628
Grp Volume(v), veh/h	76	0	413	38	0	755	228	0	0	207	0	0
Grp Sat Flow(s),veh/h/ln	1725	0	1769	1725	0	1605	1509	0	0	1585	0	0
Q Serve(g_s), s	2.2	0.0	7.3	1.1	0.0	22.4	1.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	0.0	7.3	1.1	0.0	22.4	7.1	0.0	0.0	6.1	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.09	0.38		0.17	0.18		0.40
Lane Grp Cap(c), veh/h	95	0	942	56	0	818	384	0	0	384	0	0
V/C Ratio(X)	0.80	0.00	0.44	0.68	0.00	0.92	0.59	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	705	0	3787	537	0	3435	790	0	0	845	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.0	0.0	7.3	24.6	0.0	11.7	19.7	0.0	0.0	19.4	0.0	0.0
Incr Delay (d2), s/veh	5.8	0.0	0.1	5.2	0.0	2.0	0.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	2.0	0.5	0.0	6.0	2.4	0.0	0.0	2.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.8	0.0	7.5	29.8	0.0	13.6	20.2	0.0	0.0	19.8	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	C	A	A	B	A	A
Approach Vol, veh/h		489			793			228			207	
Approach Delay, s/veh		10.9			14.4			20.2			19.8	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	32.2		14.0	6.3	31.1		14.0				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	3.1	9.3		8.1	4.2	24.4		9.1				
Green Ext Time (p_c), s	0.0	0.9		0.6	0.0	1.8		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	5	35	25	5	10	45	180	25	5	140	25
Future Vol, veh/h	20	5	35	25	5	10	45	180	25	5	140	25
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	22	5	38	27	5	11	49	196	27	5	152	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	492	497	166	505	497	210	179	0	0	223	0	0
Stage 1	176	176	-	308	308	-	-	-	-	-	-	-
Stage 2	316	321	-	197	189	-	-	-	-	-	-	-
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	487	475	878	478	475	830	1397	-	-	1346	-	-
Stage 1	826	753	-	702	660	-	-	-	-	-	-	-
Stage 2	695	652	-	805	744	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	460	454	878	438	454	830	1397	-	-	1346	-	-
Mov Cap-2 Maneuver	460	454	-	438	454	-	-	-	-	-	-	-
Stage 1	793	750	-	674	634	-	-	-	-	-	-	-
Stage 2	653	626	-	761	741	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	12.9	1.4	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1397	-	-	636	499	1346	-	-
HCM Lane V/C Ratio	0.035	-	-	0.103	0.087	0.004	-	-
HCM Control Delay (s)	7.7	0	-	11.3	12.9	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	185	130	5
Future Vol, veh/h	5	5	5	185	130	5
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	5	5	5	201	141	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	355	144	146	0	-	0
Stage 1	144	-	-	-	-	-
Stage 2	211	-	-	-	-	-
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	643	903	1436	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	640	903	1436	-	-	-
Mov Cap-2 Maneuver	640	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1436	-	749	-	-
HCM Lane V/C Ratio	0.004	-	0.015	-	-
HCM Control Delay (s)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	190	0	0	135
Future Vol, veh/h	0	0	190	0	0	135
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	207	0	0	147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	354	207	0	0	207	0
Stage 1	207	-	-	-	-	-
Stage 2	147	-	-	-	-	-
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	644	833	-	-	1364	-
Stage 1	828	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	644	833	-	-	1364	-
Mov Cap-2 Maneuver	644	-	-	-	-	-
Stage 1	828	-	-	-	-	-
Stage 2	880	-	-	-	-	-

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)	-	-	-	1364	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	20	5	5	45	25	5	20	5	20	40	50
Future Vol, veh/h	15	20	5	5	45	25	5	20	5	20	40	50
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
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	22	5	5	49	27	5	22	5	22	43	54
Number of Lanes	0	1	0	0	1	0	0	1	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	7.6	7.6	7.5	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	38%	7%	18%
Vol Thru, %	67%	50%	60%	36%
Vol Right, %	17%	12%	33%	45%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	40	75	110
LT Vol	5	15	5	20
Through Vol	20	20	45	40
RT Vol	5	5	25	50
Lane Flow Rate	33	43	82	120
Geometry Grp	1	1	1	1
Degree of Util (X)	0.038	0.052	0.092	0.131
Departure Headway (Hd)	4.194	4.278	4.061	3.955
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	841	826	871	896
Service Time	2.281	2.363	2.139	2.027
HCM Lane V/C Ratio	0.039	0.052	0.094	0.134
HCM Control Delay	7.5	7.6	7.6	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.3	0.5

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	15	5	40	55	10	25	95	15	5	85	25
Future Vol, veh/h	10	15	5	40	55	10	25	95	15	5	85	25
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	16	5	43	60	11	27	103	16	5	92	27
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	7.9	8.5	8.8	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	21%	0%	33%	38%	6%	0%
Vol Thru, %	79%	0%	50%	52%	94%	0%
Vol Right, %	0%	100%	17%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	15	30	105	90	25
LT Vol	25	0	10	40	5	0
Through Vol	95	0	15	55	85	0
RT Vol	0	15	5	10	0	25
Lane Flow Rate	130	16	33	114	98	27
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.185	0.019	0.043	0.148	0.137	0.033
Departure Headway (Hd)	5.102	4.294	4.705	4.654	5.048	4.317
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	704	833	761	772	711	829
Service Time	2.829	2.021	2.733	2.677	2.774	2.043
HCM Lane V/C Ratio	0.185	0.019	0.043	0.148	0.138	0.033
HCM Control Delay	9	7.1	7.9	8.5	8.6	7.2
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.1	0.5	0.5	0.1

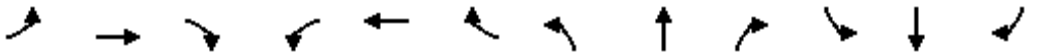
Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	5	10	90	5	25	10	440	20	5	685	10
Future Vol, veh/h	10	5	10	90	5	25	10	440	20	5	685	10
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	-	-	-	-	-	-	100	-	-	150	-	-
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, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	11	5	11	98	5	27	11	478	22	5	745	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1288	1283	751	1280	1277	489	756	0	0	500	0	0
Stage 1	761	761	-	511	511	-	-	-	-	-	-	-
Stage 2	527	522	-	769	766	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	137	161	403	139	163	569	833	-	-	1039	-	-
Stage 1	390	407	-	536	529	-	-	-	-	-	-	-
Stage 2	525	523	-	386	405	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	158	403	130	160	569	833	-	-	1039	-	-
Mov Cap-2 Maneuver	125	158	-	130	160	-	-	-	-	-	-	-
Stage 1	385	405	-	529	522	-	-	-	-	-	-	-
Stage 2	488	516	-	369	403	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.1	91.4	0.2	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	833	-	-	183	156	1039	-	-
HCM Lane V/C Ratio	0.013	-	-	0.148	0.836	0.005	-	-
HCM Control Delay (s)	9.4	-	-	28.1	91.4	8.5	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	5.6	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	340	25	5	600	5	70	0	15	5	0	15
Future Volume (veh/h)	10	340	25	5	600	5	70	0	15	5	0	15
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1868	1796	1796	1796	1796	1868	1796	1868	1796	1868	1868	1868
Adj Flow Rate, veh/h	11	370	27	5	652	5	76	0	16	5	0	16
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, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	26	856	726	12	842	743	323	0	25	167	10	125
Arrive On Green	0.01	0.48	0.48	0.01	0.47	0.47	0.10	0.00	0.10	0.10	0.00	0.10
Sat Flow, veh/h	1779	1796	1522	1711	1796	1583	1213	0	255	297	101	1271
Grp Volume(v), veh/h	11	370	27	5	652	5	92	0	0	21	0	0
Grp Sat Flow(s),veh/h/ln	1779	1796	1522	1711	1796	1583	1469	0	0	1668	0	0
Q Serve(g_s), s	0.2	4.4	0.3	0.1	9.8	0.1	1.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	4.4	0.3	0.1	9.8	0.1	1.9	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.83		0.17	0.24		0.76
Lane Grp Cap(c), veh/h	26	856	726	12	842	743	348	0	0	302	0	0
V/C Ratio(X)	0.42	0.43	0.04	0.43	0.77	0.01	0.26	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	275	1306	1107	265	1306	1151	1002	0	0	1006	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.8	5.6	4.5	16.0	7.2	4.6	13.9	0.0	0.0	13.3	0.0	0.0
Incr Delay (d2), s/veh	10.7	0.3	0.0	23.2	1.6	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.8	0.0	0.1	2.1	0.0	0.6	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	5.9	4.5	39.2	8.7	4.6	14.3	0.0	0.0	13.4	0.0	0.0
LnGrp LOS	C	A	A	D	A	A	B	A	A	B	A	A
Approach Vol, veh/h		408			662			92			21	
Approach Delay, s/veh		6.4			8.9			14.3			13.4	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		7.7	4.7	19.9		7.7	5.0	19.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		3.9	2.1	6.4		2.4	2.2	11.8				
Green Ext Time (p_c), s		0.3	0.0	2.1		0.0	0.0	3.4				

Intersection Summary												
HCM 6th Ctrl Delay			8.5									
HCM 6th LOS			A									

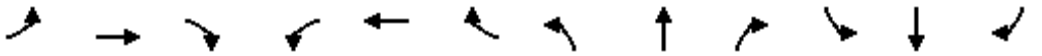
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	240	0	0	200
Future Vol, veh/h	0	0	240	0	0	200
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	261	0	0	217

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	478	261	0	0	261	0
Stage 1	261	-	-	-	-	-
Stage 2	217	-	-	-	-	-
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	546	778	-	-	1303	-
Stage 1	783	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	546	778	-	-	1303	-
Mov Cap-2 Maneuver	546	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	819	-	-	-	-	-

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)	-	-	-	1303	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	715	45	15	575	45	50	40	30	75	60	105
Future Volume (veh/h)	80	715	45	15	575	45	50	40	30	75	60	105
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1930	1930	1930	1930	1930	1930
Adj Flow Rate, veh/h	87	777	49	16	625	49	54	43	33	82	65	114
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	110	862	54	28	692	54	208	149	85	179	105	144
Arrive On Green	0.06	0.50	0.50	0.02	0.45	0.45	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1767	1727	109	1767	1529	120	458	680	387	363	481	655
Grp Volume(v), veh/h	87	0	826	16	0	674	130	0	0	261	0	0
Grp Sat Flow(s),veh/h/ln	1767	0	1836	1767	0	1648	1525	0	0	1500	0	0
Q Serve(g_s), s	2.3	0.0	19.4	0.4	0.0	18.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	2.3	0.0	19.4	0.4	0.0	18.0	3.2	0.0	0.0	7.7	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.07	0.42		0.25	0.31		0.44
Lane Grp Cap(c), veh/h	110	0	917	28	0	747	442	0	0	428	0	0
V/C Ratio(X)	0.79	0.00	0.90	0.56	0.00	0.90	0.29	0.00	0.00	0.61	0.00	0.00
Avail Cap(c_a), veh/h	782	0	4257	596	0	3822	861	0	0	901	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.9	0.0	10.8	23.2	0.0	12.0	15.7	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	4.7	0.0	1.4	6.4	0.0	1.7	0.1	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	5.6	0.2	0.0	5.0	1.1	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	12.2	29.6	0.0	13.7	15.8	0.0	0.0	17.9	0.0	0.0
LnGrp LOS	C	A	B	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		913			690			130			261	
Approach Delay, s/veh		13.6			14.1			15.8			17.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	28.6		14.6	6.5	26.4		14.6				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.4	21.4		9.7	4.3	20.0		5.2				
Green Ext Time (p_c), s	0.0	2.0		0.8	0.0	1.5		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	10	40	10	5	10	30	75	10	5	90	20
Future Vol, veh/h	30	10	40	10	5	10	30	75	10	5	90	20
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	11	43	11	5	11	33	82	11	5	98	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	281	278	109	300	284	88	120	0	0	93	0	0
Stage 1	119	119	-	154	154	-	-	-	-	-	-	-
Stage 2	162	159	-	146	130	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	669	628	942	650	623	968	1462	-	-	1495	-	-
Stage 1	883	795	-	846	768	-	-	-	-	-	-	-
Stage 2	838	764	-	854	787	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	643	610	942	599	606	968	1462	-	-	1495	-	-
Mov Cap-2 Maneuver	643	610	-	599	606	-	-	-	-	-	-	-
Stage 1	862	792	-	826	750	-	-	-	-	-	-	-
Stage 2	803	746	-	800	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	10.3	2	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1462	-	-	758	709	1495	-	-
HCM Lane V/C Ratio	0.022	-	-	0.115	0.038	0.004	-	-
HCM Control Delay (s)	7.5	0	-	10.4	10.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	0	5	80	120	5
Future Vol, veh/h	5	0	5	80	120	5
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	5	0	5	87	130	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	230	133	135	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	97	-	-	-	-	-
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	758	916	1449	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	755	916	1449	-	-	-
Mov Cap-2 Maneuver	755	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	927	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1449	-	755	-	-
HCM Lane V/C Ratio	0.004	-	0.007	-	-
HCM Control Delay (s)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	80	0	0	120
Future Vol, veh/h	0	0	80	0	0	120
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	87	0	0	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	217	87	0	0	87	0
Stage 1	87	-	-	-	-	-
Stage 2	130	-	-	-	-	-
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	771	971	-	-	1509	-
Stage 1	936	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	771	971	-	-	1509	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	896	-	-	-	-	-

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)	-	-	-	1509	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	50	5	5	40	10	5	20	5	20	15	15
Future Vol, veh/h	35	50	5	5	40	10	5	20	5	20	15	15
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	54	5	5	43	11	5	22	5	22	16	16
Number of Lanes	0	1	0	0	1	0	0	1	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	7.8	7.4	7.4	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	39%	9%	40%
Vol Thru, %	67%	56%	73%	30%
Vol Right, %	17%	6%	18%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	90	55	50
LT Vol	5	35	5	20
Through Vol	20	50	40	15
RT Vol	5	5	10	15
Lane Flow Rate	33	98	60	54
Geometry Grp	1	1	1	1
Degree of Util (X)	0.038	0.113	0.068	0.062
Departure Headway (Hd)	4.182	4.175	4.068	4.131
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	843	852	871	854
Service Time	2.274	2.233	2.137	2.218
HCM Lane V/C Ratio	0.039	0.115	0.069	0.063
HCM Control Delay	7.4	7.8	7.4	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.2	0.2

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	55	20	20	25	10	10	70	30	15	90	10
Future Vol, veh/h	15	55	20	20	25	10	10	70	30	15	90	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	60	22	22	27	11	11	76	33	16	98	11
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.2	8	8.1	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	12%	0%	17%	36%	14%	0%
Vol Thru, %	88%	0%	61%	45%	86%	0%
Vol Right, %	0%	100%	22%	18%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	30	90	55	105	10
LT Vol	10	0	15	20	15	0
Through Vol	70	0	55	25	90	0
RT Vol	0	30	20	10	0	10
Lane Flow Rate	87	33	98	60	114	11
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.123	0.039	0.123	0.077	0.162	0.013
Departure Headway (Hd)	5.1	4.333	4.523	4.631	5.101	4.326
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	703	827	794	775	704	828
Service Time	2.824	2.057	2.543	2.653	2.825	2.049
HCM Lane V/C Ratio	0.124	0.04	0.123	0.077	0.162	0.013
HCM Control Delay	8.5	7.2	8.2	8	8.8	7.1
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.4	0.2	0.6	0

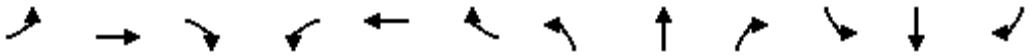
Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	5	20	25	5	20	5	900	65	15	615	15
Future Vol, veh/h	20	5	20	25	5	20	5	900	65	15	615	15
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	-	-	-	-	-	-	100	-	-	150	-	-
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	5	22	27	5	22	5	978	71	16	668	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1745	1767	676	1746	1740	1014	684	0	0	1049	0	0
Stage 1	708	708	-	1024	1024	-	-	-	-	-	-	-
Stage 2	1037	1059	-	722	716	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	67	83	452	67	86	288	905	-	-	660	-	-
Stage 1	424	436	-	283	311	-	-	-	-	-	-	-
Stage 2	278	300	-	416	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	58	81	452	59	83	288	905	-	-	660	-	-
Mov Cap-2 Maneuver	58	81	-	59	83	-	-	-	-	-	-	-
Stage 1	421	426	-	281	309	-	-	-	-	-	-	-
Stage 2	251	298	-	381	423	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	71.4	93	0	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	905	-	-	100	90	660	-	-
HCM Lane V/C Ratio	0.006	-	-	0.489	0.604	0.025	-	-
HCM Control Delay (s)	9	-	-	71.4	93	10.6	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.1	2.8	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	720	25	5	520	5	70	0	10	5	0	10
Future Volume (veh/h)	25	720	25	5	520	5	70	0	10	5	0	10
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1856	1856	1856	1856	1930	1856	1930	1856	1930	1930	1930
Adj Flow Rate, veh/h	27	783	27	5	565	5	76	0	11	5	0	11
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	61	958	812	12	909	801	312	0	17	172	12	107
Arrive On Green	0.03	0.52	0.52	0.01	0.49	0.49	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1838	1856	1572	1767	1856	1635	1315	0	190	407	132	1187
Grp Volume(v), veh/h	27	783	27	5	565	5	87	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	1838	1856	1572	1767	1856	1635	1505	0	0	1726	0	0
Q Serve(g_s), s	0.5	12.3	0.3	0.1	7.8	0.1	1.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	12.3	0.3	0.1	7.8	0.1	1.9	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.87		0.13	0.31		0.69
Lane Grp Cap(c), veh/h	61	958	812	12	909	801	329	0	0	291	0	0
V/C Ratio(X)	0.45	0.82	0.03	0.42	0.62	0.01	0.26	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	263	1249	1058	253	1249	1100	954	0	0	959	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.6	7.1	4.2	17.3	6.5	4.6	15.3	0.0	0.0	14.6	0.0	0.0
Incr Delay (d2), s/veh	5.0	3.4	0.0	21.5	0.7	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.0	0.0	0.1	1.7	0.0	0.6	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	10.4	4.2	38.8	7.2	4.6	15.7	0.0	0.0	14.7	0.0	0.0
LnGrp LOS	C	B	A	D	A	A	B	A	A	B	A	A
Approach Vol, veh/h		837			575			87			16	
Approach Delay, s/veh		10.6			7.5			15.7			14.7	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		7.7	4.7	22.5		7.7	5.7	21.6				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		3.9	2.1	14.3		2.3	2.5	9.8				
Green Ext Time (p_c), s		0.3	0.0	3.7		0.0	0.0	3.0				

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

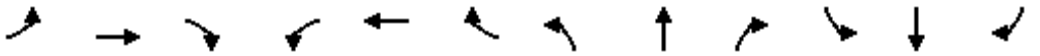
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	110	0	0	135
Future Vol, veh/h	0	0	110	0	0	135
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	120	0	0	147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	267	120	0	0	120	0
Stage 1	120	-	-	-	-	-
Stage 2	147	-	-	-	-	-
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	722	931	-	-	1468	-
Stage 1	905	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	722	931	-	-	1468	-
Mov Cap-2 Maneuver	722	-	-	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	880	-	-	-	-	-

