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MEMORANDUM

DATE: October 2, 2019

TO: Joseph Miller, SCS Engineers

FROM: Dean Arizabal, LSA

SUBJECT: Transportation Memorandum for the Eastlake Sanitary Landfill Expansion Project

The purpose of this Transportation Memorandum is to describe and document potential transportation impacts associated with the implementation of the proposed Eastlake Sanitary Landfill Expansion Project (project) at 16015 Davis Avenue in Clearlake, Lake County, California. This technical information is provided for project review under the California Environmental Quality Act (CEQA) and other pertinent regulations.

PROJECT DESCRIPTION

The Eastlake Sanitary Landfill is owned, operated, and managed by the County of Lake (County). The permitted landfill boundary encompasses approximately 80 acres (ac). The current permitted landfill footprint is approximately 35 ac. The County also owns approximately an additional 100 ac northeast and south of the landfill property. These additional parcels are not included in the currently permitted facility boundaries but have been considered as areas for possible landfill expansion.

On-site facilities include a scale house/weigh station, a liquids surface impoundment, and a landfill gas (LFG) collection system with a blower/flare station. The existing Eastlake Sanitary Landfill and other facilities are within the jurisdiction of both Unincorporated Lake County and the City of Clearlake (City). The landfill is accessible via the City streets of Davis Street, 40th Street, Phillips Avenue, and Moss Avenue.

It is estimated that the remaining permitted airspace capacity at the landfill will be exhausted as soon as early year 2024. CEQA review, permitting, final design, and construction for the proposed project must be completed by 2023 year end.

The proposed landfill expansion will be undertaken to provide long-term disposal capacity and accommodate public infrastructure needs. No significant changes in day-to-day site operations are anticipated as a result. The future waste disposal rate is assumed to increase proportionally with population and economic growth forecasts, at a modest 1.3 percent per year.

Figures 1 and 2 (all figures and tables attached) show the project location and site plan, respectively. The Eastlake Sanitary Landfill is the primary disposal facility for nonhazardous municipal solid wastes (MSW) generated within Lake County. Under Solid Waste Facility Permit No. 17-AA-001 (SFWP No. 17-11-001), current site operations are governed by the following:

- Hours of Operation: 7 days per week (except holidays), 7:30 a.m. to 3:00 p.m.
- Average Daily Intake: 200 tons (equivalent to approximately 70,000 tons per year)
- Maximum Daily Vehicles: 300 vehicles

Lake County residents and businesses currently generate approximately 40,000 to 50,000 tons of MSW per year requiring disposal at the Eastlake Sanitary Landfill. These totals exclude wildfire debris that has been disposed at the landfill over the period of 2015 through 2018 under waivers allowing additional intake and associated traffic, as granted by the oversight agencies. Over the course of a year, the average daily traffic count is approximately 175 vehicles. This includes deliveries by franchised waste haulers (in packer trucks, roll-off bins, and transfer truck/trailers) and by self-haul customers (the general public, landscapers, and other trades).

The current average daily MSW intake and vehicles are generally well below existing permit allowances. Based on MSW intake information from the County, as well as a one-day survey of the Eastlake Sanitary Landfill, 664.73 tons of MSW were delivered to the landfill on June 26, 2019, by 248 vehicles (109 passenger vehicles and 139 large trucks). Although that one-day intake is approximately three times more than the average daily intake of 200 tons, the surveyed number of vehicles is within the maximum-allowable 300 daily vehicles. For traffic analysis purposes, the focus is vehicle trips. One vehicle equates to two trips (one inbound and one outbound).

The proposed project would have the same hours of operation as the existing landfill. According to the County, the existing (2019) intake of MSW is approximately 45,600 tons per year, while the anticipated future (2050) intake of MSW is 67,900 tons per year. Therefore, the project would include the intake of an additional 22,300 tons per year of MSW, or approximately 63 additional tons per day of MSW, on site.

As previously described, the June 26, 2019 survey of the Eastlake Sanitary Landfill identified 248 vehicles for the disposal of 664.73 tons of MSW between the permitted hours of operation (7:30 a.m. to 3:00 p.m.). Because each vehicle represents two trips, the 248 vehicles (109 passenger vehicles and 139 large trucks) generated 496 trips (218 passenger vehicle trips and 278 large truck trips) on June 26, 2019. This would equate to approximately 0.16 passenger car per ton per day and 0.21 large truck per ton per day. Peak-hour trip rates were developed as a proportion of the existing peak-hour trips (by vehicle type) by the total number of vehicles (by vehicle type) per day. The results of the survey are summarized in Table A.

As shown in Table A, separate trip rates were developed for passenger cars and large trucks. The inbound and outbound trip rates then were applied to the additional 63 tons per day of MSW to calculate the project trip generation. The increase of 63 tons per day of MSW would require 46 daily trips (20 passenger vehicle trips and 26 large-truck trips). Applying a passenger car equivalent (PCE) factor of 2 to the daily trucks would result in 72 average daily trips (ADT), with 7 trips in the a.m. peak hour (3 inbound and 4 outbound) and 3 trips in the p.m. peak hour (0 inbound and 3 outbound). The remaining 62 PCE trips would occur outside the peak-hour periods.

It should be noted that the County is in the process of implementing mandatory waste collection services. The percentage of self-haul disposal of MSW and corresponding traffic volumes are anticipated to decrease as future mandatory waste collection requirements take effect Countywide.

Under these circumstances, a higher percentage of MSW will be disposed of via franchised collection vehicles. As a result of this shift in MSW delivery methods (from self-haul vehicles to franchised collection vehicles), the traffic volumes to and from the Eastlake Sanitary Landfill may decrease. However, the project trip increases (calculated in Table A) have been used to present a conservative, worst-case traffic analysis.

ENVIRONMENTAL ANALYSIS

This section includes analysis of environmental parameters based on Appendix G of the *State CEQA Guidelines*. The discussion not only includes the areas for which there is potential for environmental impacts but also provides justification for the conclusions that either no impacts, less-than-significant impacts, or less-than-significant impacts with mitigation could occur. The CEQA Analysis Checklist questions and the environmental significance conclusion appear under each environmental parameter, followed by a discussion supporting each conclusion.

