



Traffic Impact Study for the Annexation of 20455 5th Street East



Prepared for the City of Sonoma

Submitted by
W-Trans

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Executive Summary

This report presents and analysis of the potential traffic impacts that would be associated with the development of 59 residential units at 20455 5th Street East, which also includes frontages on Napa Road and Jones Street. The project site is currently located in unincorporated Sonoma County, but is proposed to be annexed by the City of Sonoma in conjunction with this project. The project site currently has one residential building and is 2.96 acres in size.

The project would be expected to generate an average of 432 new daily trips, including 27 a.m. peak hour trips and 33 p.m. peak hour trips. Based on the higher p.m. peak hour trip generation and generally higher levels of congestion during the evening peak period, only this time was studied.

Project impacts were evaluated at three intersections in the vicinity of the project site. Under Existing Conditions, all three study intersections operate acceptably, and they would be expected to continue doing so with trips from the proposed project added. Under Future volumes, the intersections of Napa Road/5th Street East and East MacArthur Street/5th Street East would be expected to operate acceptably without and with the proposed project. The intersection of Broadway/Napa Road-Leveroni Road is expected to operate at LOS F without and with the project. With the addition of a traffic signal, the intersection would operate acceptably at LOS B without and with the project. The project should contribute a proportional share of 3.1 percent toward the cost of the future signalization project.

Facilities for bicyclists would be adequate to serve the site. There are currently no sidewalks along the three project frontages and there is a gap in the sidewalk along the north side of Napa Road as well as along 5th Street East north of the site. To achieve adequate connectivity an accessible pedestrian route access between the project site and Broadway would be needed. With the addition of sidewalks along the project frontages and the elimination of off-site sidewalk gaps, the facilities would adequately serve pedestrians and provide access to local transit services.

Access to the site would be provided via street connections to 5th Street East and Jones Street. These connections should be designed to meet applicable standards and provide adequate sight distance. On-site circulation would be adequate for project traffic and a standard fire truck.

Vehicle miles traveled (VMT) generated by the project would result in a significant impact. One or more strategies would need to be implemented to mitigate this impact to a level that would be less than significant.

Introduction

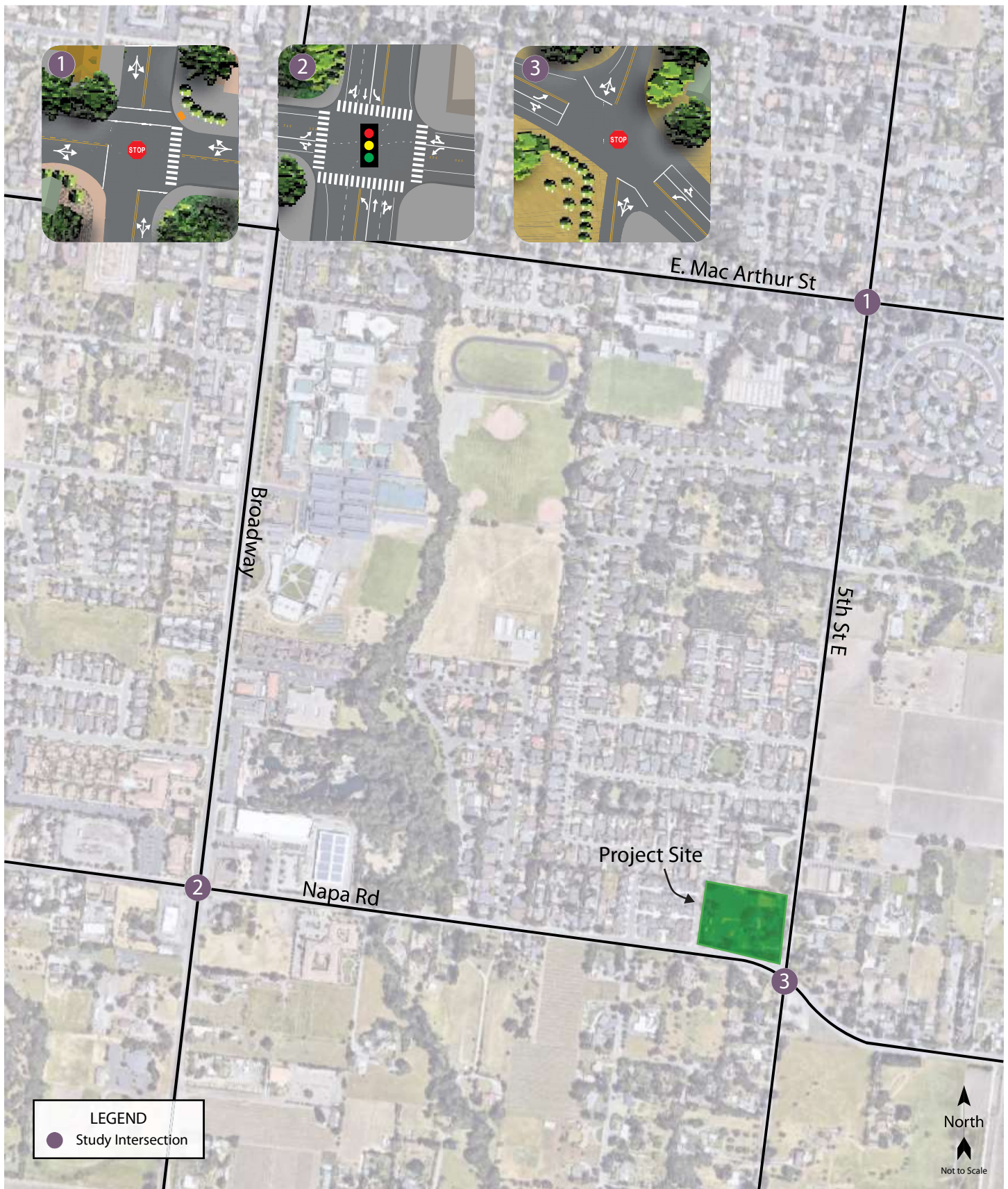
This report presents an analysis of the potential traffic impacts and effects that would be associated with development of a proposed mixed-use development with up to 59 units of residential housing to be located at 20455 5th Street East in the County of Sonoma. The traffic study was completed in accordance with the criteria established by the City of Sonoma and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data they can use to make an informed decision regarding the potential traffic impacts and adverse effects of a proposed project, and any associated improvements that would be required to mitigate these impacts to a level of insignificance as defined by the City's General Plan or other policies and address adverse effects. Vehicular traffic is typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing if the new traffic would be expected to have an adverse effect on operation of critical intersections or roadway segments. Impacts relative to access for pedestrians, bicyclists, and to transit are also addressed.