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)	-	-	-	1468	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	340	60	35	660	70	115	115	35	40	90	75
Future Volume (veh/h)	70	340	60	35	660	70	115	115	35	40	90	75
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1884	1884	1884	1884	1884	1945
Adj Flow Rate, veh/h	76	370	65	38	717	76	125	125	38	43	98	82
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, %	6	6	6	6	6	6	6	6	6	6	6	2
Cap, veh/h	97	824	145	51	758	80	196	160	43	106	189	136
Arrive On Green	0.06	0.55	0.55	0.03	0.52	0.52	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1725	1500	264	1725	1449	154	506	655	176	187	772	558
Grp Volume(v), veh/h	76	0	435	38	0	793	288	0	0	223	0	0
Grp Sat Flow(s),veh/h/ln	1725	0	1764	1725	0	1602	1337	0	0	1516	0	0
Q Serve(g_s), s	3.1	0.0	10.5	1.6	0.0	33.4	5.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	10.5	1.6	0.0	33.4	14.8	0.0	0.0	9.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.10	0.43		0.13	0.19		0.37
Lane Grp Cap(c), veh/h	97	0	969	51	0	838	399	0	0	431	0	0
V/C Ratio(X)	0.79	0.00	0.45	0.74	0.00	0.95	0.72	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	507	0	2713	386	0	2465	540	0	0	604	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.3	0.0	9.6	34.4	0.0	16.1	25.9	0.0	0.0	23.8	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.0	0.1	7.6	0.0	2.7	1.6	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	3.4	0.7	0.0	10.7	4.7	0.0	0.0	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.6	0.0	9.8	42.0	0.0	18.8	27.5	0.0	0.0	24.1	0.0	0.0
LnGrp LOS	D	A	A	D	A	B	C	A	A	C	A	A
Approach Vol, veh/h		511			831			288			223	
Approach Delay, s/veh		14.0			19.9			27.5			24.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	44.2		21.7	7.5	42.3		21.7				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	3.6	12.5		11.0	5.1	35.4		16.8				
Green Ext Time (p_c), s	0.0	0.9		0.6	0.0	2.0		0.6				

Intersection Summary		
HCM 6th Ctrl Delay		20.0
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	20	5	45	25	5	10	65	230	25	5	160	25
Future Vol, veh/h	20	5	45	25	5	10	65	230	25	5	160	25
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	22	5	49	27	5	11	71	250	27	5	174	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	612	617	188	631	617	264	201	0	0	277	0	0
Stage 1	198	198	-	406	406	-	-	-	-	-	-	-
Stage 2	414	419	-	225	211	-	-	-	-	-	-	-
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	405	405	854	394	405	775	1371	-	-	1286	-	-
Stage 1	804	737	-	622	598	-	-	-	-	-	-	-
Stage 2	616	590	-	778	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	375	379	854	349	379	775	1371	-	-	1286	-	-
Mov Cap-2 Maneuver	375	379	-	349	379	-	-	-	-	-	-	-
Stage 1	755	734	-	584	562	-	-	-	-	-	-	-
Stage 2	565	554	-	725	725	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	14.8	1.6	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1371	-	-	587	409	1286	-	-
HCM Lane V/C Ratio	0.052	-	-	0.13	0.106	0.004	-	-
HCM Control Delay (s)	7.8	0	-	12	14.8	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.4	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	205	185	5
Future Vol, veh/h	5	5	5	205	185	5
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	5	5	5	223	201	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	437	204	206	0	-	0
Stage 1	204	-	-	-	-	-
Stage 2	233	-	-	-	-	-
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	577	837	1365	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	575	837	1365	-	-	-
Mov Cap-2 Maneuver	575	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1365	-	682	-	-
HCM Lane V/C Ratio	0.004	-	0.016	-	-
HCM Control Delay (s)	7.6	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	50	195	20	20	145
Future Vol, veh/h	50	50	195	20	20	145
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	54	54	212	22	22	158

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	425	223	0	0	234	0
Stage 1	223	-	-	-	-	-
Stage 2	202	-	-	-	-	-
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	586	817	-	-	1333	-
Stage 1	814	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	575	817	-	-	1333	-
Mov Cap-2 Maneuver	575	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	817	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	675	1333	-
HCM Lane V/C Ratio	-	-	0.161	0.016	-
HCM Control Delay (s)	-	-	11.4	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	20	5	5	45	25	5	25	5	20	50	100
Future Vol, veh/h	35	20	5	5	45	25	5	25	5	20	50	100
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
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	38	22	5	5	49	27	5	27	5	22	54	109
Number of Lanes	0	1	0	0	1	0	0	1	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	8	7.8	7.7	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	58%	7%	12%
Vol Thru, %	71%	33%	60%	29%
Vol Right, %	14%	8%	33%	59%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	60	75	170
LT Vol	5	35	5	20
Through Vol	25	20	45	50
RT Vol	5	5	25	100
Lane Flow Rate	38	65	82	185
Geometry Grp	1	1	1	1
Degree of Util (X)	0.047	0.083	0.098	0.206
Departure Headway (Hd)	4.417	4.582	4.314	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	813	783	832	900
Service Time	2.432	2.601	2.332	2.013
HCM Lane V/C Ratio	0.047	0.083	0.099	0.206
HCM Control Delay	7.7	8	7.8	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.3	0.8

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	30	5	50	95	10	25	100	20	5	95	35
Future Vol, veh/h	15	30	5	50	95	10	25	100	20	5	95	35
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	33	5	54	103	11	27	109	22	5	103	38
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.3	9.2	9.1	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	0%	30%	32%	5%	0%
Vol Thru, %	80%	0%	60%	61%	95%	0%
Vol Right, %	0%	100%	10%	6%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	125	20	50	155	100	35
LT Vol	25	0	15	50	5	0
Through Vol	100	0	30	95	95	0
RT Vol	0	20	5	10	0	35
Lane Flow Rate	136	22	54	168	109	38
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.201	0.027	0.074	0.224	0.159	0.048
Departure Headway (Hd)	5.328	4.522	4.907	4.782	5.268	4.537
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	673	789	728	750	679	786
Service Time	3.072	2.266	2.953	2.818	3.012	2.281
HCM Lane V/C Ratio	0.202	0.028	0.074	0.224	0.161	0.048
HCM Control Delay	9.4	7.4	8.3	9.2	9	7.5
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.2	0.9	0.6	0.2

Intersection	
Int Delay, s/veh	31.2

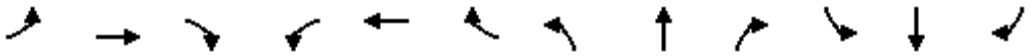
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	5	10	140	5	25	10	460	40	5	695	10
Future Vol, veh/h	10	5	10	140	5	25	10	460	40	5	695	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
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, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	11	5	11	152	5	27	11	500	43	5	755	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1331	1336	761	1323	1320	522	766	0	0	543	0	0
Stage 1	771	771	-	544	544	-	-	-	-	-	-	-
Stage 2	560	565	-	779	776	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	128	150	397	~ 130	153	545	825	-	-	1001	-	-
Stage 1	385	402	-	514	511	-	-	-	-	-	-	-
Stage 2	504	500	-	381	400	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	117	147	397	~ 121	150	545	825	-	-	1001	-	-
Mov Cap-2 Maneuver	117	147	-	~ 121	150	-	-	-	-	-	-	-
Stage 1	380	400	-	507	504	-	-	-	-	-	-	-
Stage 2	467	494	-	364	398	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.6	254.1	0.2	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	825	-	-	173	138	1001	-	-
HCM Lane V/C Ratio	0.013	-	-	0.157	1.339	0.005	-	-
HCM Control Delay (s)	9.4	-	-	29.6	254.1	8.6	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	11.7	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	340	40	10	600	5	105	0	25	5	0	15
Future Volume (veh/h)	10	340	40	10	600	5	105	0	25	5	0	15
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1868	1796	1796	1796	1796	1868	1796	1868	1796	1868	1868	1868
Adj Flow Rate, veh/h	11	370	43	11	652	5	114	0	27	5	0	16
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, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	26	827	701	25	827	729	345	0	37	160	22	166
Arrive On Green	0.01	0.46	0.46	0.01	0.46	0.46	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1779	1796	1522	1711	1796	1583	1180	0	279	225	171	1267
Grp Volume(v), veh/h	11	370	43	11	652	5	141	0	0	21	0	0
Grp Sat Flow(s),veh/h/ln	1779	1796	1522	1711	1796	1583	1459	0	0	1663	0	0
Q Serve(g_s), s	0.2	4.8	0.5	0.2	10.5	0.1	2.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	4.8	0.5	0.2	10.5	0.1	3.2	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.81		0.19	0.24		0.76
Lane Grp Cap(c), veh/h	26	827	701	25	827	729	381	0	0	348	0	0
V/C Ratio(X)	0.43	0.45	0.06	0.44	0.79	0.01	0.37	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	259	1231	1043	249	1231	1085	944	0	0	951	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.8	6.3	5.1	16.8	7.8	5.0	14.3	0.0	0.0	13.1	0.0	0.0
Incr Delay (d2), s/veh	10.7	0.4	0.0	11.9	2.1	0.0	0.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.0	0.1	0.2	2.5	0.0	0.9	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	6.7	5.2	28.7	9.9	5.0	14.9	0.0	0.0	13.2	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h		424			668			141			21	
Approach Delay, s/veh		7.1			10.2			14.9			13.2	
Approach LOS		A			B			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.0	5.0	20.3		9.0	5.0	20.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		5.2	2.2	6.8		2.4	2.2	12.5				
Green Ext Time (p_c), s		0.6	0.0	2.1		0.0	0.0	3.3				

Intersection Summary		
HCM 6th Ctrl Delay		9.7
HCM 6th LOS		A

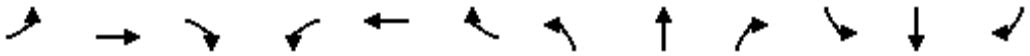
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	20	290	5	5	220
Future Vol, veh/h	10	20	290	5	5	220
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	11	22	315	5	5	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	567	318	0	0	320	0
Stage 1	318	-	-	-	-	-
Stage 2	249	-	-	-	-	-
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	485	723	-	-	1240	-
Stage 1	738	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	483	723	-	-	1240	-
Mov Cap-2 Maneuver	483	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	620	1240	-
HCM Lane V/C Ratio	-	-	0.053	0.004	-
HCM Control Delay (s)	-	-	11.1	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	745	80	15	590	50	75	50	30	85	80	105
Future Volume (veh/h)	80	745	80	15	590	50	75	50	30	85	80	105
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	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1930	1930	1930	1930	1930	1930
Adj Flow Rate, veh/h	87	810	87	16	641	54	82	54	33	92	87	114
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	111	875	94	28	736	62	213	128	60	174	126	137
Arrive On Green	0.06	0.53	0.53	0.02	0.48	0.48	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1767	1647	177	1767	1519	128	519	564	263	393	554	603
Grp Volume(v), veh/h	87	0	897	16	0	695	169	0	0	293	0	0
Grp Sat Flow(s),veh/h/ln	1767	0	1824	1767	0	1647	1346	0	0	1550	0	0
Q Serve(g_s), s	2.7	0.0	25.3	0.5	0.0	21.0	0.0	0.0	0.0	3.9	0.0	0.0
Cycle Q Clear(g_c), s	2.7	0.0	25.3	0.5	0.0	21.0	5.9	0.0	0.0	9.8	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.08	0.49		0.20	0.31		0.39
Lane Grp Cap(c), veh/h	111	0	969	28	0	798	401	0	0	436	0	0
V/C Ratio(X)	0.78	0.00	0.93	0.57	0.00	0.87	0.42	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h	665	0	3595	507	0	3247	693	0	0	781	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.8	0.0	12.0	27.3	0.0	12.8	18.8	0.0	0.0	20.3	0.0	0.0
Incr Delay (d2), s/veh	4.5	0.0	1.7	6.8	0.0	1.2	0.3	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	7.8	0.2	0.0	6.1	1.8	0.0	0.0	3.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	0.0	13.8	34.0	0.0	14.0	19.0	0.0	0.0	21.0	0.0	0.0
LnGrp LOS	C	A	B	C	A	B	B	A	A	C	A	A
Approach Vol, veh/h		984			711			169			293	
Approach Delay, s/veh		15.3			14.5			19.0			21.0	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.4	34.6		16.9	7.0	31.9		16.9				
Change Period (Y+Rc), s	3.5	4.9		* 4.2	3.5	4.9		* 4.2				
Max Green Setting (Gmax), s	16.0	110.0		* 26	21.0	110.0		* 25				
Max Q Clear Time (g_c+I1), s	2.5	27.3		11.8	4.7	23.0		7.9				
Green Ext Time (p_c), s	0.0	2.4		0.9	0.0	1.6		0.5				

Intersection Summary		
HCM 6th Ctrl Delay		16.1
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	10	60	10	5	10	40	110	10	5	145	20
Future Vol, veh/h	30	10	60	10	5	10	40	110	10	5	145	20
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	11	65	11	5	11	43	120	11	5	158	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	399	396	169	429	402	126	180	0	0	131	0	0
Stage 1	179	179	-	212	212	-	-	-	-	-	-	-
Stage 2	220	217	-	217	190	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	560	540	872	535	535	922	1389	-	-	1448	-	-
Stage 1	820	749	-	788	725	-	-	-	-	-	-	-
Stage 2	780	721	-	783	741	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	534	520	872	473	515	922	1389	-	-	1448	-	-
Mov Cap-2 Maneuver	534	520	-	473	515	-	-	-	-	-	-	-
Stage 1	793	746	-	762	701	-	-	-	-	-	-	-
Stage 2	740	697	-	711	738	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	11.3	1.9	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1389	-	-	693	600	1448	-	-
HCM Lane V/C Ratio	0.031	-	-	0.157	0.045	0.004	-	-
HCM Control Delay (s)	7.7	0	-	11.2	11.3	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	0	5	145	160	5
Future Vol, veh/h	5	0	5	145	160	5
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	5	0	5	158	174	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	345	177	179	0	-	0
Stage 1	177	-	-	-	-	-
Stage 2	168	-	-	-	-	-
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	866	1397	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	649	866	1397	-	-	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1397	-	649	-	-
HCM Lane V/C Ratio	0.004	-	0.008	-	-
HCM Control Delay (s)	7.6	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	35	90	55	55	125
Future Vol, veh/h	35	35	90	55	55	125
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	38	38	98	60	60	136

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	384	128	0	0	158	0
Stage 1	128	-	-	-	-	-
Stage 2	256	-	-	-	-	-
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	619	922	-	-	1422	-
Stage 1	898	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	591	922	-	-	1422	-
Mov Cap-2 Maneuver	591	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	751	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	720	1422	-
HCM Lane V/C Ratio	-	-	0.106	0.042	-
HCM Control Delay (s)	-	-	10.6	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	50	5	5	40	10	5	30	5	20	20	50
Future Vol, veh/h	90	50	5	5	40	10	5	30	5	20	20	50
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	98	54	5	5	43	11	5	33	5	22	22	54
Number of Lanes	0	1	0	0	1	0	0	1	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	8.5	7.7	7.8	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	62%	9%	22%
Vol Thru, %	75%	34%	73%	22%
Vol Right, %	12%	3%	18%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	145	55	90
LT Vol	5	90	5	20
Through Vol	30	50	40	20
RT Vol	5	5	10	50
Lane Flow Rate	43	158	60	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.054	0.19	0.072	0.114
Departure Headway (Hd)	4.49	4.33	4.329	4.194
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	801	815	830	859
Service Time	2.497	2.429	2.341	2.2
HCM Lane V/C Ratio	0.054	0.194	0.072	0.114
HCM Control Delay	7.8	8.5	7.7	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.7	0.2	0.4

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	100	20	25	55	10	10	80	40	15	95	15
Future Vol, veh/h	25	100	20	25	55	10	10	80	40	15	95	15
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
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	27	109	22	27	60	11	11	87	43	16	103	16
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9	8.6	8.6	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	0%	17%	28%	14%	0%
Vol Thru, %	89%	0%	69%	61%	86%	0%
Vol Right, %	0%	100%	14%	11%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	40	145	90	110	15
LT Vol	10	0	25	25	15	0
Through Vol	80	0	100	55	95	0
RT Vol	0	40	20	10	0	15
Lane Flow Rate	98	43	158	98	120	16
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.146	0.056	0.207	0.131	0.179	0.021
Departure Headway (Hd)	5.367	4.605	4.72	4.832	5.381	4.607
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	666	774	758	740	665	773
Service Time	3.117	2.355	2.762	2.88	3.131	2.357
HCM Lane V/C Ratio	0.147	0.056	0.208	0.132	0.18	0.021
HCM Control Delay	9	7.6	9	8.6	9.3	7.5
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.2	0.8	0.4	0.6	0.1

Intersection	
Int Delay, s/veh	21.6

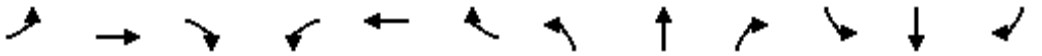
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	5	20	60	5	20	5	965	120	15	650	15
Future Vol, veh/h	20	5	20	60	5	20	5	965	120	15	650	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	5	22	65	5	22	5	1049	130	16	707	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1885	1936	715	1885	1879	1114	723	0	0	1179	0	0
Stage 1	747	747	-	1124	1124	-	-	-	-	-	-	-
Stage 2	1138	1189	-	761	755	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	54	65	429	~ 54	71	252	875	-	-	589	-	-
Stage 1	403	419	-	248	279	-	-	-	-	-	-	-
Stage 2	244	260	-	396	415	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	45	63	429	~ 47	69	252	875	-	-	589	-	-
Mov Cap-2 Maneuver	45	63	-	~ 47	69	-	-	-	-	-	-	-
Stage 1	401	408	-	247	277	-	-	-	-	-	-	-
Stage 2	217	258	-	361	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	106.4	$ 423.8	0	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	875	-	-	79	60	589	-	-
HCM Lane V/C Ratio	0.006	-	-	0.619	1.54	0.028	-	-
HCM Control Delay (s)	9.1	-	-	106.4	$ 423.8	11.3	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.8	8.2	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	720	60	15	520	5	95	0	15	5	0	10
Future Volume (veh/h)	25	720	60	15	520	5	95	0	15	5	0	10
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1856	1856	1856	1856	1930	1856	1930	1856	1930	1930	1930
Adj Flow Rate, veh/h	27	783	65	16	565	5	103	0	16	5	0	11
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	60	942	799	36	920	811	320	0	22	164	21	128
Arrive On Green	0.03	0.51	0.51	0.02	0.50	0.50	0.11	0.00	0.11	0.11	0.00	0.11
Sat Flow, veh/h	1838	1856	1572	1767	1856	1635	1299	0	202	344	199	1194
Grp Volume(v), veh/h	27	783	65	16	565	5	119	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	1838	1856	1572	1767	1856	1635	1500	0	0	1737	0	0
Q Serve(g_s), s	0.5	13.3	0.8	0.3	8.2	0.1	2.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	13.3	0.8	0.3	8.2	0.1	2.8	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.87		0.13	0.31		0.69
Lane Grp Cap(c), veh/h	60	942	799	36	920	811	342	0	0	313	0	0
V/C Ratio(X)	0.45	0.83	0.08	0.44	0.61	0.01	0.35	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	248	1178	998	239	1178	1038	900	0	0	909	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.6	7.8	4.7	17.9	6.8	4.7	16.0	0.0	0.0	14.9	0.0	0.0
Incr Delay (d2), s/veh	5.2	4.2	0.0	8.2	0.7	0.0	0.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.8	0.1	0.2	1.9	0.0	0.9	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.7	12.0	4.7	26.2	7.4	4.7	16.6	0.0	0.0	15.0	0.0	0.0
LnGrp LOS	C	B	A	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h		875			586			119			16	
Approach Delay, s/veh		11.8			7.9			16.6			15.0	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		8.5	5.3	23.3		8.5	5.7	22.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s		4.8	2.3	15.3		2.3	2.5	10.2				
Green Ext Time (p_c), s		0.5	0.0	3.5		0.0	0.0	3.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