XVII. TRANSPORTATION	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
(a) Conflict with a 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 due 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?	☐	☐	☒	☐

Discussion

This Transportation section analyzes the transportation impacts that may result due to development of the proposed project.

The traffic analysis was prepared consistent with the objectives and requirements of the City, the County, the California Department of Transportation (Caltrans), and applicable provisions of CEQA. The traffic analysis examined the following two scenarios: Existing conditions and Existing Plus Project conditions.

Study Area Intersections. The traffic analysis evaluated the following four intersections, as shown on Figure 3:

1. State Route 53 (SR-53)/40th Avenue
2. Moss Avenue/40th Avenue
3. Phillips Avenue/40th Avenue
4. Phillips Avenue/Davis Avenue

Intersection Level of Service Methodology. Intersections were evaluated using the *Highway Capacity Manual* (HCM), 6th Edition (TRB 2017) methodology. LSA utilized Synchro (version 10) for the HCM analysis of all study area intersections. The study area intersection level of service (LOS) analysis was conducted for the weekday a.m. and p.m. peak hours. The HCM worksheets are provided as an attachment.

The HCM intersection methodology presents LOS in terms of delay (in seconds per vehicle). The resulting delay is expressed in terms of LOS, where LOS A represents free-flow activity and LOS F represents overcapacity operation. The relationship between LOS and the delay for signalized and unsignalized intersections is shown below:

Level of Service	Signalized Intersection Delay per Vehicle (seconds)	Unsignalized Intersection Delay per Vehicle (seconds)
A	≤0.60	≤10.0
B	>0.60 and ≤0.70	>10.0 and ≤15.0
C	>0.70 and ≤0.80	>15.0 and ≤25.0
D	>0.80 and ≤0.90	>25.0 and ≤35.0
E	>0.90 and ≤1.00	>35.0 and ≤50.0
F	>1.00	>50.0

Threshold of Significance. The City strives to maintain LOS D or better for both signalized and unsignalized intersections. Therefore, the proposed project is considered to have a significant impact if the project would result in an intersection that deteriorates from an acceptable LOS (D or better) in the No Project condition to an unacceptable LOS (E or F) in the Plus Project condition.

Project Trip Generation, Distribution, and Assignment. As previously described, the trip generation from the proposed project was estimated based on a survey of the Eastlake Sanitary Landfill conducted on June 26, 2019. Separate trip rates were developed for passenger cars and large trucks. The inbound and outbound trip rates then were applied to the additional 63 tons per day of MSW to calculate the project trip generation.

As shown in Table A, the additional intake of 63 tons per day of MSW would require 23 total vehicles (10 passenger vehicles and 13 large trucks). This would be equivalent to 46 average daily trips (ADT), 20 passenger vehicle trips, and 26 large-truck trips. In addition, a PCE factor of 2 was applied to the large trucks.

The proposed project would generate 72 ADT, with 7 trips in the a.m. peak hour (3 inbound and 4 outbound) and 3 trips in the p.m. peak hour (0 inbound and 3 outbound), in PCEs. The remaining 62 PCE trips would occur outside the peak-hour periods.

The directions of approach to and departure from the site are based on the residential and commercial uses served by the landfill, as well as the major arterial traversing Clearlake (SR-53). Approximately 30 percent of the trips are destined north on SR-53, 30 percent are destined south on SR-53, 20 percent are destined west on 40th Avenue, and 20 percent are destined south on Phillips Avenue. The project trips have been added to the existing traffic volumes to represent Existing Plus Project conditions.

Existing Circulation System. Key roadways in the vicinity of the proposed project are as follows:

- **State Route 53 (SR-53)** is a four-lane, north-south principle arterial between State Route 20 (SR-20) in Clearlake Oaks and State Route 29 (SR-29) in Lower Lake. SR-53 is the only major arterial traversing through Clearlake.
- **Moss Avenue** is located immediately east of SR-53. It is a two-lane, north-south major collector between 40th Avenue and Davis Avenue.
- **Phillips Avenue** is a two-lane, north-south major collector between 18th Avenue and Davis Avenue.
- **40th Avenue** is a two-lane, east-west major collector between SR-53 and Parker Street.
- **Davis Avenue** is a two-lane, east-west major collector from east of SR-53 to the Eastlake Sanitary Landfill.

Existing Traffic Volumes and LOS Analysis. Existing traffic volumes were collected by Counts Unlimited on June 26, 2019 for the study area intersections.

Table B summarizes the results of the existing peak-hour LOS for the study area intersections. All study area intersections currently operate at satisfactory LOS.

Impact Analysis

a. Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact. As previously stated, transportation impacts were analyzed with respect to the following two scenarios: Existing conditions and Existing Plus Project conditions.

Because the existing number of disposal vehicles (248 vehicles on June 26, 2019) and the anticipated number of disposal vehicles (23 project vehicles) would not exceed the maximum allowable 300 daily vehicles, no change is required for SWFP No. 17-AA-001.

The project trips (72 ADT, with 7 trips in the a.m. peak hour [3 inbound and 4 outbound] and 3 trips in the p.m. peak hour [0 inbound and 3 outbound], in PCEs) were added to the existing traffic volumes to represent Existing Plus Project conditions.

Table B summarizes the peak-hour LOS results for the Existing Plus Project analysis. All study area intersections are anticipated to operate at satisfactory LOS.

A significant project impact would not occur at any study area intersection, and no mitigation is required.

Although the proposed project is an expansion of the existing landfill that would generate vehicles/trucks (self-haul vehicles or mandatory waste collection franchised vehicles), it would not preclude alternative modes of transportation or facilities (e.g., transit, bicycle, or pedestrian).Therefore, the project would not conflict with any program, plan, ordinance, or policy addressing the circulation system. No mitigation is required.

b. Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

Less Than Significant Impact. *CEQA Guidelines* Section 15064.3, Subdivision (b) states that for land use projects, transportation impacts are to be measured by evaluating the project's vehicle miles traveled (VMT), as outlined in the following:

> "Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact."