Project Profile

The project as proposed includes annexation of the parcel by the City of Sonoma and zoning for mixed use, with the planned development of up to 59 units of residential housing. The project site is located at 20455 5th Street East in the County of Sonoma, as shown in Figure 1.



Traffic Impact Study for the Annexation of 20455 5th Street East
Figure 1 – Study Area and Existing Lane Configurations

Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the sections of Napa Road, 5th Street East and Jones Street fronting the project site as well as the following intersections:

1. E. MacArthur Street/5th Street East
1. Broadway/Napa Road-Leveroni Road
2. Napa Road/5th Street East

Operating conditions during the p.m. peak period was evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Intersections

E. MacArthur Street/5th Street East is an all-way stop-controlled intersection. Marked crosswalks exist only on the north and east legs of the intersection.

Broadway/Napa Road-Leveroni Road is a four-legged signalized intersection with protected left-turn phasing on all four approaches and striped crosswalks on all legs of the intersection. Bike lanes are present on Napa Road.

Napa Road/5th Street East is an all-way stop-controlled intersection with flashing beacons for all four approaches. Bike lanes exist on Napa Road. Crosswalks do not exist at this intersection.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. Sidewalk coverage in the vicinity of the project is inconsistent as it is a transitional area between the edge of the City and the unincorporated County, which is more rural in character. Existing gaps and obstacles along the connecting roadways impact convenient and continuous access for pedestrians and present safety concerns in those locations where appropriate pedestrian infrastructure would address potential conflict points.

- **Napa Road** – Intermittent sidewalk coverage is provided on Napa Road. Sidewalks are absent along the project frontage and there is a gap along the north side of Napa Road between 5th Street East and Broadway; this area is under the jurisdiction of the City of Sonoma. Sidewalks are present only at one location along the south side of the roadway between the project and Broadway, and sidewalks are not present east of the project site, which is in unincorporated Sonoma County. Where sidewalks are present, they include curb ramps at intersections as well as detectable warning surfaces. The intersection at 5th Street East lacks crosswalks or other pedestrian crossing facilities.

- **5th Street East** – Sidewalks are intermittent along 5th Street East. Sidewalks are not present along the project frontage, and there is a gap along the west side of the street immediately north of the project site. There are no sidewalks along the east side of the street south of Denmark Street or south of Napa Road, which is all under County jurisdiction. Where sidewalks are present, there are curb ramps at intersections, but they do not include detectable warning surfaces.
- **Jones Street** – The project frontage is currently defined by a wooden fence. The west side of the street includes sidewalks, and the segment of Jones Street north of the project site includes sidewalks on both sides of the street.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2017, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

In the project area, Class II bike lanes exist on Napa Road along the project frontage, connecting to Broadway to the west and SR 12 to the east. Bicyclists ride in the roadway and/or on sidewalks along all other streets within the project study area. Table 1 summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the *Sonoma County Bicycle Pedestrian Master Plan* updated project list (2019).