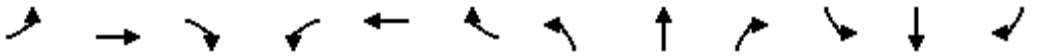
Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	10	145	10	20	190
Future Vol, veh/h	5	10	145	10	20	190
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	5	11	158	11	22	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	415	164	0	0	169	0
Stage 1	164	-	-	-	-	-
Stage 2	251	-	-	-	-	-
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	594	881	-	-	1409	-
Stage 1	865	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	583	881	-	-	1409	-
Mov Cap-2 Maneuver	583	-	-	-	-	-
Stage 1	865	-	-	-	-	-
Stage 2	777	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.7
HCM LOS	A		

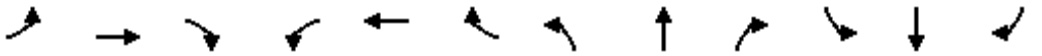
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	753	1409	-
HCM Lane V/C Ratio	-	-	0.022	0.015	-
HCM Control Delay (s)	-	-	9.9	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1	5	133	2	17	7	364	34	4	620	7
Future Volume (veh/h)	6	1	5	133	2	17	7	364	34	4	620	7
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	7	1	6	155	2	20	8	423	40	5	721	8
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	16	9	52	197	20	204	18	781	74	11	850	9
Arrive On Green	0.01	0.04	0.04	0.12	0.15	0.15	0.01	0.48	0.48	0.01	0.48	0.48
Sat Flow, veh/h	1711	222	1334	1711	140	1403	1711	1616	153	1711	1773	20
Grp Volume(v), veh/h	7	0	7	155	0	22	8	0	463	5	0	729
Grp Sat Flow(s),veh/h/ln	1711	0	1556	1711	0	1544	1711	0	1769	1711	0	1793
Q Serve(g_s), s	0.2	0.0	0.2	4.5	0.0	0.6	0.2	0.0	9.3	0.1	0.0	18.1
Cycle Q Clear(g_c), s	0.2	0.0	0.2	4.5	0.0	0.6	0.2	0.0	9.3	0.1	0.0	18.1
Prop In Lane	1.00		0.86	1.00		0.91	1.00		0.09	1.00		0.01
Lane Grp Cap(c), veh/h	16	0	61	197	0	224	18	0	855	11	0	860
V/C Ratio(X)	0.44	0.00	0.11	0.79	0.00	0.10	0.44	0.00	0.54	0.44	0.00	0.85
Avail Cap(c_a), veh/h	169	0	553	335	0	698	169	0	1366	169	0	1385
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	23.5	21.8	0.0	18.8	24.9	0.0	9.2	25.0	0.0	11.6
Incr Delay (d2), s/veh	18.1	0.0	0.8	6.8	0.0	0.2	16.3	0.0	0.5	23.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	1.8	0.0	0.2	0.2	0.0	2.2	0.1	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	0.0	24.3	28.6	0.0	19.0	41.2	0.0	9.7	49.0	0.0	14.4
LnGrp LOS	D	A	C	C	A	B	D	A	A	D	A	B
Approach Vol, veh/h		14			177			471			734	
Approach Delay, s/veh		33.7			27.4			10.2			14.7	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	29.0	10.3	6.5	5.0	28.8	5.0	11.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	39.1	9.9	18.0	5.0	39.1	5.0	22.9
Max Q Clear Time (g_c+I1), s	2.1	11.3	6.5	2.2	2.2	20.1	2.2	2.6
Green Ext Time (p_c), s	0.0	2.5	0.1	0.0	0.0	4.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	15.0
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	4	17	56	3	16	4	820	116	13	596	10
Future Volume (veh/h)	14	4	17	56	3	16	4	820	116	13	596	10
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	16	4	19	63	3	18	4	921	130	15	670	11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	34	14	64	87	18	108	9	1016	143	32	1186	19
Arrive On Green	0.02	0.05	0.05	0.05	0.08	0.08	0.01	0.64	0.64	0.02	0.65	0.65
Sat Flow, veh/h	1767	281	1334	1767	230	1378	1767	1591	225	1767	1820	30
Grp Volume(v), veh/h	16	0	23	63	0	21	4	0	1051	15	0	681
Grp Sat Flow(s),veh/h/ln	1767	0	1615	1767	0	1608	1767	0	1815	1767	0	1850
Q Serve(g_s), s	0.7	0.0	1.0	2.6	0.0	0.9	0.2	0.0	36.4	0.6	0.0	14.9
Cycle Q Clear(g_c), s	0.7	0.0	1.0	2.6	0.0	0.9	0.2	0.0	36.4	0.6	0.0	14.9
Prop In Lane	1.00		0.83	1.00		0.86	1.00		0.12	1.00		0.02
Lane Grp Cap(c), veh/h	34	0	78	87	0	126	9	0	1160	32	0	1206
V/C Ratio(X)	0.48	0.00	0.30	0.72	0.00	0.17	0.42	0.00	0.91	0.47	0.00	0.56
Avail Cap(c_a), veh/h	123	0	399	133	0	406	123	0	1568	123	0	1598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.6	0.0	33.7	34.3	0.0	31.5	36.3	0.0	11.3	35.6	0.0	7.0
Incr Delay (d2), s/veh	10.2	0.0	2.1	10.7	0.0	0.6	27.5	0.0	6.3	10.5	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4	1.3	0.0	0.3	0.1	0.0	10.4	0.3	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	0.0	35.8	45.1	0.0	32.1	63.8	0.0	17.6	46.2	0.0	7.5
LnGrp LOS	D	A	D	D	A	C	E	A	B	D	A	A
Approach Vol, veh/h		39			84			1055			696	
Approach Delay, s/veh		39.9			41.8			17.8			8.3	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	51.3	8.1	8.0	4.9	52.2	5.9	10.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	63.3	5.5	18.1	5.1	63.3	5.1	18.5
Max Q Clear Time (g_c+I1), s	2.6	38.4	4.6	3.0	2.2	16.9	2.7	2.9
Green Ext Time (p_c), s	0.0	8.4	0.0	0.0	0.0	4.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Appendix C

Simtraffic Reports

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.6	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.4	1.1	0.1	0.2	1.9	0.1	0.2	0.3	0.1	0.1	0.3	0.1
Total Del/Veh (s)	24.5	13.9	11.0	24.4	13.6	9.3	13.4	11.2	6.7	13.4	11.8	7.7
Vehicles Entered	54	263	40	26	500	44	66	93	27	27	76	64
Vehicles Exited	54	265	41	27	497	45	66	93	27	27	76	65
Hourly Exit Rate	54	265	41	27	497	45	66	93	27	27	76	65
Input Volume	58	272	42	26	502	44	69	97	28	28	72	62
% of Volume	93	97	98	104	99	103	96	96	96	96	106	104

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	4.9
Total Del/Veh (s)	13.4
Vehicles Entered	1280
Vehicles Exited	1283
Hourly Exit Rate	1283
Input Volume	1299
% of Volume	99

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	9.8	2.8	7.1	6.4	7.1	3.5	2.3	1.0	0.5	0.9	1.1	0.8
Vehicles Entered	16	43	29	21	4	4	36	153	20	1	138	18
Vehicles Exited	16	43	29	22	4	4	36	153	20	1	139	18
Hourly Exit Rate	16	43	29	22	4	4	36	153	20	1	139	18
Input Volume	18	46	31	20	4	5	37	158	19	1	132	20
% of Volume	88	92	94	111	107	84	98	97	104	100	105	91

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.3
Total Del/Veh (s)	2.3
Vehicles Entered	483
Vehicles Exited	485
Hourly Exit Rate	485
Input Volume	491
% of Volume	99

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	4.5	3.4	7.3	2.1	0.2	0.1	1.4
Vehicles Entered	3	2	1	160	119	3	288
Vehicles Exited	3	2	1	161	119	3	289
Hourly Exit Rate	3	2	1	161	119	3	289
Input Volume	3	2	1	166	114	4	290
% of Volume	92	89	100	97	104	80	99

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.4	0.4
Vehicles Entered	164	186	350
Vehicles Exited	164	186	350
Hourly Exit Rate	164	186	350
Input Volume	169	178	347
% of Volume	97	104	101

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)	4.5	9.9	4.2	3.2	8.1	2.2	4.8	4.7	2.5	9.6	7.7	8.1
Vehicles Entered	11	17	4	3	33	20	2	14	4	18	57	46
Vehicles Exited	12	17	4	3	33	20	2	14	4	17	57	45
Hourly Exit Rate	12	17	4	3	33	20	2	14	4	17	57	45
Input Volume	13	15	3	3	40	21	3	18	2	17	54	45
% of Volume	92	113	123	92	83	95	62	79	178	99	106	99

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.5
Total Del/Veh (s)	7.1
Vehicles Entered	229
Vehicles Exited	228
Hourly Exit Rate	228
Input Volume	235
% of Volume	97

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.6	0.0	0.1	0.4
Total Delay (hr)	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.9	7.3	1.6	6.3	12.5	5.4	4.3	9.8	2.0	3.6	9.3	3.1
Vehicles Entered	4	13	4	31	47	6	21	79	16	2	80	20
Vehicles Exited	4	13	4	31	48	6	21	79	16	2	79	20
Hourly Exit Rate	4	13	4	31	48	6	21	79	16	2	79	20
Input Volume	5	14	3	35	50	8	22	83	13	4	76	22
% of Volume	84	91	123	89	97	75	95	95	123	53	104	91

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	0.7
Total Del/Veh (s)	8.2
Vehicles Entered	323
Vehicles Exited	323
Hourly Exit Rate	323
Input Volume	334
% of Volume	97

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.0	0.0	0.0	2.7	0.3	0.3	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.8	0.0	0.1	0.0	0.2	0.0	0.0	2.1	0.0
Total Del/Veh (s)	13.5	11.8	16.7	36.0	11.2	19.8	4.4	2.3	0.8	12.1	11.9	7.7
Vehicles Entered	4	2	3	80	7	14	4	339	16	3	619	10
Vehicles Exited	4	1	3	79	8	13	5	339	16	3	622	10
Hourly Exit Rate	4	1	3	79	8	13	5	339	16	3	622	10
Input Volume	6	1	5	79	8	17	7	348	16	4	627	7
% of Volume	64	100	57	100	107	76	69	97	100	71	99	138

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	3.3
Total Del/Veh (s)	10.6
Vehicles Entered	1101
Vehicles Exited	1103
Hourly Exit Rate	1103
Input Volume	1126
% of Volume	98

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.4	0.4	0.1	0.1	0.3
Total Delay (hr)	0.0	0.3	0.2	0.0	0.0	0.0	0.5
Total Del/Veh (s)	5.6	3.5	1.1	0.9	7.9	5.3	2.1
Vehicles Entered	3	305	506	3	3	15	835
Vehicles Exited	3	308	505	3	3	15	837
Hourly Exit Rate	3	308	505	3	3	15	837
Input Volume	5	313	512	2	3	12	847
% of Volume	57	98	99	150	100	122	99

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1
Total Del/Veh (s)	1.1	0.3	0.7
Vehicles Entered	207	186	393
Vehicles Exited	208	186	394
Hourly Exit Rate	208	186	394
Input Volume	214	178	392
% of Volume	97	104	101

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.3
Total Delay (hr)	11.7
Total Del/Veh (s)	24.9
Vehicles Entered	1596
Vehicles Exited	1598
Hourly Exit Rate	1598
Input Volume	6762
% of Volume	24

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	89	182	90	278	146	133
Average Queue (ft)	35	70	25	120	67	62
95th Queue (ft)	69	138	68	216	117	106
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	1	5	1	21		
Queuing Penalty (veh)	2	3	8	6		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	66	39	62
Average Queue (ft)	26	19	6
95th Queue (ft)	55	44	30
Link Distance (ft)	5904	597	327
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	23
Link Distance (ft)	531
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	64	36	92
Average Queue (ft)	17	26	14	43
95th Queue (ft)	40	50	40	76
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	22	51	56	28	57	40
Average Queue (ft)	9	22	28	9	29	12
95th Queue (ft)	24	41	46	28	48	34
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			6	1	5	1
Queuing Penalty (veh)			1	1	1	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	30	159	22	14
Average Queue (ft)	5	55	2	1
95th Queue (ft)	22	123	11	6
Link Distance (ft)	2059	2239		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	SB
Directions Served	L	LTR
Maximum Queue (ft)	21	52
Average Queue (ft)	1	15
95th Queue (ft)	10	43
Link Distance (ft)		452
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 23

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.5	3.6	0.2	0.1	1.6	0.1	0.2	0.1	0.0	0.2	0.2	0.2
Total Del/Veh (s)	29.1	18.3	18.1	28.8	11.9	7.4	14.3	11.1	7.6	12.5	13.7	8.0
Vehicles Entered	65	690	39	7	462	30	41	36	22	53	52	89
Vehicles Exited	64	691	40	7	466	31	41	37	22	52	51	88
Hourly Exit Rate	64	691	40	7	466	31	41	37	22	52	51	88
Input Volume	67	693	36	9	447	29	43	36	24	55	51	90
% of Volume	96	100	110	78	104	106	96	103	91	95	100	98

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	7.0
Total Del/Veh (s)	15.4
Vehicles Entered	1586
Vehicles Exited	1590
Hourly Exit Rate	1590
Input Volume	1580
% of Volume	101

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.6	5.3	5.7	5.2	7.0	2.9	1.9	0.7	0.1	2.8	1.1	1.0
Vehicles Entered	21	19	29	5	2	7	25	69	6	2	79	18
Vehicles Exited	21	18	30	5	2	7	25	68	6	2	79	18
Hourly Exit Rate	21	18	30	5	2	7	25	68	6	2	79	18
Input Volume	27	16	34	7	3	6	25	66	6	2	79	17
% of Volume	78	114	88	69	67	112	101	103	96	100	100	107

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.2
Total Del/Veh (s)	2.6
Vehicles Entered	282
Vehicles Exited	281
Hourly Exit Rate	281
Input Volume	288
% of Volume	98

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.2	1.9	3.1	0.1	0.0	1.4
Vehicles Entered	1	1	75	98	2	177
Vehicles Exited	1	1	75	98	2	177
Hourly Exit Rate	1	1	75	98	2	177
Input Volume	1	1	70	105	1	178
% of Volume	100	100	107	93	200	99

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.3	0.3
Vehicles Entered	76	110	186
Vehicles Exited	76	110	186
Hourly Exit Rate	76	110	186
Input Volume	71	118	189
% of Volume	107	93	98

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4
Total Del/Veh (s)	6.5	10.8	4.5	7.8	2.1	3.3	4.8	3.0	7.8	2.9	4.7	6.2
Vehicles Entered	30	55	2	30	9	1	19	4	15	76	7	248
Vehicles Exited	30	54	2	30	9	1	19	4	15	76	7	247
Hourly Exit Rate	30	54	2	30	9	1	19	4	15	76	7	247
Input Volume	29	50	2	33	7	1	18	4	15	80	11	251
% of Volume	104	107	100	91	124	100	106	94	100	96	65	99

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	3.0	0.1	0.1	0.4
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
Total Del/Veh (s)	3.4	8.7	1.8	7.0	13.2	5.7	4.2	9.1	2.0	4.0	8.8	2.2
Vehicles Entered	12	49	14	16	17	6	6	51	26	13	79	11
Vehicles Exited	12	50	14	16	17	6	6	51	27	13	78	10
Hourly Exit Rate	12	50	14	16	17	6	6	51	27	13	78	10
Input Volume	11	48	14	18	22	6	9	60	23	12	78	9
% of Volume	112	104	100	89	76	96	69	85	116	111	100	114

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.3
Total Delay (hr)	0.6
Total Del/Veh (s)	7.3
Vehicles Entered	300
Vehicles Exited	300
Hourly Exit Rate	300
Input Volume	310
% of Volume	97

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.0	0.7	0.7	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.1	0.4	0.0	0.1	0.0	1.1	0.0	0.1	1.9	0.0
Total Del/Veh (s)	42.1	46.2	13.0	76.6	21.3	23.2	5.5	5.0	2.0	19.0	11.6	8.6
Vehicles Entered	11	4	18	17	4	13	4	770	56	14	578	12
Vehicles Exited	12	4	18	17	4	13	4	769	56	14	577	12
Hourly Exit Rate	12	4	18	17	4	13	4	769	56	14	577	12
Input Volume	14	4	17	20	4	16	4	767	55	13	565	10
% of Volume	87	100	107	86	89	83	100	100	101	110	102	117

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	3.9
Total Del/Veh (s)	9.1
Vehicles Entered	1501
Vehicles Exited	1500
Hourly Exit Rate	1500
Input Volume	1488
% of Volume	101

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.4	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.9	0.1	0.0	0.0	0.0	1.1
Total Del/Veh (s)	8.1	5.0	1.0	0.6	11.5	4.3	3.5
Vehicles Entered	19	663	458	5	1	10	1156
Vehicles Exited	19	658	459	5	1	11	1153
Hourly Exit Rate	19	658	459	5	1	11	1153
Input Volume	19	673	446	4	1	8	1151
% of Volume	101	98	103	125	100	133	100

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.9	0.2	0.5
Vehicles Entered	98	111	209
Vehicles Exited	99	111	210
Hourly Exit Rate	99	111	210
Input Volume	96	119	215
% of Volume	103	93	98

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	14.7
Total Del/Veh (s)	27.2
Vehicles Entered	1838
Vehicles Exited	1835
Hourly Exit Rate	1835
Input Volume	7235
% of Volume	25

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	256	30	203	96	147
Average Queue (ft)	44	119	6	104	44	63
95th Queue (ft)	90	210	26	182	81	110
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	1	12		17		
Queuing Penalty (veh)	9	8		2		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	60	29	44	6
Average Queue (ft)	30	12	2	0
95th Queue (ft)	55	35	15	4
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	12	6
Average Queue (ft)	1	0
95th Queue (ft)	9	5
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	54	37	40	55
Average Queue (ft)	28	21	17	25
95th Queue (ft)	44	43	43	54
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	44	40	41	39	61	28
Average Queue (ft)	20	15	23	13	31	7
95th Queue (ft)	34	32	42	34	49	25
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			3	1	6	0
Queuing Penalty (veh)			1	1	1	0

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	88	84	22	37
Average Queue (ft)	22	25	1	6
95th Queue (ft)	58	66	10	22
Link Distance (ft)	2059	2239		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	SB
Directions Served	L	LTR
Maximum Queue (ft)	28	34
Average Queue (ft)	6	9
95th Queue (ft)	25	33
Link Distance (ft)		452
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 21

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.1	0.1	0.2	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.5	1.4	0.2	0.2	2.5	0.1	0.5	0.4	0.1	0.1	0.4	0.2
Total Del/Veh (s)	30.2	17.3	14.1	28.6	17.4	11.6	16.6	12.4	11.0	13.4	15.2	9.0
Vehicles Entered	59	278	58	29	509	41	116	124	30	25	90	66
Vehicles Exited	59	279	60	29	511	40	117	123	30	25	90	67
Hourly Exit Rate	59	279	60	29	511	40	117	123	30	25	90	67
Input Volume	58	272	58	29	502	44	116	126	36	28	80	62
% of Volume	102	102	103	100	102	91	101	98	83	89	112	108

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	6.7
Total Del/Veh (s)	16.6
Vehicles Entered	1425
Vehicles Exited	1430
Hourly Exit Rate	1430
Input Volume	1411
% of Volume	101