Since the City does not provide defined thresholds for VMT (and has until July 1, 2020, to do so), the proposed project cannot be analyzed, and significance cannot be concluded at this point on the basis of VMT. However, using the current, effective LOS standards, it can be concluded that the project's implementation will result in a less-than-significant impact.

Furthermore, the proposed project would continue landfill operations on site and potentially decrease the need to haul waste from surrounding areas to landfills located farther away than the Eastlake Sanitary Landfill. Although the proposed project could generate a minimal increase in traffic (self-haul vehicles or mandatory waste collection franchised vehicles), it would generate VMT consistent with the existing landfill that has a low VMT profile. As a result, the project would not likely exceed potential thresholds for VMT. No mitigation is required.

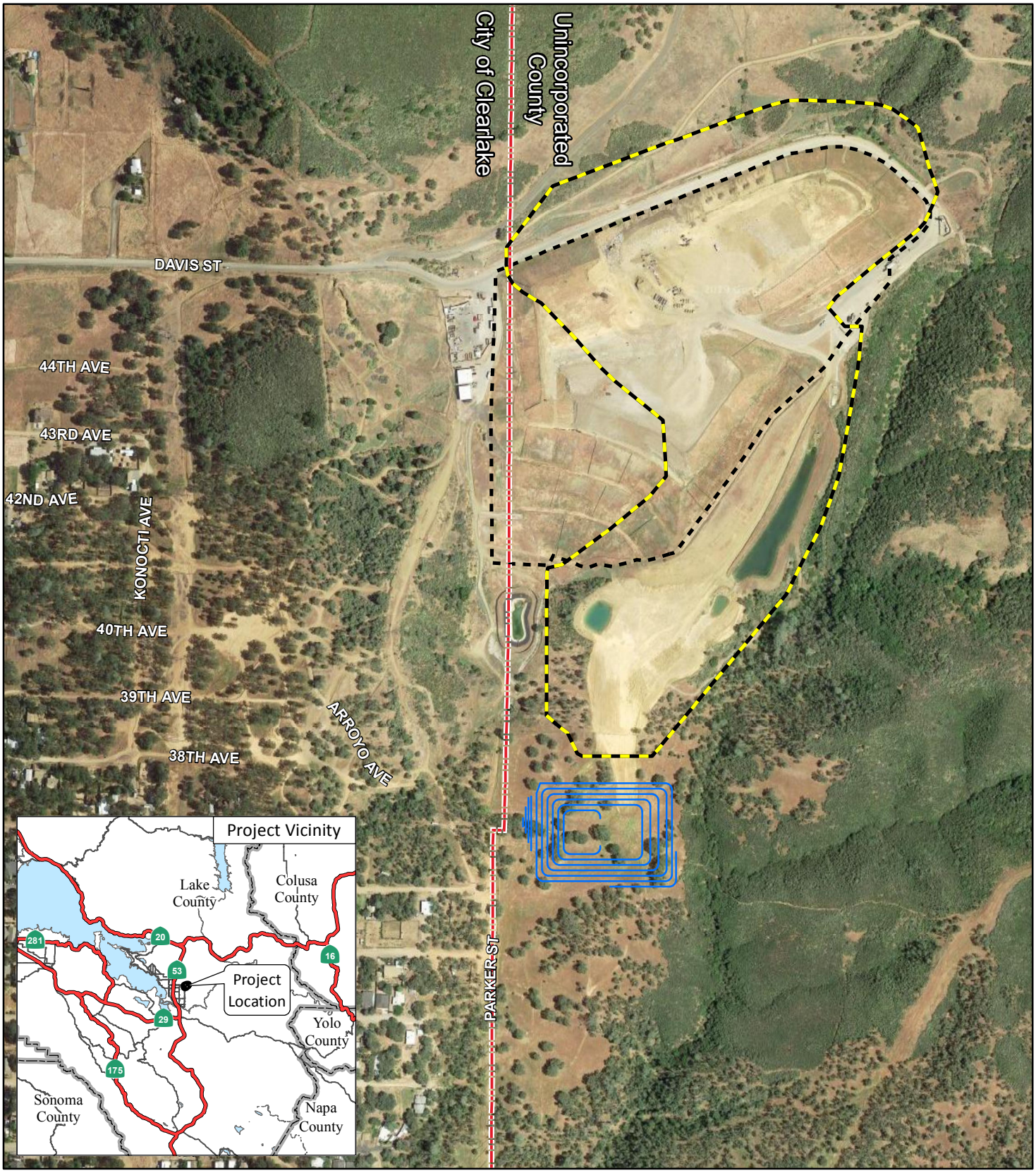
c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. Access to the proposed project will be provided at the existing landfill driveway via Davis Avenue. In addition, the proposed expansion of the Eastlake Sanitary Landfill is compatible with the current landfill operations on site. Therefore, the proposed project would not substantially increase hazards for vehicles due to a geometric design feature or incompatible uses. No mitigation is required.

d. Would the project result in inadequate emergency access?

Less Than Significant Impact. The project proposed will not change the existing roadway design. The site is built to meet all roadway design standards and allows for adequate emergency access. Therefore, the proposed project would not result in inadequate emergency access, and no mitigation is required.

Attachments: Figures 1–3
Tables A and B
HCM Worksheets



LSA

LEGEND

- City of Clearlake
- Existing Landfill Refuse Limit
- Proposed Landfill Expansion Area
- Proposed Storm Water Basin

0 250 500
FEET

FIGURE 1

Eastlake Sanitary Landfill Expansion Project

Project Location

SOURCE: Google (2018); SCS Engineers (8/2019)