Table 1 – Bicycle Facility Summary

Status Facility	Class	Length (miles)	Begin Point	End Point
Existing				
Sonoma City Trail	I	0.40	E. MacArthur St	Larkin Dr
Napa Rd*	II	5.40	SR 12	Broadway
Dewell Dr	II	0.20	Larkin Dr	Fine Ave
Planned				
5 th St E	II	0.80	Napa Rd	Denmark St
Denmark St	III	0.30	5 th St E	Brockman Ln

Notes: * A portion of this bikeway is located within unincorporated Sonoma County

Source: *Sonoma County Bicycle and Pedestrian Master Plan, County of Sonoma, Updated Project List, 2019*,
<https://scta.ca.gov/planning/countywide-bike-and-pedestrian-plan/>

Transit Facilities

Sonoma County Transit (SCT) provides fixed route bus service in the City of Sonoma. There is one bus stop within one-half mile of the project site, at the intersection of Broadway/Napa Road-Leveroni Road. This stop is served by SCT Routes 34 and 40. Route 34 operates once a day on weekdays in each direction, departing Santa Rosa at 6:45 a.m., and returning from Sonoma at 3:50 p.m. Route 40 provides service between Sonoma and Petaluma along SR 116, with five buses in each direction on weekdays between 6:00 a.m. and 8:30 p.m.

Two or three bicycles can be carried on SCT buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on SCT buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. SCT Paratransit is designed to serve the needs of individuals with disabilities within Sonoma County.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The study intersections with stop signs on all approaches were analyzed using the “All-Way Stop-Controlled” Intersection methodology from the HCM. This methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection as a whole and is then related to a Level of Service.

The study intersections that are controlled by a traffic signal were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing.

The ranges of delay associated with the various levels of service are indicated in Table 2.

Table 2 – Intersection Level of Service Criteria

LOS	All-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach and wait for vehicle to clear from one or more approaches prior to entering the intersection.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, Transportation Research Board, 2010

Traffic Operation Standards

City of Sonoma

In the 2016 *Circulation Element* of the *City of Sonoma General Plan*, the following policy has been adopted:

Policy 1.5: Establish a motor vehicle Level of Service (LOS) standard of LOS D at intersections. The following shall be taken into consideration in applying this standard:

- Efforts to meet the vehicle LOS standard shall not result in diminished safety for other modes including walking, bicycling, or transit (see Policy 1.6).
- The standard shall be applied to the overall intersection operation and not that of any individual approach or movement.
- Consideration shall be given to the operation of the intersection over time, rather than relying exclusively on peak period conditions.
- The five intersections surrounding the historic Sonoma Plaza shall be exempt from vehicle LOS standards in order to maintain the historic integrity of the Plaza and prioritize non-auto modes.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the p.m. peak period. This condition does not include project-generated traffic volumes. Due to the COVID-19 outbreak, at the time this study was conducted traffic volumes were lower than under typical conditions. Therefore, for the analysis counts for East MacArthur Street/5th Street East and Napa Road/5th Street East that were collected for the *City of Sonoma Systemic Safety Analysis Report*, W-Trans, 2018 were applied. Counts for Broadway/Napa Road-Leveroni Road were taken from the *Traffic Impact Study for the Animal Sanctuary Education Center Project*, W-Trans, 2019. The *City of Sonoma Systemic Safety Analysis Report* included only p.m. peak volumes for all study intersections, but this was determined to be adequate as that is the time period with the highest traffic volumes and the associated traffic delay would be a greater concern. The traffic volumes for these intersections were scaled to year 2020 to approximate volumes during non-COVID conditions.