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Total Del/Veh (s)	11.6	3.0	7.2	8.3	7.5	2.9	2.5	1.1	0.4	2.3	1.1	1.0
Vehicles Entered	19	48	36	19	3	5	47	231	21	1	170	24
Vehicles Exited	19	49	36	19	3	5	47	231	21	1	170	24
Hourly Exit Rate	19	49	36	19	3	5	47	231	21	1	170	24
Input Volume	18	47	37	20	4	5	52	237	19	1	162	20
% of Volume	104	104	98	96	80	105	91	98	109	100	105	122

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.4
Total Del/Veh (s)	2.3
Vehicles Entered	624
Vehicles Exited	625
Hourly Exit Rate	625
Input Volume	620
% of Volume	101

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.2
Total Del/Veh (s)	5.3	2.7	1.7	2.5	0.4	0.2	1.5
Vehicles Entered	3	3	1	178	176	3	364
Vehicles Exited	3	3	1	182	176	3	368
Hourly Exit Rate	3	3	1	182	176	3	368
Input Volume	3	2	1	187	176	4	374
% of Volume	92	133	100	97	100	80	98

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	7.1	3.9	0.6	0.3	2.5	0.7	1.5
Vehicles Entered	37	54	170	22	17	205	505
Vehicles Exited	37	53	170	22	18	205	505
Hourly Exit Rate	37	53	170	22	18	205	505
Input Volume	39	54	177	21	18	201	510
% of Volume	95	98	96	106	99	102	99

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.3
Total Del/Veh (s)	5.7	12.1	4.9	4.1	8.4	2.1	4.8	4.9	3.6	11.6	8.2	10.3
Vehicles Entered	34	15	4	3	33	17	2	16	4	18	64	98
Vehicles Exited	34	15	4	3	34	17	2	16	4	17	63	98
Hourly Exit Rate	34	15	4	3	34	17	2	16	4	17	63	98
Input Volume	31	15	3	3	40	21	3	21	2	17	63	99
% of Volume	109	100	123	92	86	81	62	76	178	99	100	99

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.7
Total Del/Veh (s)	8.3
Vehicles Entered	308
Vehicles Exited	307
Hourly Exit Rate	307
Input Volume	319
% of Volume	96

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	2.9	0.0	0.0	0.4
Total Delay (hr)	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.8	7.6	1.3	7.1	12.9	5.3	4.9	9.9	2.5	5.2	8.9	3.4
Vehicles Entered	9	32	3	36	93	7	19	87	18	3	72	28
Vehicles Exited	9	32	3	36	92	7	19	87	17	3	73	28
Hourly Exit Rate	9	32	3	36	92	7	19	87	17	3	73	28
Input Volume	8	30	3	43	96	8	22	86	16	4	76	30
% of Volume	112	105	92	84	96	88	86	101	105	80	96	93

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	1.0
Total Del/Veh (s)	8.7
Vehicles Entered	407
Vehicles Exited	406
Hourly Exit Rate	406
Input Volume	423
% of Volume	96

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.1	0.4	0.3	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	3.0	0.0	0.3	0.0	0.3	0.0	0.0	2.4	0.0
Total Del/Veh (s)	23.8	9.1	17.3	83.3	10.2	62.1	5.8	2.8	0.7	15.4	12.1	10.3
Vehicles Entered	8	1	9	128	10	15	9	372	36	3	687	7
Vehicles Exited	9	1	9	124	10	15	9	370	37	3	687	6
Hourly Exit Rate	9	1	9	124	10	15	9	370	37	3	687	6
Input Volume	6	1	5	133	12	17	7	364	34	4	672	7
% of Volume	144	100	171	93	83	88	124	102	109	71	102	83

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	6.1
Total Del/Veh (s)	16.9
Vehicles Entered	1285
Vehicles Exited	1280
Hourly Exit Rate	1280
Input Volume	1263
% of Volume	101

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.4	1.0	0.1	0.1	0.2
Total Delay (hr)	0.0	0.4	0.1	0.0	0.0	0.0	0.5
Total Del/Veh (s)	4.5	4.0	1.0	0.1	8.0	5.4	2.2
Vehicles Entered	4	321	523	1	2	12	863
Vehicles Exited	4	321	522	1	2	12	862
Hourly Exit Rate	4	321	522	1	2	12	862
Input Volume	5	322	515	2	3	12	860
% of Volume	76	100	101	50	67	98	100

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.1	0.0	0.0	0.0	0.2
Total Del/Veh (s)	7.8	4.6	1.2	0.8	2.9	0.4	1.5
Vehicles Entered	23	39	259	8	14	200	543
Vehicles Exited	24	39	259	8	14	200	544
Hourly Exit Rate	24	39	259	8	14	200	544
Input Volume	23	39	268	8	13	197	548
% of Volume	104	100	97	100	110	101	99

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	17.5
Total Del/Veh (s)	32.2
Vehicles Entered	1844
Vehicles Exited	1852
Hourly Exit Rate	1852
Input Volume	7905
% of Volume	23

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	201	99	347	203	164
Average Queue (ft)	45	89	26	159	94	73
95th Queue (ft)	93	166	70	276	163	131
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					1	
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	1	9	2	29		
Queuing Penalty (veh)	4	5	12	8		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	78	50	57	4
Average Queue (ft)	31	17	10	0
95th Queue (ft)	62	44	39	3
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	31	6
Average Queue (ft)	5	0
95th Queue (ft)	23	6
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	72	39
Average Queue (ft)	33	2
95th Queue (ft)	56	16
Link Distance (ft)	940	1089
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	49	49	51	102
Average Queue (ft)	23	25	18	55
95th Queue (ft)	43	49	45	85
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	34	64	66	28	52	50
Average Queue (ft)	14	30	29	10	28	17
95th Queue (ft)	31	52	49	30	47	41
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			7	1	5	2
Queuing Penalty (veh)			1	1	2	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	48	321	25	11
Average Queue (ft)	12	120	3	0
95th Queue (ft)	37	282	15	5
Link Distance (ft)	2059	2239		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	SB
Directions Served	L	LTR
Maximum Queue (ft)	16	46
Average Queue (ft)	1	13
95th Queue (ft)	10	38
Link Distance (ft)		452
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	68	53
Average Queue (ft)	28	4
95th Queue (ft)	53	26
Link Distance (ft)	1756	327
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 35

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.7	4.5	0.5	0.1	1.6	0.1	0.3	0.2	0.1	0.2	0.3	0.2
Total Del/Veh (s)	37.4	22.8	20.4	27.4	13.0	9.8	16.1	15.3	9.9	13.7	13.5	8.5
Vehicles Entered	66	689	85	16	445	28	72	44	31	54	78	96
Vehicles Exited	66	688	82	16	446	29	72	44	31	54	77	96
Hourly Exit Rate	66	688	82	16	446	29	72	44	31	54	77	96
Input Volume	67	693	89	18	447	29	74	52	29	55	77	90
% of Volume	99	99	92	88	100	99	97	85	106	99	100	106

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	8.9
Total Del/Veh (s)	18.4
Vehicles Entered	1704
Vehicles Exited	1701
Hourly Exit Rate	1701
Input Volume	1721
% of Volume	99

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.3	5.2	7.2	5.6	8.3	3.0	2.4	0.7	0.2	3.4	0.9	0.8
Vehicles Entered	26	19	52	7	3	5	33	114	6	1	161	16
Vehicles Exited	25	19	52	7	3	5	33	114	6	1	161	16
Hourly Exit Rate	25	19	52	7	3	5	33	114	6	1	161	16
Input Volume	27	17	52	7	3	6	35	118	6	2	168	17
% of Volume	93	112	100	97	100	80	94	97	96	50	96	96

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.3
Total Del/Veh (s)	2.6
Vehicles Entered	443
Vehicles Exited	442
Hourly Exit Rate	442
Input Volume	458
% of Volume	96

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1		0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.2
Total Del/Veh (s)	5.4		5.7	0.3	0.2	3.1
Vehicles Entered	1	0	139	134	2	276
Vehicles Exited	1	0	136	134	2	273
Hourly Exit Rate	1	0	136	134	2	273
Input Volume	1	1	140	146	1	289
% of Volume	100	0	97	92	200	95

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	6.2	3.0	1.1	0.6	2.8	0.7	1.6
Vehicles Entered	26	39	88	74	61	124	412
Vehicles Exited	26	39	88	74	61	125	413
Hourly Exit Rate	26	39	88	74	61	125	413
Input Volume	26	36	97	70	61	133	424
% of Volume	100	108	90	105	100	94	97

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0		0.1	0.2		0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)	8.2	12.1	8.1		8.0	2.3		5.2	3.1	6.8	3.2	7.1
Vehicles Entered	89	54	1	0	32	7	0	28	5	15	79	40
Vehicles Exited	89	54	1	0	32	7	0	28	5	15	80	39
Hourly Exit Rate	89	54	1	0	32	7	0	28	5	15	80	39
Input Volume	90	50	2	1	33	7	1	27	4	15	84	47
% of Volume	99	109	50	0	97	97	0	105	118	100	95	83

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.7
Total Del/Veh (s)	7.1
Vehicles Entered	350
Vehicles Exited	350
Hourly Exit Rate	350
Input Volume	361
% of Volume	97

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.8	0.1	0.1	0.7
Total Delay (hr)	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Total Del/Veh (s)	3.8	9.5	2.5	6.5	11.4	4.3	3.7	9.9	2.7	4.7	8.9	4.0
Vehicles Entered	22	104	14	20	47	7	9	68	32	11	81	13
Vehicles Exited	22	104	14	20	47	7	9	69	32	11	81	13
Hourly Exit Rate	22	104	14	20	47	7	9	69	32	11	81	13
Input Volume	20	101	14	23	53	6	9	69	32	12	78	14
% of Volume	109	103	100	86	88	112	103	100	100	94	104	93

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.3
Total Delay (hr)	1.0
Total Del/Veh (s)	8.0
Vehicles Entered	428
Vehicles Exited	429
Hourly Exit Rate	429
Input Volume	432
% of Volume	99

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.0	0.0	0.0	2.2	0.9	0.8	0.0	0.0	0.0
Total Delay (hr)	0.4	0.2	0.3	5.7	0.2	1.7	0.0	1.7	0.1	0.1	2.0	0.0
Total Del/Veh (s)	94.5	101.6	53.5	419.4	156.5	389.8	8.1	7.5	3.5	18.7	11.4	7.7
Vehicles Entered	14	6	21	48	5	16	3	813	121	11	607	11
Vehicles Exited	13	6	20	37	4	13	3	814	121	12	610	11
Hourly Exit Rate	13	6	20	37	4	13	3	814	121	12	610	11
Input Volume	14	4	17	56	5	16	4	820	116	13	603	10
% of Volume	95	150	119	66	84	83	75	99	105	94	101	107

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.5
Total Delay (hr)	12.4
Total Del/Veh (s)	26.2
Vehicles Entered	1676
Vehicles Exited	1664
Hourly Exit Rate	1664
Input Volume	1677
% of Volume	99

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.4	0.2		0.1	0.1
Total Delay (hr)	0.0	1.0	0.1	0.0	0.0	0.0	1.1
Total Del/Veh (s)	7.6	5.1	0.9	0.6		4.0	3.5
Vehicles Entered	18	670	452	5	0	10	1155
Vehicles Exited	18	669	450	4	0	10	1151
Hourly Exit Rate	18	669	450	4	0	10	1151
Input Volume	19	678	455	4	1	8	1165
% of Volume	96	99	99	100	0	121	99

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	7.6	3.5	1.1	1.0	2.5	0.5	1.4
Vehicles Entered	14	28	124	28	46	173	413
Vehicles Exited	14	27	125	29	46	173	414
Hourly Exit Rate	14	27	125	29	46	173	414
Input Volume	15	26	132	26	44	182	425
% of Volume	95	104	95	112	105	95	97

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.6
Total Delay (hr)	26.6
Total Del/Veh (s)	41.9
Vehicles Entered	2154
Vehicles Exited	2128
Hourly Exit Rate	2128
Input Volume	8856
% of Volume	24

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	391	80	222	144	159
Average Queue (ft)	53	173	16	112	60	75
95th Queue (ft)	109	314	51	191	113	129
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	2	20	1	21		
Queuing Penalty (veh)	12	14	5	4		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	30	58	6
Average Queue (ft)	36	12	8	0
95th Queue (ft)	62	35	33	4
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	19	16
Average Queue (ft)	1	1
95th Queue (ft)	12	11
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	61	53
Average Queue (ft)	30	12
95th Queue (ft)	51	42
Link Distance (ft)	940	1089
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	50	54	54	69
Average Queue (ft)	31	21	24	36
95th Queue (ft)	44	46	52	62
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	53	56	53	53	60	43
Average Queue (ft)	25	22	28	18	30	9
95th Queue (ft)	40	40	45	43	50	32
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			5	2	6	1
Queuing Penalty (veh)			2	1	1	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	130	481	15	4	29
Average Queue (ft)	35	200	1	0	5
95th Queue (ft)	90	482	8	2	19
Link Distance (ft)	2059	2239		2410	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		150
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	SB
Directions Served	L	LTR
Maximum Queue (ft)	32	34
Average Queue (ft)	6	9
95th Queue (ft)	26	32
Link Distance (ft)		452
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	54	66
Average Queue (ft)	23	8
95th Queue (ft)	50	36
Link Distance (ft)	1756	327
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 38

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.1
Total Delay (hr)	0.6	1.4	0.2	0.3	3.2	0.2	0.3	0.4	0.1	0.1	0.3	0.2
Total Del/Veh (s)	31.8	15.1	12.4	30.5	18.7	15.7	16.5	14.3	10.4	15.9	14.6	10.1
Vehicles Entered	64	312	43	29	595	51	67	94	29	32	72	62
Vehicles Exited	65	310	43	30	597	51	67	94	28	32	72	64
Hourly Exit Rate	65	310	43	30	597	51	67	94	28	32	72	64
Input Volume	61	320	45	31	585	52	71	97	28	31	72	64
% of Volume	106	97	96	97	102	98	95	97	100	103	100	100

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	7.1
Total Del/Veh (s)	17.2
Vehicles Entered	1450
Vehicles Exited	1453
Hourly Exit Rate	1453
Input Volume	1457
% of Volume	100

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	9.3	3.2	7.2	6.2	6.8	2.6	2.4	1.0	0.7	1.0	1.1	0.9
Vehicles Entered	17	53	32	20	6	5	41	156	19	1	138	19
Vehicles Exited	16	53	31	20	6	5	41	156	19	1	138	19
Hourly Exit Rate	16	53	31	20	6	5	41	156	19	1	138	19
Input Volume	18	46	31	20	4	5	37	160	19	1	138	20
% of Volume	88	114	100	101	160	105	112	98	99	100	100	96

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.3
Total Del/Veh (s)	2.3
Vehicles Entered	507
Vehicles Exited	505
Hourly Exit Rate	505
Input Volume	498
% of Volume	101

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	5.0	3.0	2.3	2.1	0.2	0.1	1.4
Vehicles Entered	3	6	1	163	115	6	294
Vehicles Exited	3	6	1	163	115	6	294
Hourly Exit Rate	3	6	1	163	115	6	294
Input Volume	3	2	1	166	114	4	290
% of Volume	92	267	100	98	100	160	101

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.4	0.4
Vehicles Entered	166	178	344
Vehicles Exited	166	178	344
Hourly Exit Rate	166	178	344
Input Volume	169	178	347
% of Volume	98	100	99

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	4.4	10.6	5.1	2.8	8.2	2.2	3.9	4.6	2.7	11.0	5.9	8.5
Vehicles Entered	14	18	4	2	37	21	2	13	4	16	55	48
Vehicles Exited	14	18	4	2	38	21	2	14	4	16	54	48
Hourly Exit Rate	14	18	4	2	38	21	2	14	4	16	54	48
Input Volume	13	15	3	3	40	21	3	18	2	17	54	45
% of Volume	108	120	123	62	96	100	62	79	178	93	100	106

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.5
Total Del/Veh (s)	6.9
Vehicles Entered	234
Vehicles Exited	235
Hourly Exit Rate	235
Input Volume	235
% of Volume	100

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.9	0.1	0.1	0.6
Total Delay (hr)	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.7	6.9	2.4	6.2	12.8	4.1	4.2	10.2	2.8	5.7	8.9	3.4
Vehicles Entered	4	16	2	36	52	5	21	91	15	5	78	22
Vehicles Exited	4	16	2	35	52	5	21	92	15	5	76	22
Hourly Exit Rate	4	16	2	35	52	5	21	92	15	5	76	22
Input Volume	5	14	3	35	50	8	22	83	13	4	76	22
% of Volume	84	112	62	100	105	62	95	111	115	133	100	100

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	0.8
Total Del/Veh (s)	8.3
Vehicles Entered	347
Vehicles Exited	345
Hourly Exit Rate	345
Input Volume	334
% of Volume	103

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.1	0.0	2.0	0.4	0.3	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.9	0.0	0.2	0.0	0.3	0.0	0.0	2.5	0.0
Total Del/Veh (s)	18.9	23.6	8.8	42.8	18.1	27.9	5.0	2.7	0.8	10.0	12.1	9.7
Vehicles Entered	8	1	6	78	7	20	7	392	16	4	718	5
Vehicles Exited	8	1	6	77	7	20	7	392	16	4	719	5
Hourly Exit Rate	8	1	6	77	7	20	7	392	16	4	719	5
Input Volume	7	1	5	79	7	20	7	399	16	4	708	7
% of Volume	110	100	114	97	100	100	97	98	100	94	102	69

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	4.0
Total Del/Veh (s)	11.2
Vehicles Entered	1262
Vehicles Exited	1262
Hourly Exit Rate	1262
Input Volume	1262
% of Volume	100

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.1	2.9	0.4	2.5	0.1	0.2	0.1	0.1	0.3
Total Delay (hr)	0.0	0.6	0.0	0.0	0.7	0.0	0.1	0.0	0.0	0.0	1.5
Total Del/Veh (s)	15.4	6.5	5.0	10.8	4.5	1.5	8.1	4.8	5.3	3.3	5.4
Vehicles Entered	5	320	26	5	557	2	61	15	3	13	1007
Vehicles Exited	5	321	26	5	559	2	61	16	3	13	1011
Hourly Exit Rate	5	321	26	5	559	2	61	16	3	13	1011
Input Volume	5	334	22	4	542	2	66	12	3	12	1003
% of Volume	95	96	120	125	103	100	92	131	100	106	101

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1
Total Del/Veh (s)	1.1	0.3	0.7
Vehicles Entered	212	178	390
Vehicles Exited	212	178	390
Hourly Exit Rate	212	178	390
Input Volume	214	178	392
% of Volume	99	100	100

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	15.9
Total Del/Veh (s)	30.3
Vehicles Entered	1795
Vehicles Exited	1795
Hourly Exit Rate	1795
Input Volume	7304
% of Volume	25

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	211	99	349	167	138
Average Queue (ft)	49	79	31	171	73	64
95th Queue (ft)	99	163	77	305	130	116
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	2	6	2	29		
Queuing Penalty (veh)	8	4	14	9		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	58	38	58
Average Queue (ft)	28	19	7
95th Queue (ft)	56	43	34
Link Distance (ft)	5904	597	327
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	36	15
Average Queue (ft)	8	1
95th Queue (ft)	31	11
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	37	57	40	80
Average Queue (ft)	19	28	15	42
95th Queue (ft)	40	49	42	76
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	22	54	56	28	57	32
Average Queue (ft)	9	24	31	9	30	12
95th Queue (ft)	25	43	46	29	46	33
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			7	1	5	1
Queuing Penalty (veh)			1	1	1	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	41	181	24	14	1
Average Queue (ft)	11	62	2	1	0
95th Queue (ft)	33	141	13	6	1
Link Distance (ft)	2059	2239			6551
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100	150	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	27	120	31	25	171	3	85	43
Average Queue (ft)	5	36	5	3	56	0	36	9
95th Queue (ft)	21	95	23	16	123	2	65	29
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		0			1			
Queuing Penalty (veh)		0			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 39