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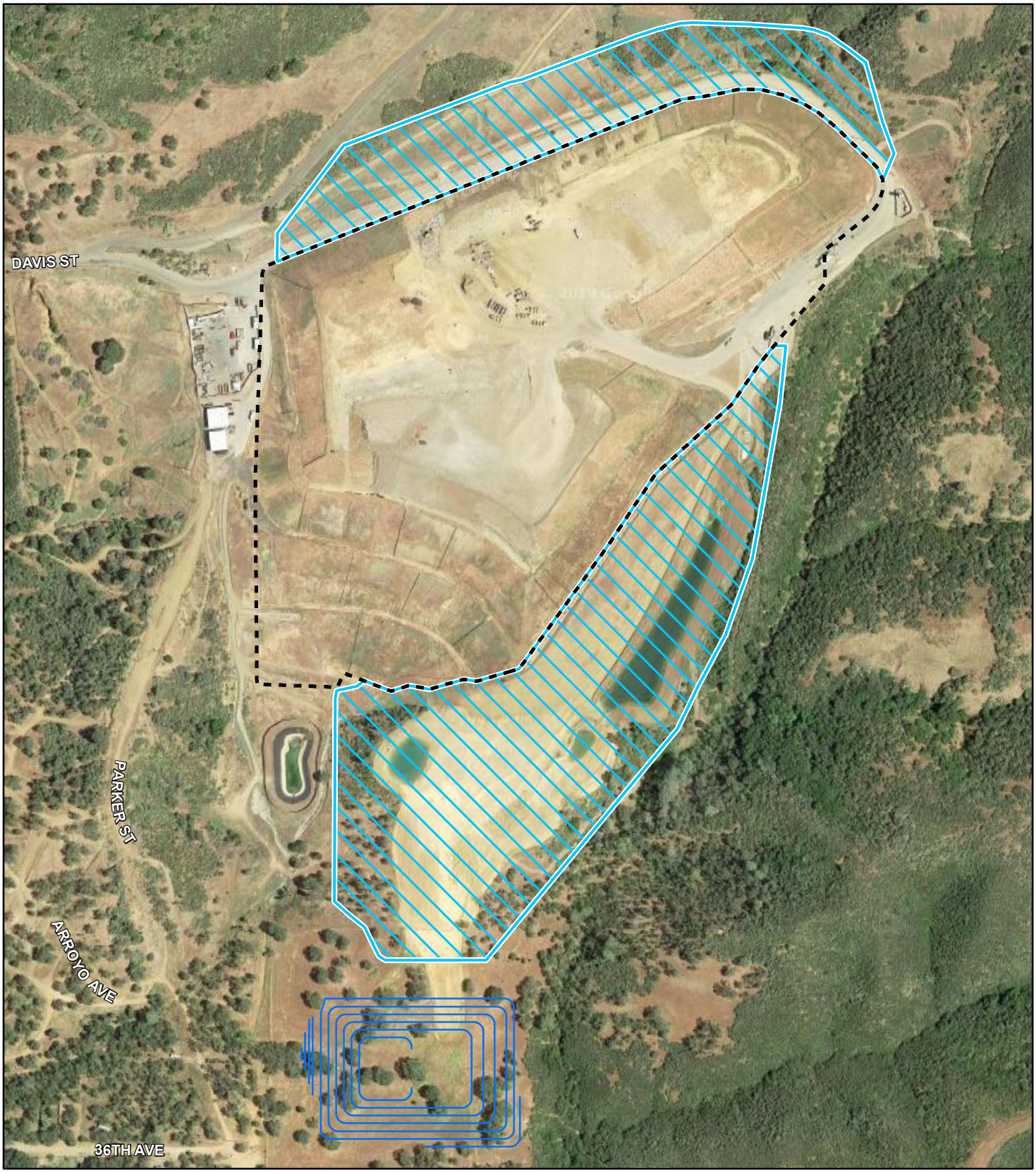

LSA

LEGEND

Existing Landfill Refuse Limit (36.0 acres)

Proposed expansion area beyond existing refuse limit (24.5 acres)

Proposed Storm Water Basin

N

0 175 350

FEET

SOURCE: Google (2018); SCS Engineers (8/2019)

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FIGURE 2

Eastlake Sanitary Landfill Expansion Project

Project Detail

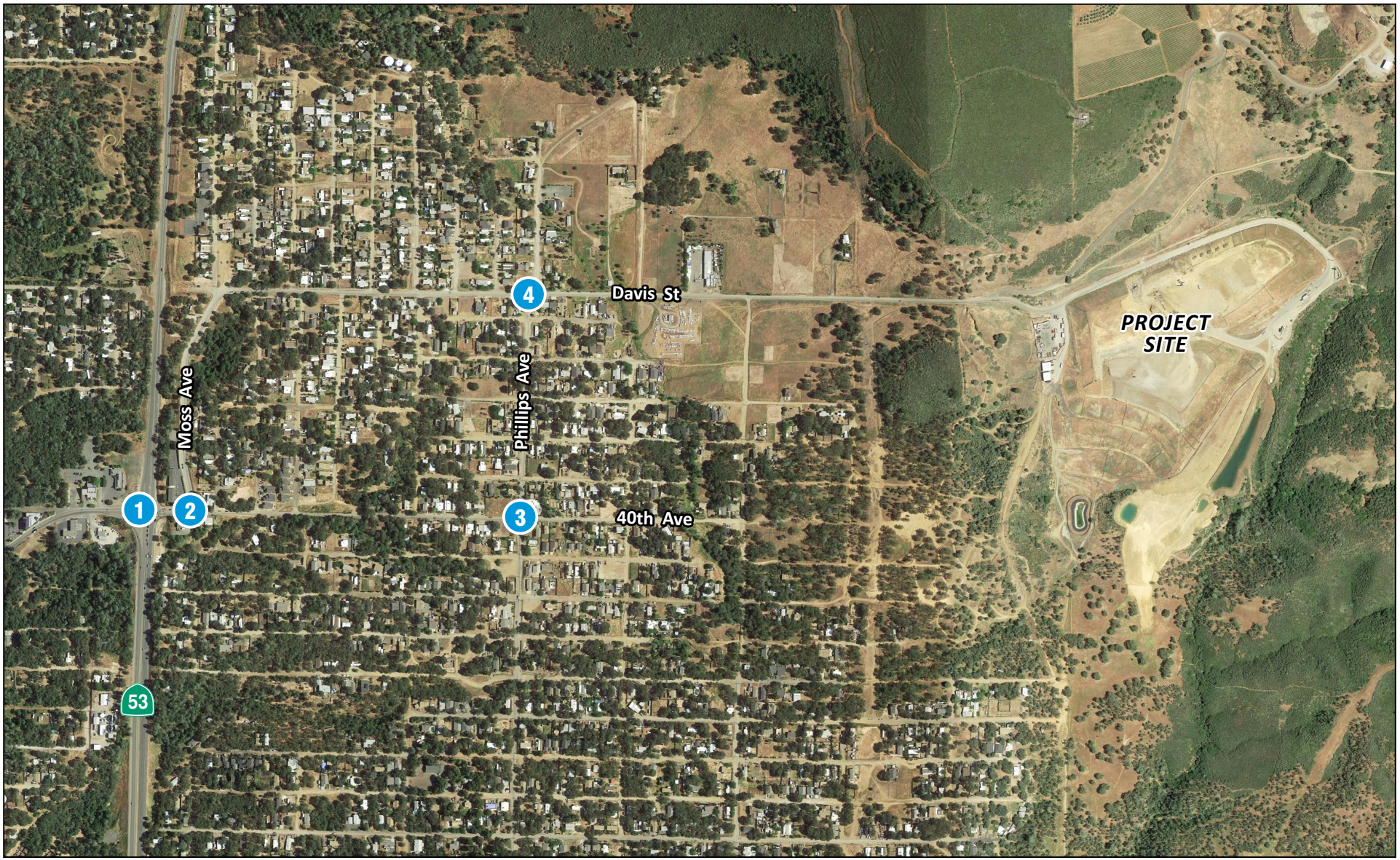

FIGURE 3

LSA

LEGEND

- Study Area Intersection

N

0 450 900

FEET

SOURCE: Google Earth

Eastlake Sanitary Landfill Expansion Project

Study Area Intersections

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Table A: Eastlake Landfill Expansion Project Trip Generation

Landfill		Vehicle			Vehicle Trip Generation								PCE Trip Generation						
						AM Peak Hour			PM Peak Hour					AM Peak Hour			PM Peak Hour		
Size	Unit	Type[2]	Split	No.	ADT	In	Out	Total	In	Out	Total	PCE	ADT	In	Out	Total	In	Out	Total
Trip Rates[1]																			
		Passenger Vehicle	-	0.16	2.00	0.05	0.04	0.09	0.05	0.08	0.13	-	-	-	-	-	-	-	-
1	TPD	Large Truck	-	0.21	2.00	0.09	0.12	0.21	0.00	0.04	0.04	-	-	-	-	-	-	-	-
Existing Trip Generation																			
		Passenger Vehicle	43.95%	109	218	6	4	10	5	9	14	1	218	6	4	10	5	9	14
		Large Truck	56.05%	139	278	13	16	29	0	5	5	2	556	26	32	58	0	10	10
664.730	TPD	Total	100.00%	248	496	19	20	39	5	14	19	-	774	32	36	68	5	19	24
Project Trip Generation																			
		Passenger Vehicle	43.95%	10	20	1	0	1	0	1	1	1	20	1	0	1	0	1	1
		Large Truck	56.05%	13	26	1	2	3	0	1	1	2	52	2	4	6	0	2	2
63.000	TPD	Total	100.00%	23	46	2	2	4	0	2	2	-	72	3	4	7	0	3	3

[1] Trip rates developed from surveys of the Eastlake Landfill on June 26, 2019.

[2] Passenger vehicles include motorcycles, cars, pickups, vans, and panel trucks. Large trucks include trucks with 6+ tires and/or 3+ axles.

ADT = average daily trips

PCE = passenger car equivalent

TPD = tons per day of waste

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Table B: Existing Plus Project Intersection Level of Service Analysis

Study Area No.	Intersection	Control Type	Existing											
			Baseline				Plus Project				Significant Impact?			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay Increase	AM	Delay Increase	PM
1	SR-53/40th Avenue	Signal	31.0	C	35.7	D	31.0	C	35.7	D	0.0	No	0.0	No
2	Moss Avenue/40th Avenue[1]	TWSC	9.7	A	9.6	A	9.7	A	9.7	A	0.0	No	0.1	No
3	Phillips Avenue/40th Avenue	AWSC	7.8	A	8.8	A	7.8	A	8.9	A	0.0	No	0.1	No
4	Phillips Avenue/Davis Avenue[1]	TWSC	8.6	A	8.9	A	9.0	A	9.0	A	0.4	No	0.1	No

[1] The reported delay is the delay of the stop-controlled approach.