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.6	4.2	0.2	0.1	2.0	0.1	0.2	0.1	0.1	0.2	0.2	0.2
Total Del/Veh (s)	32.4	19.9	20.3	25.7	13.6	10.1	14.7	11.8	7.7	13.3	14.2	8.5
Vehicles Entered	61	733	38	14	517	37	46	36	24	63	46	94
Vehicles Exited	62	732	37	15	519	38	46	35	24	63	47	93
Hourly Exit Rate	62	732	37	15	519	38	46	35	24	63	47	93
Input Volume	68	742	37	14	526	37	44	36	24	65	51	93
% of Volume	91	99	101	105	99	103	105	97	99	97	93	100

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	8.2
Total Del/Veh (s)	16.9
Vehicles Entered	1709
Vehicles Exited	1711
Hourly Exit Rate	1711
Input Volume	1737
% of Volume	99

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.4	5.3	6.8	5.6	6.8	2.5	2.4	0.4	0.1	3.2	1.0	1.0
Vehicles Entered	27	20	35	7	3	8	20	66	7	1	80	17
Vehicles Exited	26	19	36	8	3	8	20	66	7	1	80	17
Hourly Exit Rate	26	19	36	8	3	8	20	66	7	1	80	17
Input Volume	27	16	34	7	3	6	25	67	6	2	83	17
% of Volume	96	121	106	110	100	128	81	99	112	50	96	101

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.2
Total Del/Veh (s)	2.9
Vehicles Entered	291
Vehicles Exited	291
Hourly Exit Rate	291
Input Volume	293
% of Volume	99

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1		0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.0		1.7	0.2	0.3	0.8
Vehicles Entered	1	0	66	104	2	173
Vehicles Exited	1	0	66	104	2	173
Hourly Exit Rate	1	0	66	104	2	173
Input Volume	1	1	70	105	1	178
% of Volume	100	0	94	99	200	97

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.1	0.5	0.3
Vehicles Entered	66	116	182
Vehicles Exited	67	117	184
Hourly Exit Rate	67	117	184
Input Volume	71	118	189
% of Volume	94	99	97

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1		0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	6.3	11.1	5.1	1.3	7.8	1.4		4.7	2.7	7.9	3.4	8.2
Vehicles Entered	25	51	2	1	30	6	0	19	5	12	81	11
Vehicles Exited	25	51	2	1	30	6	0	20	5	12	79	11
Hourly Exit Rate	25	51	2	1	30	6	0	20	5	12	79	11
Input Volume	29	50	2	1	33	7	1	18	4	15	80	11
% of Volume	87	101	100	100	91	83	0	111	118	80	99	102

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.4
Total Del/Veh (s)	6.4
Vehicles Entered	243
Vehicles Exited	242
Hourly Exit Rate	242
Input Volume	251
% of Volume	97

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	2.6	0.1	0.1	1.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Total Del/Veh (s)	3.2	8.4	2.0	7.0	12.9	4.8	4.0	9.6	2.6	3.8	8.9	2.9
Vehicles Entered	10	49	15	17	20	6	5	66	21	11	75	8
Vehicles Exited	9	50	15	17	20	6	5	67	21	11	73	8
Hourly Exit Rate	9	50	15	17	20	6	5	67	21	11	73	8
Input Volume	11	48	14	18	22	6	9	60	23	12	78	9
% of Volume	84	104	107	94	90	96	57	112	90	94	94	91

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.3
Total Delay (hr)	0.7
Total Del/Veh (s)	7.7
Vehicles Entered	303
Vehicles Exited	302
Hourly Exit Rate	302
Input Volume	310
% of Volume	97

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	1.6	0.8	0.8	0.0	0.0	0.0
Total Delay (hr)	0.2	0.1	0.1	0.4	0.1	0.2	0.0	1.2	0.0	0.1	2.0	0.0
Total Del/Veh (s)	62.9	41.8	24.6	88.8	38.0	63.5	5.9	5.4	2.0	17.8	10.9	9.7
Vehicles Entered	13	5	17	17	5	12	4	807	54	13	636	8
Vehicles Exited	13	5	17	16	5	12	4	807	54	14	639	8
Hourly Exit Rate	13	5	17	16	5	12	4	807	54	14	639	8
Input Volume	15	4	17	20	4	17	4	815	55	13	640	10
% of Volume	88	125	101	81	118	72	100	99	98	110	100	78

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.5
Total Delay (hr)	4.4
Total Del/Veh (s)	9.8
Vehicles Entered	1591
Vehicles Exited	1594
Hourly Exit Rate	1594
Input Volume	1614
% of Volume	99

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	2.6	0.4	2.5	0.1	0.1	0.1	0.1	0.2
Total Delay (hr)	0.1	1.7	0.0	0.0	0.5	0.0	0.2	0.0	0.0	0.0	2.6
Total Del/Veh (s)	16.9	8.8	7.0	12.0	4.1	1.8	9.2	5.3	1.7	3.6	7.1
Vehicles Entered	15	691	20	3	464	4	66	11	1	10	1285
Vehicles Exited	14	685	20	3	464	4	66	11	1	10	1278
Hourly Exit Rate	14	685	20	3	464	4	66	11	1	10	1278
Input Volume	19	699	22	4	472	4	66	8	1	8	1303
% of Volume	75	98	92	75	98	100	100	133	100	121	98

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.4	0.2	0.3
Vehicles Entered	91	117	208
Vehicles Exited	91	117	208
Hourly Exit Rate	91	117	208
Input Volume	96	119	215
% of Volume	95	98	97

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.6
Total Delay (hr)	18.2
Total Del/Veh (s)	31.5
Vehicles Entered	1971
Vehicles Exited	1973
Hourly Exit Rate	1973
Input Volume	7746
% of Volume	25

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	290	80	273	102	155
Average Queue (ft)	49	139	14	122	45	68
95th Queue (ft)	99	248	48	218	79	120
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	1	15	0	20		
Queuing Penalty (veh)	9	10	2	3		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	65	38	50
Average Queue (ft)	31	13	4
95th Queue (ft)	58	38	24
Link Distance (ft)	5904	597	327
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	18	6
Average Queue (ft)	1	0
95th Queue (ft)	9	5
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	45	50	31	59
Average Queue (ft)	26	20	18	25
95th Queue (ft)	43	46	43	55
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	34	42	59	38	59	28
Average Queue (ft)	19	15	27	13	30	6
95th Queue (ft)	31	34	47	35	49	23
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			4	1	5	0
Queuing Penalty (veh)			1	1	0	0

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	75	122	14	3	25
Average Queue (ft)	25	30	1	0	5
95th Queue (ft)	59	81	7	2	20
Link Distance (ft)	2059	2239		2410	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		150
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	65	197	22	24	129	13	81	23
Average Queue (ft)	13	74	3	2	48	1	36	6
95th Queue (ft)	46	161	16	12	103	5	63	22
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		2			0			
Queuing Penalty (veh)		1			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 28

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.1	0.1	0.2	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.5	1.6	0.2	0.2	3.5	0.3	0.6	0.5	0.1	0.1	0.3	0.2
Total Del/Veh (s)	31.4	16.5	13.7	32.0	19.8	15.9	19.4	16.2	12.0	16.1	15.6	12.0
Vehicles Entered	58	334	56	27	616	57	102	114	34	33	79	64
Vehicles Exited	59	335	55	26	620	56	102	114	34	33	79	63
Hourly Exit Rate	59	335	55	26	620	56	102	114	34	33	79	63
Input Volume	61	328	55	31	610	60	102	117	28	34	78	64
% of Volume	96	102	100	84	102	93	100	98	121	96	101	98

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	8.2
Total Del/Veh (s)	18.4
Vehicles Entered	1574
Vehicles Exited	1576
Hourly Exit Rate	1576
Input Volume	1568
% of Volume	100

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0		0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.8	2.9	6.8	7.5	6.4	3.7	2.7	1.3	0.6		1.1	1.0
Vehicles Entered	17	53	39	19	4	5	52	212	22	0	153	17
Vehicles Exited	17	53	39	19	4	5	52	212	22	0	153	17
Hourly Exit Rate	17	53	39	19	4	5	52	212	22	0	153	17
Input Volume	18	47	37	20	4	5	53	207	19	1	156	20
% of Volume	93	112	106	96	107	105	98	102	114	0	98	86

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.4
Total Del/Veh (s)	2.4
Vehicles Entered	593
Vehicles Exited	593
Hourly Exit Rate	593
Input Volume	586
% of Volume	101

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1		0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.2	0.0	0.0	0.2
Total Del/Veh (s)	5.4	3.1		2.9	0.4	0.2	1.8
Vehicles Entered	4	4	0	186	168	4	366
Vehicles Exited	4	4	0	189	169	5	371
Hourly Exit Rate	4	4	0	189	169	5	371
Input Volume	3	2	1	185	170	4	365
% of Volume	123	178	0	102	100	133	102

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	6.4	3.9	0.6	0.3	2.6	0.5	1.5
Vehicles Entered	48	46	180	13	17	183	487
Vehicles Exited	48	46	180	13	17	183	487
Hourly Exit Rate	48	46	180	13	17	183	487
Input Volume	47	47	172	16	16	186	484
% of Volume	102	98	104	81	106	98	101

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Total Del/Veh (s)	6.3	11.1	5.0	4.7	8.4	2.0	6.8	4.8	2.7	11.6	8.2	9.4
Vehicles Entered	31	16	4	3	41	25	1	20	3	15	61	96
Vehicles Exited	31	16	4	3	41	25	1	20	3	15	61	96
Hourly Exit Rate	31	16	4	3	41	25	1	20	3	15	61	96
Input Volume	29	15	3	3	40	21	3	21	2	17	62	92
% of Volume	107	107	123	92	103	119	31	95	133	87	98	104

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.7
Total Del/Veh (s)	7.9
Vehicles Entered	316
Vehicles Exited	316
Hourly Exit Rate	316
Input Volume	310
% of Volume	102

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.7	0.0	0.1	0.5
Total Delay (hr)	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.4	7.1	1.6	7.3	13.2	6.4	5.2	10.6	2.6	6.2	9.9	4.0
Vehicles Entered	8	32	4	45	89	8	18	92	17	3	78	33
Vehicles Exited	8	33	3	44	89	8	19	92	17	3	81	33
Hourly Exit Rate	8	33	3	44	89	8	19	92	17	3	81	33
Input Volume	8	28	3	43	88	8	22	86	16	4	84	30
% of Volume	100	117	92	102	101	100	86	107	105	80	96	109

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	1.1
Total Del/Veh (s)	9.0
Vehicles Entered	427
Vehicles Exited	430
Hourly Exit Rate	430
Input Volume	421
% of Volume	102

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.3	0.4	0.4	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	3.9	0.1	0.6	0.0	0.4	0.0	0.0	2.6	0.0
Total Del/Veh (s)	29.4	33.9	18.0	113.0	27.7	99.8	5.9	3.1	1.0	14.2	12.1	11.0
Vehicles Entered	7	1	3	123	9	22	7	420	37	5	767	7
Vehicles Exited	7	1	3	120	9	22	7	419	36	4	767	7
Hourly Exit Rate	7	1	3	120	9	22	7	419	36	4	767	7
Input Volume	7	1	5	126	11	20	7	417	32	4	761	7
% of Volume	97	100	57	95	84	110	97	101	113	94	101	97

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	7.7
Total Del/Veh (s)	19.4
Vehicles Entered	1408
Vehicles Exited	1402
Hourly Exit Rate	1402
Input Volume	1398
% of Volume	100

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	2.1	0.5	4.1	0.2	0.2	0.1	0.1	0.3
Total Delay (hr)	0.0	0.7	0.1	0.0	0.8	0.0	0.2	0.0	0.0	0.0	1.9
Total Del/Veh (s)	16.2	7.1	4.6	13.9	5.6	1.5	9.1	5.0	9.1	3.9	6.4
Vehicles Entered	5	339	39	8	542	2	98	21	2	14	1070
Vehicles Exited	5	341	38	8	543	2	98	21	2	14	1072
Hourly Exit Rate	5	341	38	8	543	2	98	21	2	14	1072
Input Volume	5	334	33	7	542	2	97	20	3	12	1056
% of Volume	95	102	114	110	100	100	101	106	67	114	102

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.4	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Total Del/Veh (s)	7.2	3.9	1.3	0.1	2.7	0.3	1.1
Vehicles Entered	7	17	267	2	4	195	492
Vehicles Exited	7	17	266	2	4	195	491
Hourly Exit Rate	7	17	266	2	4	195	491
Input Volume	8	16	261	3	5	194	487
% of Volume	88	106	102	62	84	100	101

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	22.1
Total Del/Veh (s)	37.4
Vehicles Entered	2008
Vehicles Exited	2011
Hourly Exit Rate	2011
Input Volume	8329
% of Volume	24

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	107	201	99	392	230	145
Average Queue (ft)	44	95	29	184	99	72
95th Queue (ft)	88	176	80	313	176	126
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					1	
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	2	9	2	33		
Queuing Penalty (veh)	7	5	14	10		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	64	51	93	11
Average Queue (ft)	30	19	12	0
95th Queue (ft)	55	45	52	6
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	7
95th Queue (ft)	27
Link Distance (ft)	531
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	67	31
Average Queue (ft)	32	4
95th Queue (ft)	56	21
Link Distance (ft)	940	1089
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	51	63	49	108
Average Queue (ft)	22	29	19	53
95th Queue (ft)	43	49	46	86
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	40	64	66	28	56	54
Average Queue (ft)	14	31	31	11	30	19
95th Queue (ft)	30	56	50	30	52	44
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			7	1	6	2
Queuing Penalty (veh)			1	1	2	2

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	46	369	23	19
Average Queue (ft)	9	152	2	1
95th Queue (ft)	30	362	12	9
Link Distance (ft)	2059	2239		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	28	128	32	30	166	9	88	51
Average Queue (ft)	4	43	5	6	70	0	46	9
95th Queue (ft)	20	101	22	24	140	4	78	32
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		0			2			
Queuing Penalty (veh)		0			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	41	29
Average Queue (ft)	15	1
95th Queue (ft)	39	9
Link Distance (ft)	1756	327
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 44

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.7	4.9	0.4	0.1	2.6	0.1	0.3	0.2	0.1	0.3	0.3	0.3
Total Del/Veh (s)	37.7	22.5	21.4	28.8	16.5	11.6	17.8	16.0	12.2	14.6	16.4	11.2
Vehicles Entered	66	755	71	12	550	39	60	43	22	76	69	102
Vehicles Exited	68	744	72	11	547	40	60	43	22	75	68	101
Hourly Exit Rate	68	744	72	11	547	40	60	43	22	75	68	101
Input Volume	68	768	72	14	541	42	65	46	24	74	69	93
% of Volume	100	97	100	77	101	96	92	94	91	101	99	108

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	10.4
Total Del/Veh (s)	19.6
Vehicles Entered	1865
Vehicles Exited	1851
Hourly Exit Rate	1851
Input Volume	1876
% of Volume	99

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.1	4.0	6.4	6.2	8.6	2.7	2.3	0.7	0.8	2.0	1.0	1.0
Vehicles Entered	25	20	53	8	2	6	36	91	7	2	135	15
Vehicles Exited	25	19	52	8	2	6	36	91	7	2	135	15
Hourly Exit Rate	25	19	52	8	2	6	36	91	7	2	135	15
Input Volume	27	17	52	7	3	6	35	98	6	2	137	17
% of Volume	93	112	100	110	67	96	103	93	112	100	99	90

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.3
Total Del/Veh (s)	2.7
Vehicles Entered	400
Vehicles Exited	398
Hourly Exit Rate	398
Input Volume	407
% of Volume	98

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.2
Total Del/Veh (s)	6.5	0.9	4.2	0.4	0.2	2.2
Vehicles Entered	1	1	123	138	2	265
Vehicles Exited	1	0	122	139	2	264
Hourly Exit Rate	1	0	122	139	2	264
Input Volume	1	1	132	141	1	276
% of Volume	100	0	92	99	200	96

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	6.0	3.0	0.7	0.5	2.4	0.9	1.6
Vehicles Entered	30	32	78	45	53	123	361
Vehicles Exited	30	32	78	45	53	123	361
Hourly Exit Rate	30	32	78	45	53	123	361
Input Volume	31	31	80	53	53	124	372
% of Volume	97	103	97	85	100	100	97

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)	7.4	12.8	4.9	2.2	7.8	1.9	3.3	5.0	2.9	9.6	3.3	7.1
Vehicles Entered	79	49	3	1	32	8	1	24	5	13	84	42
Vehicles Exited	78	49	3	1	32	8	1	23	5	12	83	42
Hourly Exit Rate	78	49	3	1	32	8	1	23	5	12	83	42
Input Volume	82	50	2	1	33	7	1	27	4	15	84	42
% of Volume	95	98	150	100	97	110	100	86	118	80	99	99

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.7
Total Del/Veh (s)	6.9
Vehicles Entered	341
Vehicles Exited	337
Hourly Exit Rate	337
Input Volume	348
% of Volume	97

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.8	0.0	0.1	0.3
Total Delay (hr)	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Total Del/Veh (s)	3.8	9.0	2.3	6.2	12.2	3.9	4.1	9.7	2.5	4.6	9.0	3.2
Vehicles Entered	19	88	13	21	47	9	10	69	38	10	81	16
Vehicles Exited	19	88	13	21	47	9	10	70	37	10	81	16
Hourly Exit Rate	19	88	13	21	47	9	10	70	37	10	81	16
Input Volume	20	94	14	23	48	6	9	69	32	12	83	14
% of Volume	94	94	93	90	98	144	114	101	116	85	97	114

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.3
Total Delay (hr)	0.9
Total Del/Veh (s)	7.7
Vehicles Entered	421
Vehicles Exited	421
Hourly Exit Rate	421
Input Volume	424
% of Volume	99

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.5	1.0	1.0	0.0	0.0	0.0
Total Delay (hr)	0.3	0.1	0.1	5.4	0.3	1.5	0.0	1.8	0.1	0.1	2.3	0.0
Total Del/Veh (s)	65.5	77.1	22.4	365.0	207.5	328.1	12.9	7.5	3.5	21.6	11.6	8.3
Vehicles Entered	15	4	18	53	6	16	3	863	103	11	688	9
Vehicles Exited	14	4	18	43	6	13	3	865	103	12	686	9
Hourly Exit Rate	14	4	18	43	6	13	3	865	103	12	686	9
Input Volume	15	4	17	51	4	17	4	876	108	13	676	10
% of Volume	95	100	107	84	133	78	75	99	95	94	101	88

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	11.9
Total Del/Veh (s)	23.6
Vehicles Entered	1789
Vehicles Exited	1776
Hourly Exit Rate	1776
Input Volume	1795
% of Volume	99

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	2.5	0.4	2.4	0.2	0.2		0.1	0.2
Total Delay (hr)	0.1	1.9	0.1	0.1	0.7	0.0	0.3	0.0	0.0	0.0	3.2
Total Del/Veh (s)	21.5	10.1	7.6	15.7	5.0	1.7	10.7	7.6		3.0	8.4
Vehicles Entered	17	679	55	14	466	4	90	13	0	10	1348
Vehicles Exited	17	682	55	14	467	4	91	14	0	10	1354
Hourly Exit Rate	17	682	55	14	467	4	91	14	0	10	1354
Input Volume	19	699	57	13	472	4	87	13	1	8	1373
% of Volume	91	98	96	106	99	100	105	106	0	121	99