Note: Delay is reported in seconds

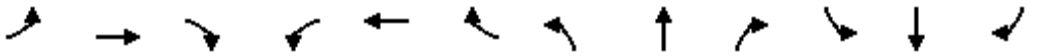
AWSC = All-Way Stop Control

HCM = Highway Capacity Manual

LOS = level of service

SR-53 = State Route 53

TWSC = Two-Way Stop Control



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	76	253	65	118	49	287	297	25	30	327	91
Future Volume (veh/h)	46	76	253	65	118	49	287	297	25	30	327	91
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	50	83	0	71	128	53	312	323	27	33	355	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	449		119	302	125	368	1253	104	135	877	
Arrive On Green	0.07	0.24	0.00	0.07	0.24	0.24	0.21	0.38	0.38	0.08	0.25	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1256	520	1781	3321	276	1781	3554	1585
Grp Volume(v), veh/h	50	83	0	71	0	181	312	172	178	33	355	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1777	1781	1777	1821	1781	1777	1585
Q Serve(g_s), s	2.0	2.6	0.0	2.9	0.0	6.5	12.6	5.0	5.1	1.3	6.3	0.0
Cycle Q Clear(g_c), s	2.0	2.6	0.0	2.9	0.0	6.5	12.6	5.0	5.1	1.3	6.3	0.0
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	119	449		119	0	426	368	670	687	135	877	
V/C Ratio(X)	0.42	0.18		0.60	0.00	0.42	0.85	0.26	0.26	0.24	0.40	
Avail Cap(c_a), veh/h	119	449		119	0	426	368	670	687	135	877	
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.6	22.7	0.0	34.0	0.0	24.1	28.6	16.1	16.1	32.6	23.6	0.0
Incr Delay (d2), s/veh	10.6	0.9	0.0	20.3	0.0	3.1	20.8	0.9	0.9	4.2	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.2	0.0	1.9	0.0	3.0	7.3	2.1	2.2	0.7	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	23.6	0.0	54.3	0.0	27.2	49.5	17.0	17.0	36.9	25.0	0.0
LnGrp LOS	D	C		D	A	C	D	B	B	D	C	
Approach Vol, veh/h		133	A		252			662			388	A
Approach Delay, s/veh		31.3			34.8			32.3			26.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	32.8	9.5	22.5	20.0	23.0	9.5	22.5
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	5.7	28.3	5.0	18.0	15.5	18.5	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.3	7.1	4.9	4.6	14.6	8.3	4.0	8.5
Green Ext Time (p_c), s	0.0	2.0	0.0	0.3	0.1	1.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	54	78	163	0	1	82
Future Vol, veh/h	54	78	163	0	1	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	85	177	0	1	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	177	0	-	0	380	177
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	203	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1399	-	-	-	622	866
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	831	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1399	-	-	-	595	866
Mov Cap-2 Maneuver	-	-	-	-	595	-
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	831	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1399	-	-	-	861
HCM Lane V/C Ratio	0.042	-	-	-	0.105
HCM Control Delay (s)	7.7	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	5	62	8	10	0	116	12	7	0	13	26
Future Vol, veh/h	11	5	62	8	10	0	116	12	7	0	13	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	5	67	9	11	0	126	13	8	0	14	28
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	7.3	7.7	8.3	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	86%	14%	44%	0%
Vol Thru, %	9%	6%	56%	33%
Vol Right, %	5%	79%	0%	67%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	135	78	18	39
LT Vol	116	11	8	0
Through Vol	12	5	10	13
RT Vol	7	62	0	26
Lane Flow Rate	147	85	20	42
Geometry Grp	1	1	1	1
Degree of Util (X)	0.175	0.093	0.025	0.045
Departure Headway (Hd)	4.288	3.932	4.533	3.826
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	831	916	794	920
Service Time	2.345	1.933	2.536	1.917
HCM Lane V/C Ratio	0.177	0.093	0.025	0.046
HCM Control Delay	8.3	7.3	7.7	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.1	0.1

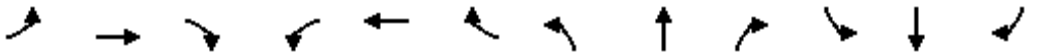
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	28	11	6	31	0	9	1	5	0	1	7
Future Vol, veh/h	4	28	11	6	31	0	9	1	5	0	1	7
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	-	-	-	-	-	-	-	-	-	-	-	-
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	4	30	12	7	34	0	10	1	5	0	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	34	0	0	42	0	0	97	92	36	95	98	34
Stage 1	-	-	-	-	-	-	44	44	-	48	48	-
Stage 2	-	-	-	-	-	-	53	48	-	47	50	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1578	-	-	1567	-	-	885	798	1037	888	792	1039
Stage 1	-	-	-	-	-	-	970	858	-	965	855	-
Stage 2	-	-	-	-	-	-	960	855	-	967	853	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1578	-	-	1567	-	-	873	792	1037	877	786	1039
Mov Cap-2 Maneuver	-	-	-	-	-	-	873	792	-	877	786	-
Stage 1	-	-	-	-	-	-	967	855	-	962	851	-
Stage 2	-	-	-	-	-	-	947	851	-	958	850	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	1.2	9	8.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	915	1578	-	-	1567	-	-	999
HCM Lane V/C Ratio	0.018	0.003	-	-	0.004	-	-	0.009
HCM Control Delay (s)	9	7.3	0	-	7.3	0	-	8.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	169	271	60	150	35	362	447	60	67	326	66
Future Volume (veh/h)	95	169	271	60	150	35	362	447	60	67	326	66
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	184	0	65	163	38	393	486	65	73	354	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	433		116	330	77	434	1158	154	198	835	
Arrive On Green	0.07	0.23	0.00	0.06	0.22	0.22	0.24	0.37	0.37	0.11	0.24	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1467	342	1781	3152	420	1781	3554	1585
Grp Volume(v), veh/h	103	184	0	65	0	201	393	273	278	73	354	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1809	1781	1777	1795	1781	1777	1585
Q Serve(g_s), s	4.6	6.7	0.0	2.8	0.0	7.8	17.1	9.2	9.3	3.0	6.8	0.0
Cycle Q Clear(g_c), s	4.6	6.7	0.0	2.8	0.0	7.8	17.1	9.2	9.3	3.0	6.8	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	127	433		116	0	407	434	653	660	198	835	
V/C Ratio(X)	0.81	0.43		0.56	0.00	0.49	0.91	0.42	0.42	0.37	0.42	
Avail Cap(c_a), veh/h	127	433		116	0	407	434	653	660	198	835	
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.6	26.2	0.0	36.3	0.0	27.0	29.4	18.9	18.9	32.9	26.0	0.0
Incr Delay (d2), s/veh	41.1	3.0	0.0	18.2	0.0	4.2	25.0	2.0	2.0	5.2	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.3	0.0	1.8	0.0	3.7	10.0	4.0	4.0	1.6	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.7	29.3	0.0	54.5	0.0	31.3	54.3	20.9	20.9	38.1	27.6	0.0
LnGrp LOS	E	C		D	A	C	D	C	C	D	C	
Approach Vol, veh/h		287	A		266			944			427	A
Approach Delay, s/veh		46.7			36.9			34.8			29.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.4	33.9	9.7	23.0	24.0	23.3	10.2	22.5
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	8.9	29.4	5.2	18.5	19.5	18.8	5.7	18.0
Max Q Clear Time (g_c+I1), s	5.0	11.3	4.8	8.7	19.1	8.8	6.6	9.8
Green Ext Time (p_c), s	0.0	3.2	0.0	0.6	0.1	1.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	35.7
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	73	254	169	2	1	61
Future Vol, veh/h	73	254	169	2	1	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	276	184	2	1	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	186	0	-	0	619	185
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	434	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1388	-	-	-	452	857
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1388	-	-	-	422	857
Mov Cap-2 Maneuver	-	-	-	-	422	-
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1388	-	-	-	843
HCM Lane V/C Ratio	0.057	-	-	-	0.08
HCM Control Delay (s)	7.8	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

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	23	37	179	25	13	5	127	17	19	4	16	18
Future Vol, veh/h	23	37	179	25	13	5	127	17	19	4	16	18
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	25	40	195	27	14	5	138	18	21	4	17	20
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	8.8	8.1	9.2	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	78%	10%	58%	11%
Vol Thru, %	10%	15%	30%	42%
Vol Right, %	12%	75%	12%	47%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	163	239	43	38
LT Vol	127	23	25	4
Through Vol	17	37	13	16
RT Vol	19	179	5	18
Lane Flow Rate	177	260	47	41
Geometry Grp	1	1	1	1
Degree of Util (X)	0.233	0.295	0.062	0.052
Departure Headway (Hd)	4.729	4.092	4.787	4.553
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	758	881	748	785
Service Time	2.76	2.112	2.817	2.59
HCM Lane V/C Ratio	0.234	0.295	0.063	0.052
HCM Control Delay	9.2	8.8	8.1	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	1.2	0.2	0.2

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	7	22	1	4	0	16	2	3	0	3	2
Future Vol, veh/h	6	7	22	1	4	0	16	2	3	0	3	2
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	-	-	-	-	-	-	-	-	-	-	-	-
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	7	8	24	1	4	0	17	2	3	0	3	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	4	0	0	32	0	0	43	40	20	43	52	4
Stage 1	-	-	-	-	-	-	34	34	-	6	6	-
Stage 2	-	-	-	-	-	-	9	6	-	37	46	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1618	-	-	1580	-	-	960	852	1058	960	839	1080
Stage 1	-	-	-	-	-	-	982	867	-	1016	891	-
Stage 2	-	-	-	-	-	-	1012	891	-	978	857	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1618	-	-	1580	-	-	951	848	1058	951	835	1080
Mov Cap-2 Maneuver	-	-	-	-	-	-	951	848	-	951	835	-
Stage 1	-	-	-	-	-	-	978	864	-	1012	890	-
Stage 2	-	-	-	-	-	-	1005	890	-	969	854	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.5	8.9	8.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	954	1618	-	-	1580	-	-	918
HCM Lane V/C Ratio	0.024	0.004	-	-	0.001	-	-	0.006
HCM Control Delay (s)	8.9	7.2	0	-	7.3	0	-	8.9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	77	253	66	119	50	287	297	26	31	327	91
Future Volume (veh/h)	46	77	253	66	119	50	287	297	26	31	327	91
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	50	84	0	72	129	54	312	323	28	34	355	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	449		119	300	126	368	1249	108	135	877	
Arrive On Green	0.07	0.24	0.00	0.07	0.24	0.24	0.21	0.38	0.38	0.08	0.25	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1252	524	1781	3311	285	1781	3554	1585
Grp Volume(v), veh/h	50	84	0	72	0	183	312	172	179	34	355	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1776	1781	1777	1819	1781	1777	1585
Q Serve(g_s), s	2.0	2.7	0.0	2.9	0.0	6.5	12.6	5.0	5.1	1.3	6.3	0.0
Cycle Q Clear(g_c), s	2.0	2.7	0.0	2.9	0.0	6.5	12.6	5.0	5.1	1.3	6.3	0.0
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	119	449		119	0	426	368	670	686	135	877	
V/C Ratio(X)	0.42	0.19		0.61	0.00	0.43	0.85	0.26	0.26	0.25	0.40	
Avail Cap(c_a), veh/h	119	449		119	0	426	368	670	686	135	877	
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.6	22.7	0.0	34.0	0.0	24.1	28.6	16.1	16.1	32.6	23.6	0.0
Incr Delay (d2), s/veh	10.6	0.9	0.0	20.9	0.0	3.1	20.8	0.9	0.9	4.4	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.3	0.0	1.9	0.0	3.0	7.3	2.1	2.2	0.7	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	23.6	0.0	54.9	0.0	27.3	49.5	17.0	17.0	37.0	25.0	0.0
LnGrp LOS	D	C		D	A	C	D	B	B	D	C	
Approach Vol, veh/h		134	A		255			663			389	A
Approach Delay, s/veh		31.3			35.1			32.3			26.1	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	32.8	9.5	22.5	20.0	23.0	9.5	22.5
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	5.7	28.3	5.0	18.0	15.5	18.5	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.3	7.1	4.9	4.7	14.6	8.3	4.0	8.5
Green Ext Time (p_c), s	0.0	2.0	0.0	0.3	0.1	1.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	54	81	166	0	1	82
Future Vol, veh/h	54	81	166	0	1	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	88	180	0	1	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	180	0	-	0	386	180
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	206	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1396	-	-	-	617	863
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	829	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1396	-	-	-	590	863
Mov Cap-2 Maneuver	-	-	-	-	590	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	829	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1396	-	-	-	858
HCM Lane V/C Ratio	0.042	-	-	-	0.105
HCM Control Delay (s)	7.7	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	5	62	8	10	0	116	13	7	0	14	29
Future Vol, veh/h	14	5	62	8	10	0	116	13	7	0	14	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	5	67	9	11	0	126	14	8	0	15	32
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	7.4	7.7	8.3	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	85%	17%	44%	0%
Vol Thru, %	10%	6%	56%	33%
Vol Right, %	5%	77%	0%	67%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	136	81	18	43
LT Vol	116	14	8	0
Through Vol	13	5	10	14
RT Vol	7	62	0	29
Lane Flow Rate	148	88	20	47
Geometry Grp	1	1	1	1
Degree of Util (X)	0.176	0.097	0.025	0.05
Departure Headway (Hd)	4.296	3.967	4.549	3.828
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	829	909	791	918
Service Time	2.356	1.968	2.551	1.922
HCM Lane V/C Ratio	0.179	0.097	0.025	0.051
HCM Control Delay	8.3	7.4	7.7	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.1	0.2