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	5.3	3.0	0.9	0.7	2.3	0.3	0.8
Vehicles Entered	4	10	122	12	17	174	339
Vehicles Exited	4	10	122	12	17	174	339
Hourly Exit Rate	4	10	122	12	17	174	339
Input Volume	5	10	128	9	18	174	344
% of Volume	76	98	95	130	96	100	98

Total Network Performance

Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.6
Total Delay (hr)	29.6
Total Del/Veh (s)	44.3
Vehicles Entered	2272
Vehicles Exited	2244
Hourly Exit Rate	2244
Input Volume	9150
% of Volume	25

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	342	97	347	151	188
Average Queue (ft)	52	164	13	146	62	87
95th Queue (ft)	112	290	55	251	120	154
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	3	19	1	27		
Queuing Penalty (veh)	20	13	3	4		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	30	45	6
Average Queue (ft)	35	13	7	0
95th Queue (ft)	60	36	32	0
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB
Directions Served	LR
Maximum Queue (ft)	24
Average Queue (ft)	1
95th Queue (ft)	11
Link Distance (ft)	531
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	66	58
Average Queue (ft)	29	7
95th Queue (ft)	54	33
Link Distance (ft)	940	1089
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	59	52	45	73
Average Queue (ft)	32	23	20	35
95th Queue (ft)	48	46	46	64
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	54	51	62	45	60	45
Average Queue (ft)	25	22	28	18	31	11
95th Queue (ft)	40	39	47	38	50	35
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			5	2	6	1
Queuing Penalty (veh)			2	1	1	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	88	424	22	6	25
Average Queue (ft)	27	192	2	0	5
95th Queue (ft)	64	466	11	3	19
Link Distance (ft)	2059	2239		2410	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		150
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	70	234	146	43	160	13	94	27
Average Queue (ft)	14	89	14	9	55	0	44	5
95th Queue (ft)	47	178	64	30	118	5	78	22
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		4			1			
Queuing Penalty (veh)		3			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	33	35
Average Queue (ft)	11	3
95th Queue (ft)	34	19
Link Distance (ft)	1756	327
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 48

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.7	1.9	0.2	0.3	4.0	0.3	0.5	0.5	0.1	0.1	0.4	0.2
Total Del/Veh (s)	35.2	17.6	15.6	33.8	22.3	19.1	20.8	16.8	10.6	16.8	16.2	11.1
Vehicles Entered	71	366	46	35	636	57	84	106	38	31	80	71
Vehicles Exited	71	367	46	35	636	58	84	106	38	32	79	71
Hourly Exit Rate	71	367	46	35	636	58	84	106	38	32	79	71
Input Volume	70	354	50	35	640	60	80	104	35	35	80	75
% of Volume	101	104	92	100	99	97	105	102	109	91	98	94

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	9.3
Total Del/Veh (s)	20.1
Vehicles Entered	1621
Vehicles Exited	1623
Hourly Exit Rate	1623
Input Volume	1620
% of Volume	100

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	11.3	3.7	6.9	7.0	7.7	4.0	2.5	1.0	0.5	3.2	1.2	0.8
Vehicles Entered	16	64	29	24	6	10	41	195	26	3	144	22
Vehicles Exited	16	64	30	25	6	10	41	195	26	3	144	22
Hourly Exit Rate	16	64	30	25	6	10	41	195	26	3	144	22
Input Volume	20	60	35	25	5	10	45	180	25	5	147	25
% of Volume	81	106	86	101	120	98	91	108	105	60	98	89

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.4
Total Del/Veh (s)	2.4
Vehicles Entered	580
Vehicles Exited	582
Hourly Exit Rate	582
Input Volume	582
% of Volume	100

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.2	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.2
Total Del/Veh (s)	5.9	2.6	4.2	2.4	0.3	0.2	1.7
Vehicles Entered	4	5	5	191	120	5	330
Vehicles Exited	4	5	5	194	120	5	333
Hourly Exit Rate	4	5	5	194	120	5	333
Input Volume	5	5	5	185	130	5	335
% of Volume	80	100	100	105	92	100	99

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1
Total Del/Veh (s)	0.4	0.6	0.5
Vehicles Entered	198	192	390
Vehicles Exited	198	192	390
Hourly Exit Rate	198	192	390
Input Volume	190	200	390
% of Volume	104	96	100

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	4.9	10.7	3.3	3.2	8.4	2.5	4.3	4.8	3.0	10.2	7.9	9.4
Vehicles Entered	16	21	5	5	43	28	4	18	6	17	58	50
Vehicles Exited	16	21	5	5	44	28	4	19	6	17	58	49
Hourly Exit Rate	16	21	5	5	44	28	4	19	6	17	58	49
Input Volume	15	20	5	5	45	25	5	20	5	20	65	50
% of Volume	105	106	100	100	97	113	80	96	120	86	89	98

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	0.6
Total Del/Veh (s)	7.3
Vehicles Entered	271
Vehicles Exited	272
Hourly Exit Rate	272
Input Volume	280
% of Volume	97

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.5	0.1	0.1	0.3
Total Delay (hr)	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Total Del/Veh (s)	3.5	8.0	2.0	6.1	12.9	5.2	4.8	10.2	2.6	3.2	9.3	3.2
Vehicles Entered	11	18	6	39	55	8	27	90	16	5	77	26
Vehicles Exited	11	18	6	38	55	8	27	90	17	5	77	27
Hourly Exit Rate	11	18	6	38	55	8	27	90	17	5	77	27
Input Volume	10	16	5	40	55	10	25	95	15	5	85	25
% of Volume	107	109	120	95	100	78	109	95	111	100	90	109

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	0.9
Total Del/Veh (s)	8.2
Vehicles Entered	378
Vehicles Exited	379
Hourly Exit Rate	379
Input Volume	387
% of Volume	98

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.1	0.4	0.3	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	2.1	0.1	0.4	0.0	0.4	0.0	0.0	2.9	0.0
Total Del/Veh (s)	28.5	28.9	19.3	79.3	73.5	54.5	7.8	3.1	0.9	13.0	13.1	11.4
Vehicles Entered	10	5	12	93	5	27	11	447	22	6	773	11
Vehicles Exited	9	5	12	90	5	27	11	447	22	6	775	11
Hourly Exit Rate	9	5	12	90	5	27	11	447	22	6	775	11
Input Volume	10	5	10	90	5	25	10	440	20	5	780	10
% of Volume	88	100	117	100	100	109	107	102	111	120	99	107

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.2
Total Delay (hr)	6.1
Total Del/Veh (s)	15.3
Vehicles Entered	1422
Vehicles Exited	1420
Hourly Exit Rate	1420
Input Volume	1410
% of Volume	101

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.0	0.1	2.7	0.5	2.8	0.2	0.1	0.1	0.1	0.3
Total Delay (hr)	0.0	0.8	0.0	0.0	0.9	0.0	0.1	0.0	0.0	0.0	1.9
Total Del/Veh (s)	14.3	7.2	5.3	11.4	5.2	1.8	8.2	4.5	4.2	3.9	6.1
Vehicles Entered	8	380	22	6	598	5	64	14	4	18	1119
Vehicles Exited	9	382	23	7	597	5	64	14	4	18	1123
Hourly Exit Rate	9	382	23	7	597	5	64	14	4	18	1123
Input Volume	10	368	25	5	600	5	70	15	5	15	1118
% of Volume	88	104	93	140	99	100	91	92	80	118	100

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1
Total Del/Veh (s)	1.2	0.3	0.8
Vehicles Entered	249	192	441
Vehicles Exited	249	192	441
Hourly Exit Rate	249	192	441
Input Volume	240	200	440
% of Volume	104	96	100

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	21.1
Total Del/Veh (s)	35.5
Vehicles Entered	2022
Vehicles Exited	2031
Hourly Exit Rate	2031
Input Volume	8272
% of Volume	25

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	268	100	477	201	163
Average Queue (ft)	52	98	35	205	94	69
95th Queue (ft)	103	194	88	373	172	125
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	4	10	3	34		
Queuing Penalty (veh)	15	7	22	12		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	64	44	64	17
Average Queue (ft)	27	24	7	1
95th Queue (ft)	56	46	35	9
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	31	24
Average Queue (ft)	8	1
95th Queue (ft)	30	11
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	46	56	60	86
Average Queue (ft)	20	30	20	45
95th Queue (ft)	42	45	51	72
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	23	46	59	28	65	36
Average Queue (ft)	13	24	31	10	31	15
95th Queue (ft)	27	38	48	30	50	37
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			7	1	6	1
Queuing Penalty (veh)			1	1	1	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	64	220	36	19
Average Queue (ft)	18	104	5	1
95th Queue (ft)	46	204	20	9
Link Distance (ft)	2059	2239		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	41	146	31	25	202	12	82	40
Average Queue (ft)	8	44	3	5	60	1	35	11
95th Queue (ft)	30	111	19	20	138	5	65	31
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		1			2			
Queuing Penalty (veh)		0			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 61

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Total Delay (hr)	0.9	5.6	0.4	0.1	3.0	0.2	0.2	0.2	0.1	0.3	0.3	0.4
Total Del/Veh (s)	40.2	24.3	23.9	33.6	18.0	13.7	17.7	16.6	12.4	16.8	17.8	12.3
Vehicles Entered	78	809	51	14	588	43	48	42	29	73	60	102
Vehicles Exited	78	805	53	15	585	43	48	42	29	75	59	102
Hourly Exit Rate	78	805	53	15	585	43	48	42	29	75	59	102
Input Volume	80	814	45	15	575	45	50	40	30	75	60	105
% of Volume	97	99	117	98	102	95	96	105	97	100	99	97

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	11.7
Total Del/Veh (s)	21.2
Vehicles Entered	1937
Vehicles Exited	1934
Hourly Exit Rate	1934
Input Volume	1935
% of Volume	100

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	9.9	5.4	7.6	5.2	6.4	2.7	2.1	0.4	0.3	2.4	1.0	0.9
Vehicles Entered	32	25	41	6	6	10	23	72	11	5	103	19
Vehicles Exited	32	24	40	6	6	10	23	72	11	5	102	19
Hourly Exit Rate	32	24	40	6	6	10	23	72	11	5	102	19
Input Volume	30	26	40	10	5	10	30	75	10	5	96	20
% of Volume	107	94	100	59	120	98	77	96	107	100	106	96

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.3
Total Del/Veh (s)	3.1
Vehicles Entered	353
Vehicles Exited	350
Hourly Exit Rate	350
Input Volume	358
% of Volume	98

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	5.3	5.3	2.3	0.2	0.1	1.2
Vehicles Entered	3	5	76	117	5	206
Vehicles Exited	3	5	76	117	5	206
Hourly Exit Rate	3	5	76	117	5	206
Input Volume	5	5	80	120	5	216
% of Volume	60	100	95	97	100	96

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.2	0.3	0.3
Vehicles Entered	79	136	215
Vehicles Exited	79	136	215
Hourly Exit Rate	79	136	215
Input Volume	85	135	220
% of Volume	93	101	98

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	6.9	10.1	5.8	4.1	8.1	1.9	3.9	5.0	2.7	7.3	3.2	6.2
Vehicles Entered	34	59	5	4	39	8	4	19	6	19	82	17
Vehicles Exited	34	59	5	4	39	8	4	19	7	19	81	15
Hourly Exit Rate	34	59	5	4	39	8	4	19	7	19	81	15
Input Volume	35	60	5	5	40	10	5	20	5	20	85	15
% of Volume	97	98	100	80	98	78	80	96	140	96	95	98

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.5
Total Del/Veh (s)	6.2
Vehicles Entered	296
Vehicles Exited	294
Hourly Exit Rate	294
Input Volume	305
% of Volume	96

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	3.1	0.1	0.1	0.4
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Total Del/Veh (s)	3.7	9.1	2.0	6.7	10.5	4.9	4.1	9.6	2.2	4.6	9.0	2.3
Vehicles Entered	13	55	21	15	32	12	8	74	28	15	79	10
Vehicles Exited	13	54	21	16	31	12	8	73	28	15	78	9
Hourly Exit Rate	13	54	21	16	31	12	8	73	28	15	78	9
Input Volume	15	55	20	20	31	10	10	70	30	15	90	10
% of Volume	85	99	106	81	99	117	78	104	93	98	87	88

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.3
Total Delay (hr)	0.8
Total Del/Veh (s)	7.5
Vehicles Entered	362
Vehicles Exited	358
Hourly Exit Rate	358
Input Volume	376
% of Volume	95

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.5	0.9	0.9	0.0	0.0	0.0
Total Delay (hr)	0.5	0.1	0.3	1.3	0.2	0.8	0.0	1.6	0.1	0.1	2.4	0.0
Total Del/Veh (s)	107.5	118.7	55.9	205.5	151.6	152.9	9.3	6.2	3.0	19.7	12.0	9.0
Vehicles Entered	18	4	22	23	4	18	5	902	63	17	701	16
Vehicles Exited	17	4	22	22	4	18	5	904	63	17	703	16
Hourly Exit Rate	17	4	22	22	4	18	5	904	63	17	703	16
Input Volume	20	5	20	25	5	20	5	900	65	15	700	15
% of Volume	86	80	111	89	80	91	100	100	97	111	101	105

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	7.5
Total Del/Veh (s)	14.7
Vehicles Entered	1793
Vehicles Exited	1795
Hourly Exit Rate	1795
Input Volume	1794
% of Volume	100

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	2.7	0.4	3.0	0.1	0.2	0.1	0.1	0.2
Total Delay (hr)	0.1	2.0	0.0	0.0	0.8	0.0	0.2	0.0	0.0	0.0	3.2
Total Del/Veh (s)	18.9	9.2	7.3	13.9	5.2	1.7	10.9	7.5	11.0	3.6	7.9
Vehicles Entered	26	757	22	3	532	6	64	11	3	12	1436
Vehicles Exited	26	756	22	3	533	6	64	11	3	11	1435
Hourly Exit Rate	26	756	22	3	533	6	64	11	3	11	1435
Input Volume	25	770	25	5	520	5	70	10	5	10	1446
% of Volume	105	98	89	60	102	120	91	107	60	107	99

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.5	0.2	0.3
Vehicles Entered	100	140	240
Vehicles Exited	100	140	240
Hourly Exit Rate	100	140	240
Input Volume	110	140	250
% of Volume	91	100	96

Total Network Performance

Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.6
Total Delay (hr)	26.0
Total Del/Veh (s)	39.2
Vehicles Entered	2258
Vehicles Exited	2244
Hourly Exit Rate	2244
Input Volume	8810
% of Volume	25

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	461	97	313	116	168
Average Queue (ft)	61	192	18	170	52	82
95th Queue (ft)	118	355	61	283	91	140
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	3	23	1	28		
Queuing Penalty (veh)	25	18	5	4		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	30	31	11
Average Queue (ft)	37	16	3	0
95th Queue (ft)	62	39	18	6
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	31	6
Average Queue (ft)	3	0
95th Queue (ft)	18	4
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	54	54	49	55
Average Queue (ft)	29	26	20	29
95th Queue (ft)	43	48	46	56
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	60	48	57	41	60	28
Average Queue (ft)	23	18	29	15	32	8
95th Queue (ft)	43	38	45	38	51	27
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			5	1	6	1
Queuing Penalty (veh)			1	1	1	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	146	217	21	1	25	1
Average Queue (ft)	43	78	2	0	7	0
95th Queue (ft)	116	194	11	1	23	1
Link Distance (ft)	2059	2239		2410		6551
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			100		150	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	55	194	86	25	157	11	74	32
Average Queue (ft)	19	75	4	2	59	0	35	8
95th Queue (ft)	47	162	39	14	126	5	63	25
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		3			1			
Queuing Penalty (veh)		1			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 58

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.1	0.0	0.1	0.4	0.8	0.2	0.2	0.2
Total Delay (hr)	0.9	2.1	0.3	0.5	6.0	0.5	0.8	0.9	0.2	0.3	0.5	0.4
Total Del/Veh (s)	42.1	19.4	16.2	47.9	31.6	26.2	25.9	25.0	20.0	21.9	20.6	17.1
Vehicles Entered	70	368	59	33	675	74	111	127	35	42	94	78
Vehicles Exited	71	368	61	33	671	73	112	128	35	41	92	77
Hourly Exit Rate	71	368	61	33	671	73	112	128	35	41	92	77
Input Volume	70	366	60	35	665	70	115	122	35	40	90	75
% of Volume	101	101	102	94	101	104	97	105	100	102	103	102

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	13.3
Total Del/Veh (s)	26.5
Vehicles Entered	1766
Vehicles Exited	1762
Hourly Exit Rate	1762
Input Volume	1742
% of Volume	101

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0
Total Del/Veh (s)	12.7	3.9	7.5	7.3	7.2	3.4	3.2	2.0	2.2	3.8	1.3	0.9
Vehicles Entered	19	60	38	19	4	9	59	235	23	6	163	30
Vehicles Exited	20	59	37	19	4	9	59	234	23	6	164	30
Hourly Exit Rate	20	59	37	19	4	9	59	234	23	6	164	30
Input Volume	20	60	45	25	5	10	65	230	25	5	167	25
% of Volume	101	98	82	77	80	88	91	102	93	120	98	121

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.5
Total Del/Veh (s)	2.9
Vehicles Entered	665
Vehicles Exited	664
Hourly Exit Rate	664
Input Volume	682
% of Volume	97

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.1	0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.2	0.0	0.0	0.2
Total Del/Veh (s)	4.2	3.1	3.1	3.0	0.4	0.2	1.8
Vehicles Entered	4	4	6	207	170	4	395
Vehicles Exited	4	4	6	209	170	4	397
Hourly Exit Rate	4	4	6	209	170	4	397
Input Volume	5	5	5	205	190	5	416
% of Volume	80	80	120	102	89	80	96

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	6.3	3.8	0.6	0.4	2.7	0.5	1.4
Vehicles Entered	43	50	199	19	18	194	523
Vehicles Exited	43	49	199	19	18	193	521
Hourly Exit Rate	43	49	199	19	18	193	521
Input Volume	50	50	195	20	20	211	546
% of Volume	86	98	102	96	91	92	96

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Total Del/Veh (s)	5.6	11.9	5.8	3.2	8.3	2.2	3.9	5.2	3.0	10.8	7.7	9.2
Vehicles Entered	34	18	5	4	46	27	4	25	6	15	63	91
Vehicles Exited	34	18	5	4	46	26	5	25	5	15	63	90
Hourly Exit Rate	34	18	5	4	46	26	5	25	5	15	63	90
Input Volume	35	20	5	5	45	25	5	25	5	20	72	100
% of Volume	97	91	100	80	102	105	100	101	100	76	88	90

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.7
Total Del/Veh (s)	7.6
Vehicles Entered	338
Vehicles Exited	336
Hourly Exit Rate	336
Input Volume	361
% of Volume	93

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.9	0.1	0.1	0.2
Total Delay (hr)	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0
Total Del/Veh (s)	3.1	7.9	2.4	7.2	12.8	5.5	4.3	10.5	2.7	5.7	9.6	4.5
Vehicles Entered	15	31	7	47	91	9	24	93	21	4	97	33
Vehicles Exited	15	32	7	48	90	9	23	93	21	4	97	32
Hourly Exit Rate	15	32	7	48	90	9	23	93	21	4	97	32
Input Volume	15	32	5	50	96	10	25	100	20	5	95	35
% of Volume	98	100	140	96	94	88	93	93	106	80	102	91

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	1.2
Total Del/Veh (s)	8.7
Vehicles Entered	472
Vehicles Exited	471
Hourly Exit Rate	471
Input Volume	488
% of Volume	97