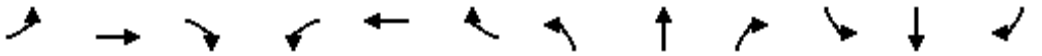
Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	28	11	10	31	0	9	1	9	0	1	7
Future Vol, veh/h	4	28	11	10	31	0	9	1	9	0	1	7
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	-	-	-	-	-	-	-	-	-	-	-	-
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	4	30	12	11	34	0	10	1	10	0	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	34	0	0	42	0	0	105	100	36	106	106	34
Stage 1	-	-	-	-	-	-	44	44	-	56	56	-
Stage 2	-	-	-	-	-	-	61	56	-	50	50	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1578	-	-	1567	-	-	875	790	1037	873	784	1039
Stage 1	-	-	-	-	-	-	970	858	-	956	848	-
Stage 2	-	-	-	-	-	-	950	848	-	963	853	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1578	-	-	1567	-	-	861	782	1037	857	776	1039
Mov Cap-2 Maneuver	-	-	-	-	-	-	861	782	-	857	776	-
Stage 1	-	-	-	-	-	-	967	855	-	953	842	-
Stage 2	-	-	-	-	-	-	935	842	-	950	850	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	1.8	9	8.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	931	1578	-	-	1567	-	-	997
HCM Lane V/C Ratio	0.022	0.003	-	-	0.007	-	-	0.009
HCM Control Delay (s)	9	7.3	0	-	7.3	0	-	8.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	170	271	61	151	36	362	447	61	68	326	66
Future Volume (veh/h)	95	170	271	61	151	36	362	447	61	68	326	66
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	185	0	66	164	39	393	486	66	74	354	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	433		116	329	78	434	1156	156	198	835	
Arrive On Green	0.07	0.23	0.00	0.06	0.22	0.22	0.24	0.37	0.37	0.11	0.24	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1461	347	1781	3145	425	1781	3554	1585
Grp Volume(v), veh/h	103	185	0	66	0	203	393	274	278	74	354	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1808	1781	1777	1794	1781	1777	1585
Q Serve(g_s), s	4.6	6.8	0.0	2.9	0.0	7.8	17.1	9.2	9.3	3.1	6.8	0.0
Cycle Q Clear(g_c), s	4.6	6.8	0.0	2.9	0.0	7.8	17.1	9.2	9.3	3.1	6.8	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	127	433		116	0	407	434	653	659	198	835	
V/C Ratio(X)	0.81	0.43		0.57	0.00	0.50	0.91	0.42	0.42	0.37	0.42	
Avail Cap(c_a), veh/h	127	433		116	0	407	434	653	659	198	835	
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.6	26.2	0.0	36.3	0.0	27.1	29.4	18.9	18.9	33.0	26.0	0.0
Incr Delay (d2), s/veh	41.1	3.1	0.0	18.8	0.0	4.3	25.0	2.0	2.0	5.3	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.3	0.0	1.8	0.0	3.8	10.0	4.0	4.0	1.6	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.7	29.3	0.0	55.1	0.0	31.4	54.3	20.9	20.9	38.3	27.6	0.0
LnGrp LOS	E	C		E	A	C	D	C	C	D	C	
Approach Vol, veh/h		288	A		269			945			428	A
Approach Delay, s/veh		46.6			37.2			34.8			29.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.4	33.9	9.7	23.0	24.0	23.3	10.2	22.5
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	8.9	29.4	5.2	18.5	19.5	18.8	5.7	18.0
Max Q Clear Time (g_c+I1), s	5.1	11.3	4.9	8.8	19.1	8.8	6.6	9.8
Green Ext Time (p_c), s	0.0	3.2	0.0	0.6	0.1	1.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	35.7
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	73	257	172	2	1	61
Future Vol, veh/h	73	257	172	2	1	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	279	187	2	1	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	189	0	-	0	625	188
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1385	-	-	-	449	854
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	651	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1385	-	-	-	418	854
Mov Cap-2 Maneuver	-	-	-	-	418	-
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	651	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1385	-	-	-	840
HCM Lane V/C Ratio	0.057	-	-	-	0.08
HCM Control Delay (s)	7.8	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

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	26	37	179	25	13	5	127	18	19	4	17	21
Future Vol, veh/h	26	37	179	25	13	5	127	18	19	4	17	21
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	28	40	195	27	14	5	138	20	21	4	18	23
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	8.9	8.2	9.2	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	77%	11%	58%	10%
Vol Thru, %	11%	15%	30%	40%
Vol Right, %	12%	74%	12%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	164	242	43	42
LT Vol	127	26	25	4
Through Vol	18	37	13	17
RT Vol	19	179	5	21
Lane Flow Rate	178	263	47	46
Geometry Grp	1	1	1	1
Degree of Util (X)	0.235	0.3	0.062	0.058
Departure Headway (Hd)	4.745	4.112	4.804	4.548
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	756	873	745	786
Service Time	2.775	2.135	2.838	2.585
HCM Lane V/C Ratio	0.235	0.301	0.063	0.059
HCM Control Delay	9.2	8.9	8.2	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	1.3	0.2	0.2

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	7	22	5	4	0	16	2	7	0	3	2
Future Vol, veh/h	6	7	22	5	4	0	16	2	7	0	3	2
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	-	-	-	-	-	-	-	-	-	-	-	-
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	7	8	24	5	4	0	17	2	8	0	3	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	4	0	0	32	0	0	51	48	20	53	60	4
Stage 1	-	-	-	-	-	-	34	34	-	14	14	-
Stage 2	-	-	-	-	-	-	17	14	-	39	46	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1618	-	-	1580	-	-	948	844	1058	946	831	1080
Stage 1	-	-	-	-	-	-	982	867	-	1006	884	-
Stage 2	-	-	-	-	-	-	1002	884	-	976	857	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1618	-	-	1580	-	-	939	838	1058	933	825	1080
Mov Cap-2 Maneuver	-	-	-	-	-	-	939	838	-	933	825	-
Stage 1	-	-	-	-	-	-	978	864	-	1002	881	-
Stage 2	-	-	-	-	-	-	993	881	-	963	854	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	4	8.9	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	960	1618	-	-	1580	-	-	911
HCM Lane V/C Ratio	0.028	0.004	-	-	0.003	-	-	0.006
HCM Control Delay (s)	8.9	7.2	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0