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.1	0.0	0.0	0.0	1.9	0.5	0.5	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.1	10.0	0.3	1.9	0.0	0.4	0.0	0.0	3.1	0.0
Total Del/Veh (s)	49.9	31.7	18.9	271.8	298.1	262.2	7.4	3.5	1.2	11.7	12.9	11.1
Vehicles Entered	10	4	13	130	4	25	11	464	40	5	843	10
Vehicles Exited	10	5	12	111	3	23	11	464	40	6	840	10
Hourly Exit Rate	10	5	12	111	3	23	11	464	40	6	840	10
Input Volume	10	5	10	140	5	25	10	460	40	5	837	10
% of Volume	98	100	117	79	60	93	107	101	100	120	100	98

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.2
Total Delay (hr)	16.1
Total Del/Veh (s)	36.5
Vehicles Entered	1559
Vehicles Exited	1535
Hourly Exit Rate	1535
Input Volume	1558
% of Volume	99

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.1	2.8	0.5	2.8	0.2	0.2	0.1	0.1	0.3
Total Delay (hr)	0.0	0.8	0.1	0.0	1.2	0.0	0.3	0.0	0.0	0.0	2.5
Total Del/Veh (s)	22.1	7.9	5.6	16.1	6.9	2.1	10.3	5.3	10.3	5.3	7.6
Vehicles Entered	8	368	41	9	608	6	109	25	3	15	1192
Vehicles Exited	8	367	42	9	608	6	108	26	3	16	1193
Hourly Exit Rate	8	367	42	9	608	6	108	26	3	16	1193
Input Volume	10	368	40	10	600	5	105	25	5	15	1184
% of Volume	78	100	105	88	101	120	103	105	60	105	101

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Total Del/Veh (s)	7.8	3.7	1.3	1.3	3.1	0.4	1.2
Vehicles Entered	10	19	293	7	5	206	540
Vehicles Exited	10	20	291	7	5	206	539
Hourly Exit Rate	10	20	291	7	5	206	539
Input Volume	10	20	290	5	5	225	555
% of Volume	98	101	100	140	100	92	97

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.4
Total Delay (hr)	36.8
Total Del/Veh (s)	54.9
Vehicles Entered	2284
Vehicles Exited	2248
Hourly Exit Rate	2248
Input Volume	9441
% of Volume	24

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	262	100	615	232	198
Average Queue (ft)	60	116	35	290	129	91
95th Queue (ft)	112	214	89	520	218	158
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)					1	
Queuing Penalty (veh)					4	
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	6	14	5	41		
Queuing Penalty (veh)	24	10	34	14		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	61	50	137	42
Average Queue (ft)	31	19	19	2
95th Queue (ft)	57	45	80	19
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	35	23
Average Queue (ft)	7	1
95th Queue (ft)	28	12
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	65	4	34
Average Queue (ft)	32	0	3
95th Queue (ft)	51	3	18
Link Distance (ft)	940	265	1089
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	43	58	59	92
Average Queue (ft)	24	29	23	54
95th Queue (ft)	44	47	53	80
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	39	62	57	28	59	48
Average Queue (ft)	17	30	30	11	33	18
95th Queue (ft)	34	51	45	32	51	44
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			7	1	7	2
Queuing Penalty (veh)			1	1	3	2

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	73	728	37	23	18
Average Queue (ft)	22	334	5	1	1
95th Queue (ft)	55	756	23	16	9
Link Distance (ft)	2059	2239		2410	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		150
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	47	148	46	25	210	16	120	35
Average Queue (ft)	7	54	11	6	82	1	51	9
95th Queue (ft)	30	121	34	23	163	9	90	28
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		1			3			
Queuing Penalty (veh)		0			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	50	34
Average Queue (ft)	19	3
95th Queue (ft)	44	17
Link Distance (ft)	1756	327
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 95

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.2
Total Delay (hr)	1.2	6.7	0.7	0.2	3.5	0.3	0.4	0.3	0.1	0.5	0.4	0.4
Total Del/Veh (s)	50.3	28.1	28.3	42.6	20.7	16.6	19.4	20.7	14.7	20.0	20.1	13.7
Vehicles Entered	79	825	85	14	596	55	70	50	29	89	78	101
Vehicles Exited	80	824	85	14	591	54	70	50	29	90	78	101
Hourly Exit Rate	80	824	85	14	591	54	70	50	29	90	78	101
Input Volume	80	844	80	15	590	50	75	50	30	85	80	105
% of Volume	100	98	106	92	100	107	93	100	97	106	97	96

1: Tully Rd/Elliott Rd & SR 12/SR 88 Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	14.6
Total Del/Veh (s)	24.6
Vehicles Entered	2071
Vehicles Exited	2066
Hourly Exit Rate	2066
Input Volume	2086
% of Volume	99

2: Tully Rd & Hammond St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.8	5.7	8.1	5.7	7.4	3.1	2.7	0.6	0.2	2.5	1.0	0.8
Vehicles Entered	27	27	60	9	5	9	38	109	9	5	156	17
Vehicles Exited	27	27	60	9	5	9	38	109	9	5	155	17
Hourly Exit Rate	27	27	60	9	5	9	38	109	9	5	155	17
Input Volume	30	26	60	10	5	10	40	110	10	5	152	20
% of Volume	90	106	100	88	100	88	95	99	88	100	102	86

2: Tully Rd & Hammond St Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.4
Total Del/Veh (s)	3.1
Vehicles Entered	471
Vehicles Exited	470
Hourly Exit Rate	470
Input Volume	478
% of Volume	98

3: Tully Rd & Sharon Dr Performance by movement

Movement	EBL	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.2
Total Del/Veh (s)	6.7	5.9	4.7	0.4	0.3	2.5
Vehicles Entered	5	5	141	162	5	318
Vehicles Exited	5	4	141	162	5	317
Hourly Exit Rate	5	4	141	162	5	317
Input Volume	5	5	145	160	5	320
% of Volume	100	80	97	101	100	99

4: Tully Rd & Main Project Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	5.8	3.3	0.9	0.5	3.0	0.8	1.7
Vehicles Entered	34	36	89	57	49	147	412
Vehicles Exited	35	36	89	57	49	147	413
Hourly Exit Rate	35	36	89	57	49	147	413
Input Volume	35	35	96	55	55	140	415
% of Volume	100	103	93	104	89	105	100

5: Tully Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	7.8	11.7	5.7	3.4	8.3	1.9	4.1	5.0	2.8	9.6	3.3	7.7
Vehicles Entered	85	62	7	3	42	10	6	28	6	22	88	51
Vehicles Exited	85	62	7	3	42	10	6	28	5	21	88	48
Hourly Exit Rate	85	62	7	3	42	10	6	28	5	21	88	48
Input Volume	90	60	5	5	40	10	5	30	5	20	90	50
% of Volume	95	102	140	60	105	98	120	93	100	106	98	96

5: Tully Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	0.8
Total Del/Veh (s)	7.1
Vehicles Entered	410
Vehicles Exited	405
Hourly Exit Rate	405
Input Volume	410
% of Volume	99

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.8	0.1	0.1	0.2
Total Delay (hr)	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Total Del/Veh (s)	4.7	9.9	2.7	6.8	11.8	5.5	4.0	10.2	2.7	5.3	9.4	3.8
Vehicles Entered	25	93	21	22	63	12	10	78	45	15	91	16
Vehicles Exited	25	94	22	22	62	11	11	79	46	15	90	15
Hourly Exit Rate	25	94	22	22	62	11	11	79	46	15	90	15
Input Volume	25	100	20	25	61	10	10	80	40	15	95	15
% of Volume	101	94	111	89	101	107	107	98	115	98	95	98

6: Jack Tone Rd & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.3
Total Delay (hr)	1.1
Total Del/Veh (s)	8.2
Vehicles Entered	491
Vehicles Exited	492
Hourly Exit Rate	492
Input Volume	496
% of Volume	99

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	1.0	0.0	0.0	2.1	1.1	1.2	0.0	0.0	0.0
Total Delay (hr)	1.7	0.3	1.2	14.4	1.5	5.2	0.0	2.4	0.2	0.1	2.5	0.1
Total Del/Veh (s)	296.7	196.4	232.5	861.4	903.9	894.7	10.1	9.1	4.7	23.6	12.3	10.2
Vehicles Entered	20	5	18	59	6	21	3	959	118	14	729	19
Vehicles Exited	18	4	17	29	3	10	3	961	118	13	729	18
Hourly Exit Rate	18	4	17	29	3	10	3	961	118	13	729	18
Input Volume	20	5	20	60	5	20	5	965	120	15	740	15
% of Volume	91	80	86	49	60	51	60	100	98	85	99	118

7: SR 12/SR 88 & Brandt Rd Performance by movement

Movement	All
Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.7
Total Delay (hr)	29.6
Total Del/Veh (s)	53.2
Vehicles Entered	1971
Vehicles Exited	1923
Hourly Exit Rate	1923
Input Volume	1990
% of Volume	97

8: N Sierra Dr & SR 12/SR 88 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	0.5	3.0	0.2	0.2	0.1	0.1	0.2
Total Delay (hr)	0.1	2.4	0.1	0.1	0.9	0.0	0.3	0.0	0.0	0.0	4.0
Total Del/Veh (s)	22.4	11.1	7.9	16.7	6.2	2.4	12.0	7.0	12.8	4.7	9.5
Vehicles Entered	23	768	54	14	521	4	101	16	5	11	1517
Vehicles Exited	23	767	54	15	522	4	101	17	5	11	1519
Hourly Exit Rate	23	767	54	15	522	4	101	17	5	11	1519
Input Volume	25	776	60	15	520	5	95	15	5	10	1526
% of Volume	93	99	90	98	100	80	107	111	100	107	100

9: Tully Rd & Malbec Dr Dwy (Future) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	4.8	2.8	0.8	1.1	2.2	0.4	0.7
Vehicles Entered	5	8	142	10	20	196	381
Vehicles Exited	5	8	142	10	20	196	381
Hourly Exit Rate	5	8	142	10	20	196	381
Input Volume	5	10	145	10	20	196	386
% of Volume	100	78	98	98	101	100	99

Total Network Performance

Denied Delay (hr)	0.5
Denied Del/Veh (s)	0.7
Total Delay (hr)	53.2
Total Del/Veh (s)	70.2
Vehicles Entered	2570
Vehicles Exited	2513
Hourly Exit Rate	2513
Input Volume	10306
% of Volume	24

Intersection: 1: Tully Rd/Elliott Rd & SR 12/SR 88

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	114	486	75	398	137	201
Average Queue (ft)	70	237	16	182	70	104
95th Queue (ft)	130	422	52	327	119	171
Link Distance (ft)		6551		2266	239	1173
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	75		55			
Storage Blk Time (%)	5	27	1	32		
Queuing Penalty (veh)	45	22	9	5		

Intersection: 2: Tully Rd & Hammond St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	91	38	87	17
Average Queue (ft)	40	17	10	1
95th Queue (ft)	71	41	45	7
Link Distance (ft)	5904	597	327	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Tully Rd & Sharon Dr

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	31	27
Average Queue (ft)	4	1
95th Queue (ft)	22	14
Link Distance (ft)	531	5468
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Tully Rd & Main Project Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	70	59
Average Queue (ft)	30	10
95th Queue (ft)	55	40
Link Distance (ft)	940	1089
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Tully Rd & Brandt Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	64	55	53	77
Average Queue (ft)	33	26	24	40
95th Queue (ft)	49	50	51	70
Link Distance (ft)	4986	2275	1559	5468
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Jack Tone Rd & Brandt Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	R
Maximum Queue (ft)	60	59	62	54	69	28
Average Queue (ft)	27	24	29	21	33	11
95th Queue (ft)	48	46	45	42	54	32
Link Distance (ft)	2239	4986	2110		5904	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				20		30
Storage Blk Time (%)			6	2	7	1
Queuing Penalty (veh)			2	2	1	1

Intersection: 7: SR 12/SR 88 & Brandt Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	255	1029	13	7	29
Average Queue (ft)	96	498	1	0	7
95th Queue (ft)	244	1034	10	3	22
Link Distance (ft)	2059	2239		2410	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		150
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: N Sierra Dr & SR 12/SR 88

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	57	247	145	37	165	11	116	27
Average Queue (ft)	17	102	14	11	65	0	46	8
95th Queue (ft)	45	196	67	32	131	4	84	26
Link Distance (ft)		2266			1304		773	438
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100		100		
Storage Blk Time (%)		5			2			
Queuing Penalty (veh)		4			0			

Intersection: 9: Tully Rd & Malbec Dr Dwy (Future)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	28	52
Average Queue (ft)	10	4
95th Queue (ft)	32	25
Link Distance (ft)	1756	327
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 92

Appendix D

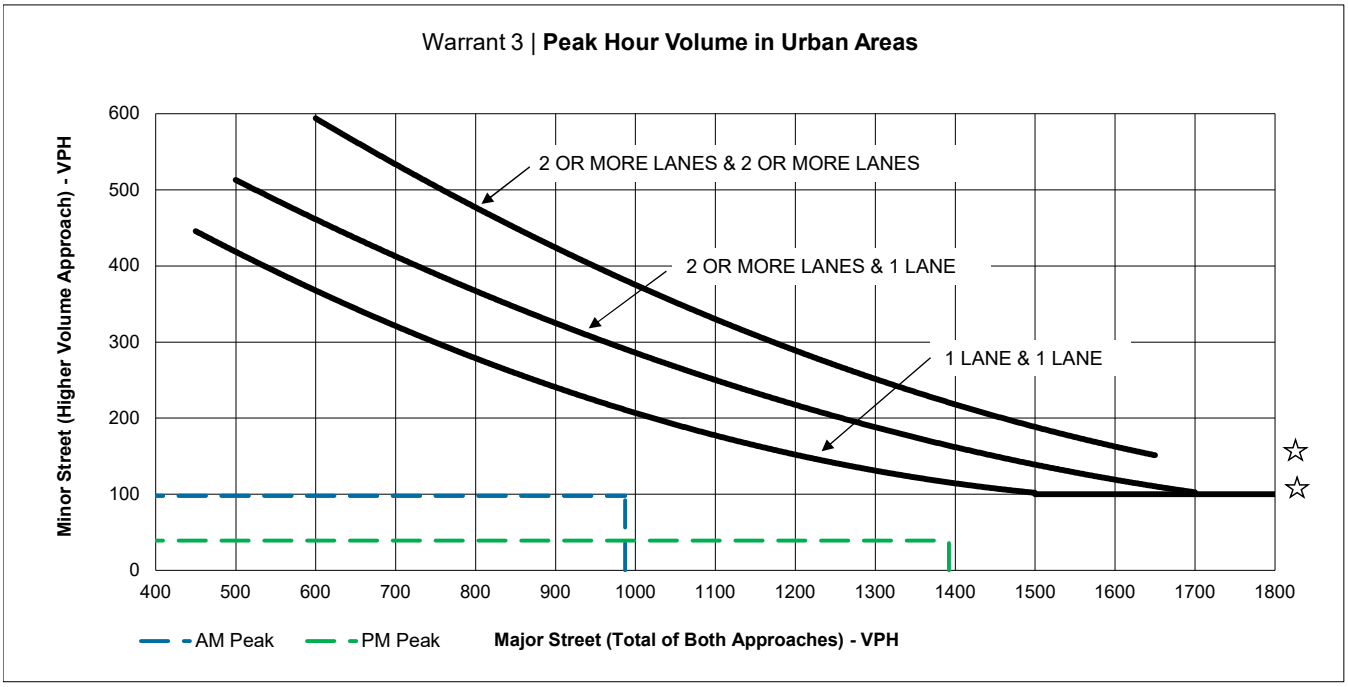
Signal Warrants

Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ **NOTE:**

150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		
		Number of Lanes
Major Approach	SR 12/SR 88	1
Minor Approach	Brandt Rd	1
	AM Peak	PM Peak
Major St. Volume (both approaches):	987	1,392
Minor St. Volume (higher volume approach):	98	39
Warrant Met?:	**No**	**No**

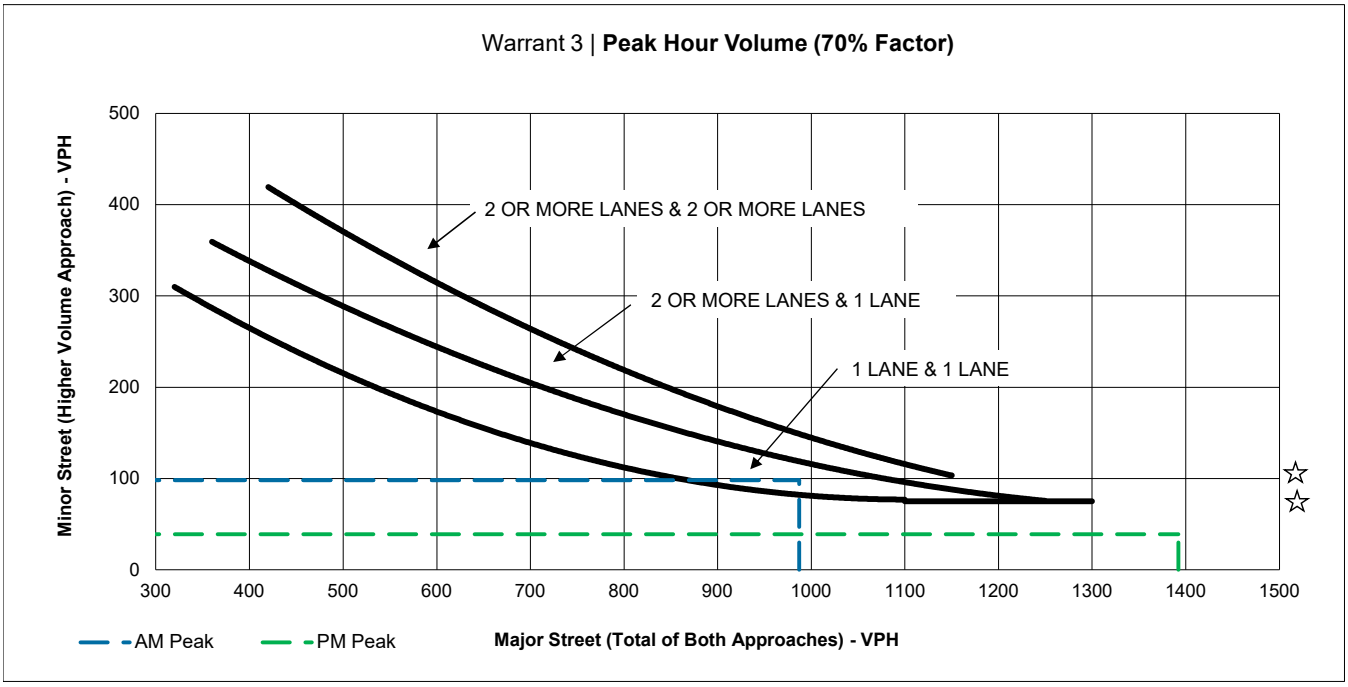
Fig 4C-3 (100% Option)

Cumulative Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		
		Number of Lanes
Major Approach	SR 12/SR 88	1
Minor Approach	Brandt Rd	1
	AM Peak	PM Peak
Major St. Volume (both approaches):	987	1,392
Minor St. Volume (higher volume approach):	98	39
Warrant Met?:	**Yes**	**No**

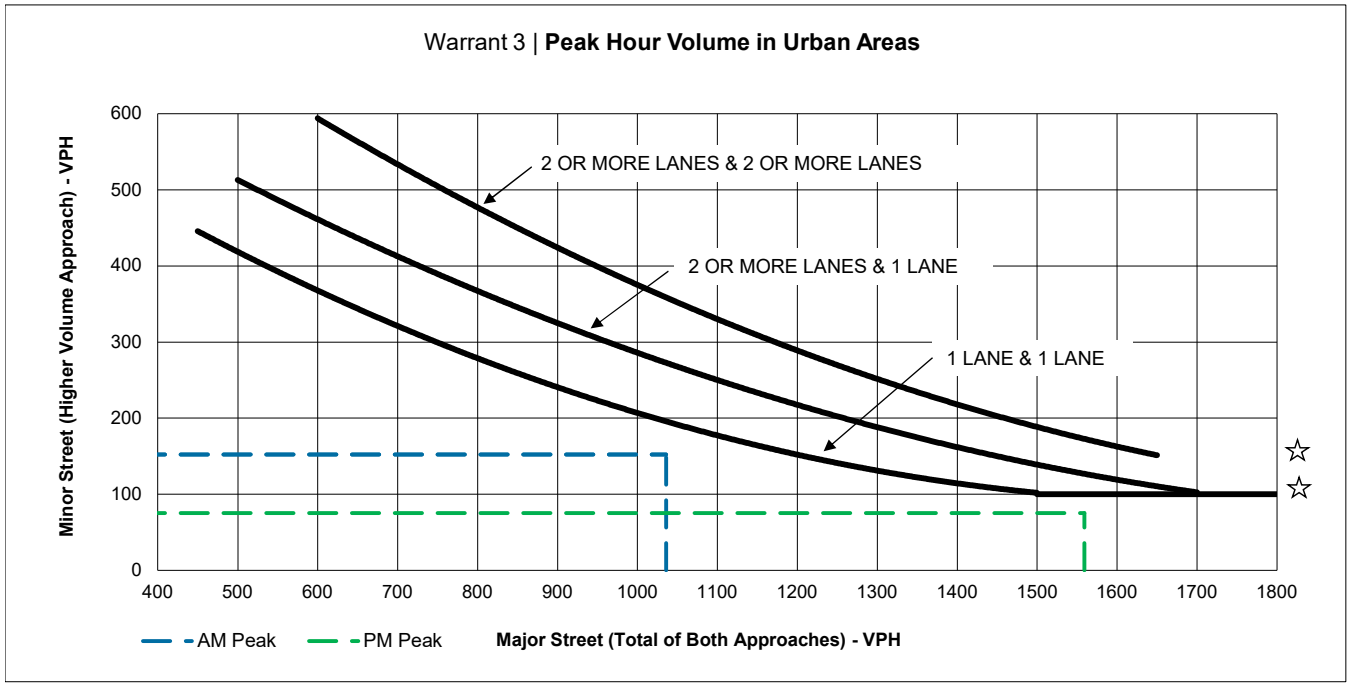
Fig 4C-4 (70% Option)

Existing Plus Project Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ **NOTE:**

150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		
		Number of Lanes
Major Approach	SR 12/SR 88	1
Minor Approach	Brandt Rd	1
	AM Peak	PM Peak
Major St. Volume (both approaches):	1,036	1,559
Minor St. Volume (higher volume approach):	152	75
Warrant Met?:	**No**	**No**

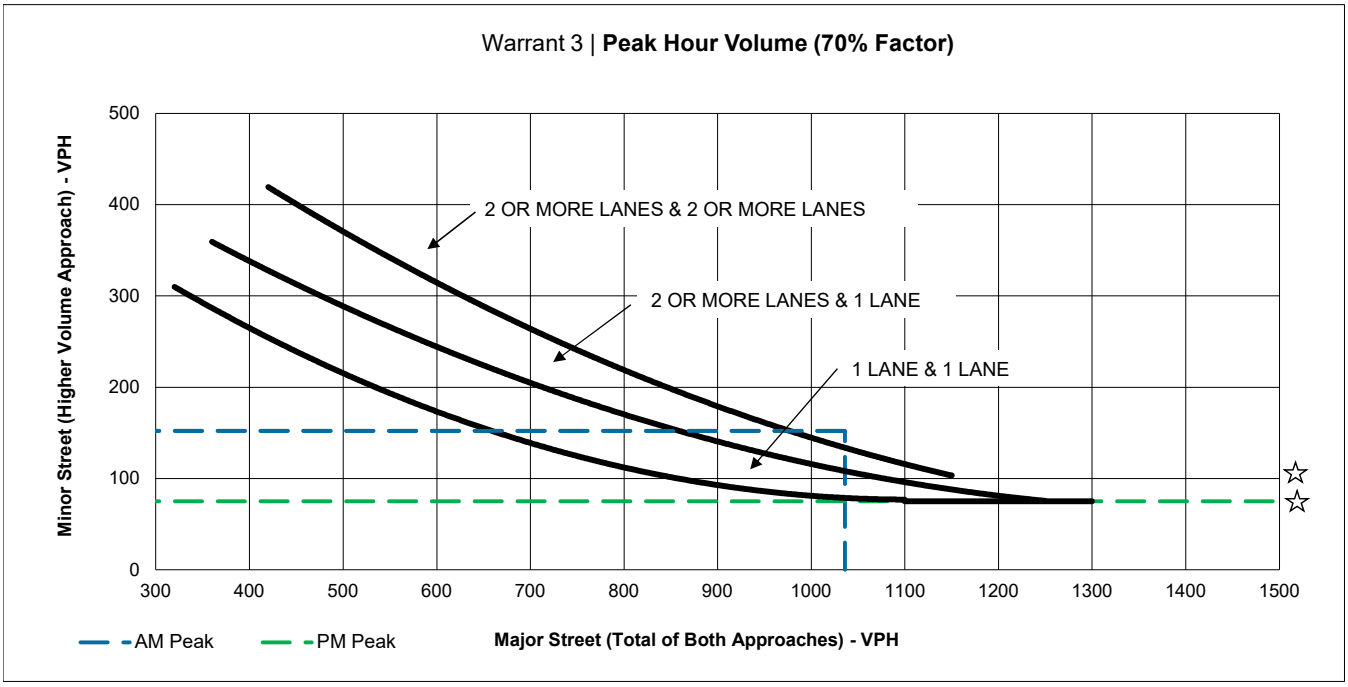
Fig 4C-3 (100% Option)

Cumulative Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)			
		Number of Lanes	
Major Approach	SR 12/SR 88	1	
Minor Approach	Brandt Rd	1	
	AM Peak	PM Peak	
Major St. Volume (both approaches):	1,036	1,559	
Minor St. Volume (higher volume approach):	152	75	
Warrant Met?:	**Yes**	**Yes**	

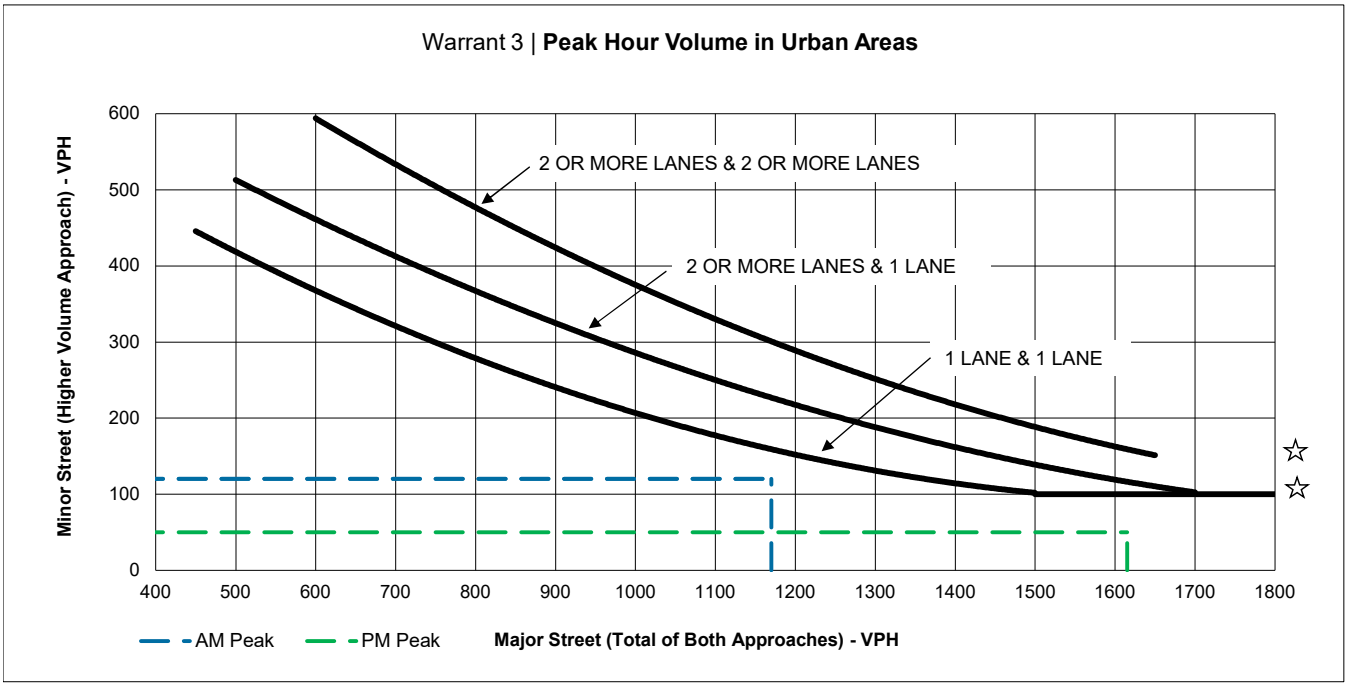
Fig 4C-4 (70% Option)

Cumulative Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ **NOTE:**

150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		
		Number of Lanes
Major Approach	SR 12/SR 88	1
Minor Approach	Brandt Rd	1
	AM Peak	PM Peak
Major St. Volume (both approaches):	1,170	1,615
Minor St. Volume (higher volume approach):	120	50
Warrant Met?:	**No**	**No**

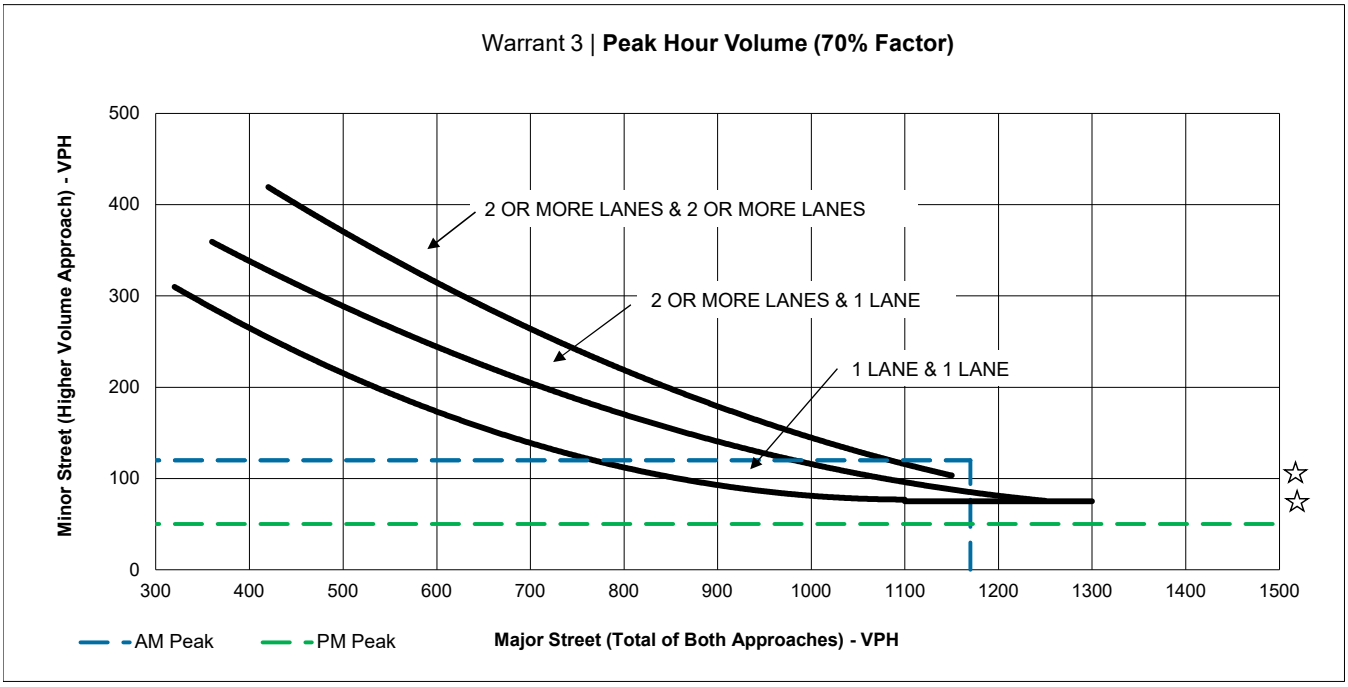
Fig 4C-3 (100% Option)

Cumulative Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		
		Number of Lanes
Major Approach	SR 12/SR 88	1
Minor Approach	Brandt Rd	1
	AM Peak	PM Peak
Major St. Volume (both approaches):	1,170	1,615
Minor St. Volume (higher volume approach):	120	50
Warrant Met?:	**Yes**	**No**

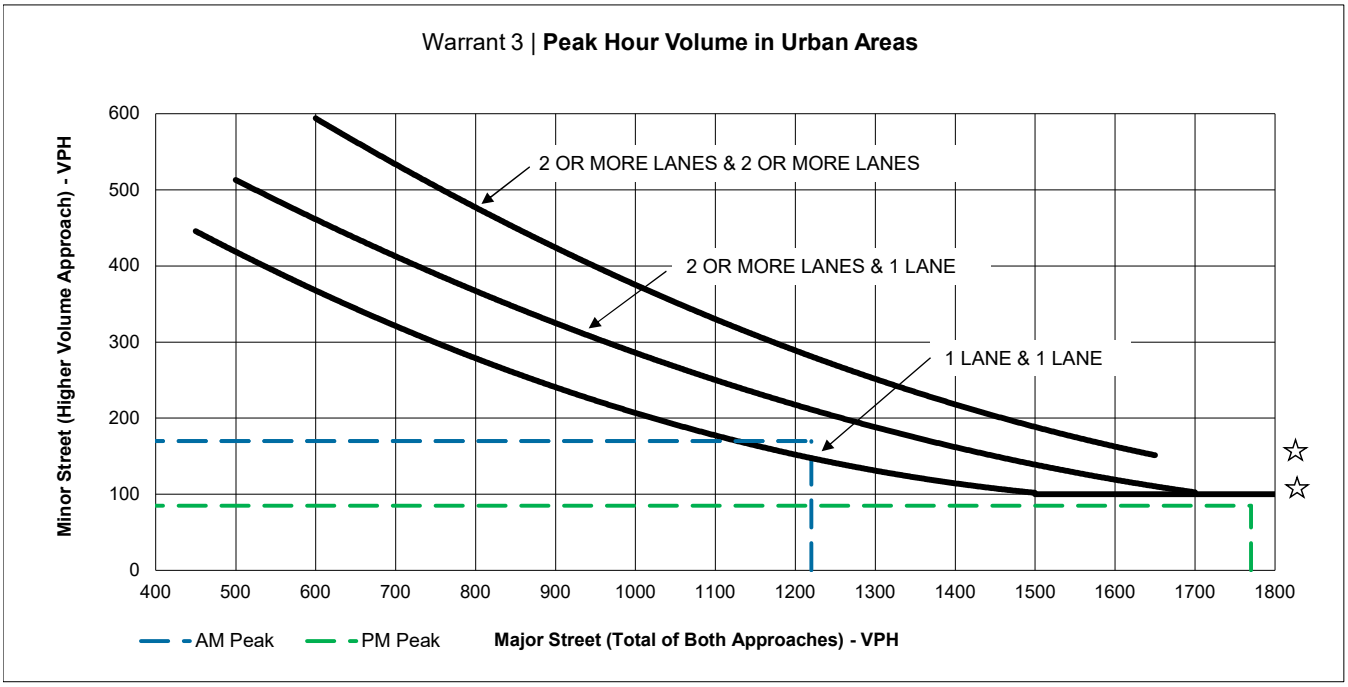
Fig 4C-4 (70% Option)

Cumulative Plus Project Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ **NOTE:**

150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		
		Number of Lanes
Major Approach	SR 12/SR 88	1
Minor Approach	Brandt Rd	1
	AM Peak	PM Peak
Major St. Volume (both approaches):	1,220	1,770
Minor St. Volume (higher volume approach):	170	85
Warrant Met?:	**Yes**	**No**

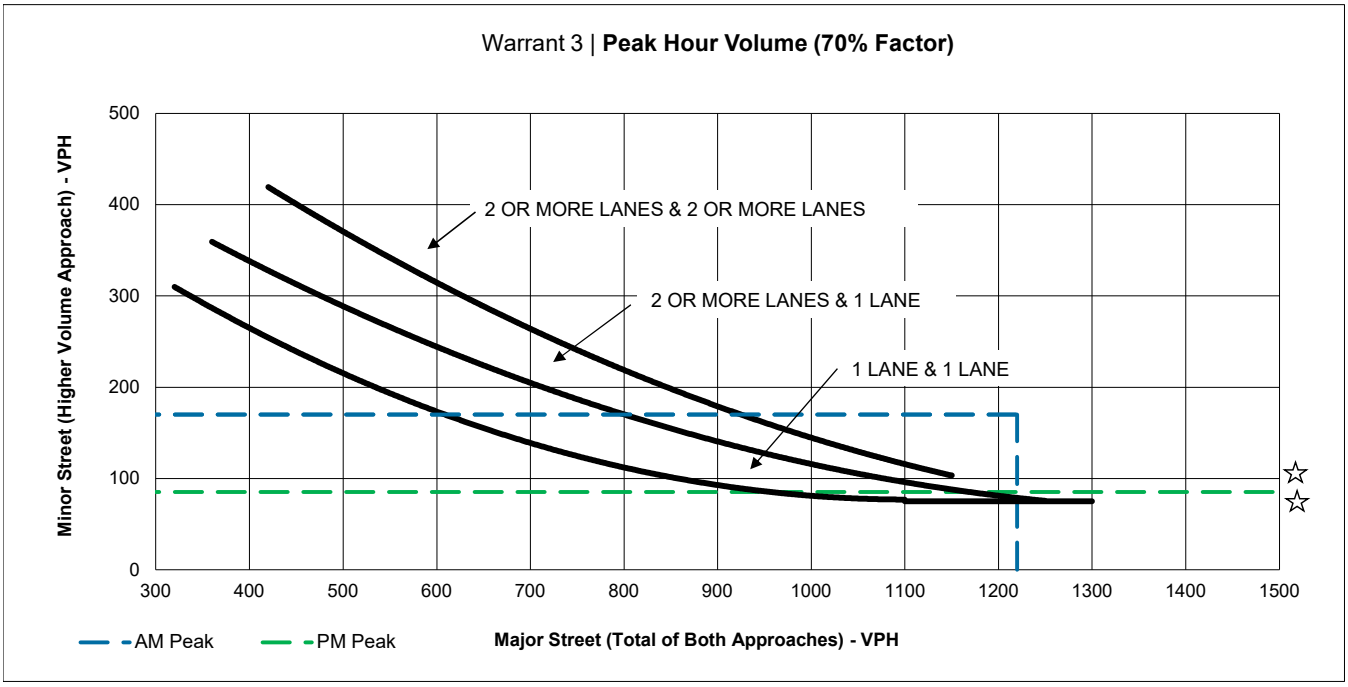
Fig 4C-3 (100% Option)

Cumulative Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



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100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		
		Number of Lanes
Major Approach	SR 12/SR 88	1
Minor Approach	Brandt Rd	1
	AM Peak	PM Peak
Major St. Volume (both approaches):	1,220	1,770
Minor St. Volume (higher volume approach):	170	85
Warrant Met?:	**Yes**	**Yes**

Fig 4C-4 (70% Option)

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