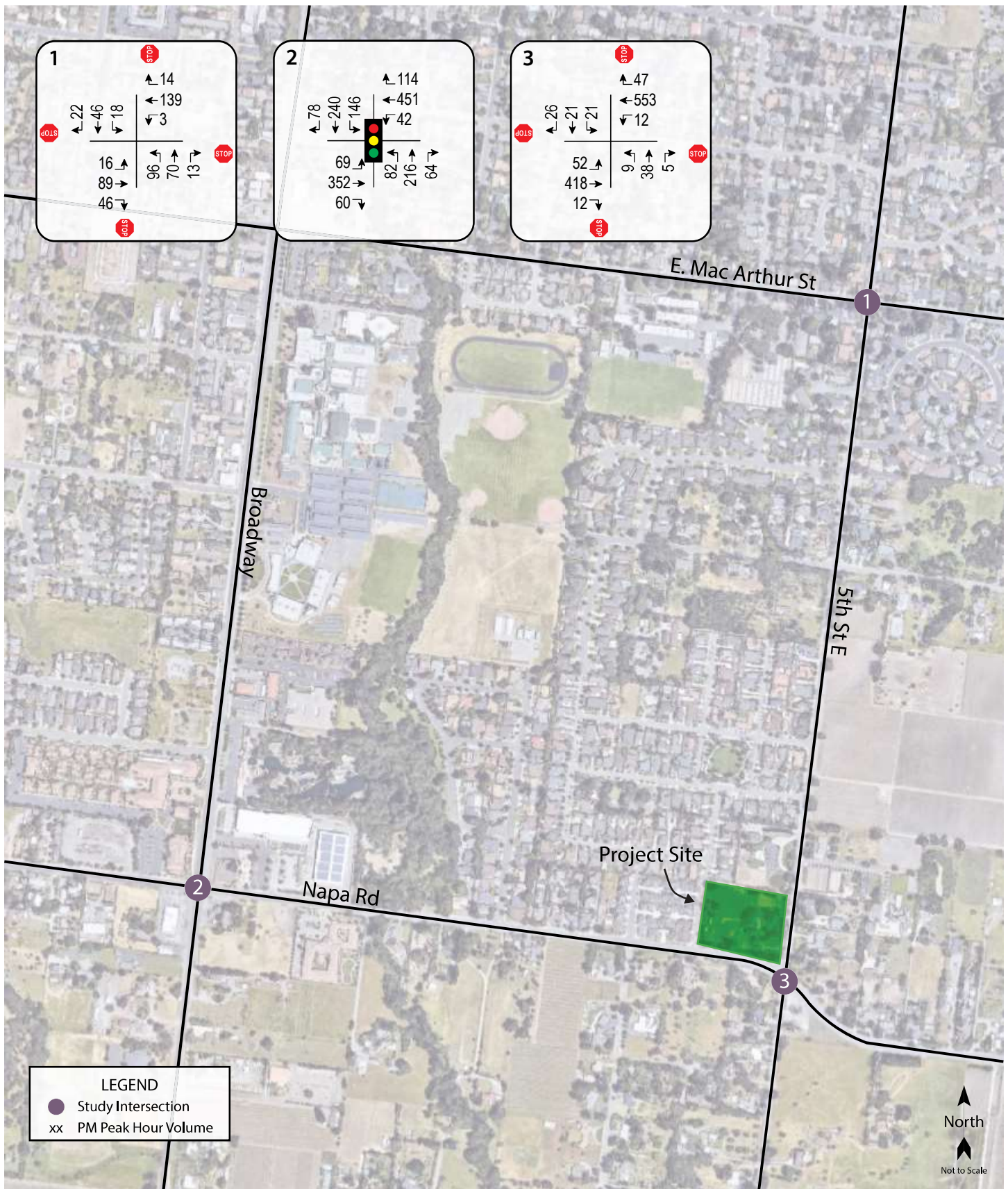
Intersection Levels of Service

Under Existing Conditions, all study intersections operate acceptably at LOS D or better. The existing traffic volumes are shown in Figure 2. A summary of the intersection level of service calculations is contained in Table 3, and copies of the Level of Service calculations are provided in Appendix A.

Table 3 – Existing Peak Hour Intersection Levels of Service		
Study Intersection	PM Peak	
	Delay	LOS
1. E. MacArthur St/5 th St E	9.7	A
2. Broadway/Napa Rd-Leveroni Rd	33.6	C
3. Napa Rd/5 th St E	31.1	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Finding – All three study intersections are operating acceptably at LOS D or better under Existing Conditions.



Traffic Impact Study for the Annexation of 20455 5th Street East
Figure 2 – Existing Traffic Volumes

Future Conditions

The intersection turning movements for the Future scenario were developed using the Furness procedure, which is a commonly accepted factoring algorithm used within the traffic engineering field wherein the base year turning movement counts at the intersection are factored until the total volumes in and out of each leg closely match the adjusted link volumes from the Sonoma County Transportation Authority (SCTA) traffic model for the base year and future horizon year, in this case 2040. A computer application of the Furness procedure was used to produce the future intersection turning movement volumes.

Under the anticipated Future volumes, the intersections of East MacArthur Street/5th Street East and Broadway/Napa Road-Leveroni Road are expected to operate acceptably at LOS D or better during the p.m. peak hour. Napa Road/5th Street East is anticipated to operate at LOS F but would improve to LOS B with the installation of a traffic signal; the City of Sonoma's General Plan identifies the need for a traffic signal at this location, Future volumes are shown in Figure 3 and operating conditions are summarized in Table 4.

Table 4 – Future Peak Hour Intersection Levels of Service

Study Intersection	Delay	LOS
1. E. MacArthur St/5 th St E	20.1	C
2. Broadway/Napa Rd-Leveroni Rd	39.7	D
3. Napa Rd/5 th St E	65.5	F
Signalized	14.0	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service;
Bold text = deficient operation; **Shaded cells** = conditions with potential improvements

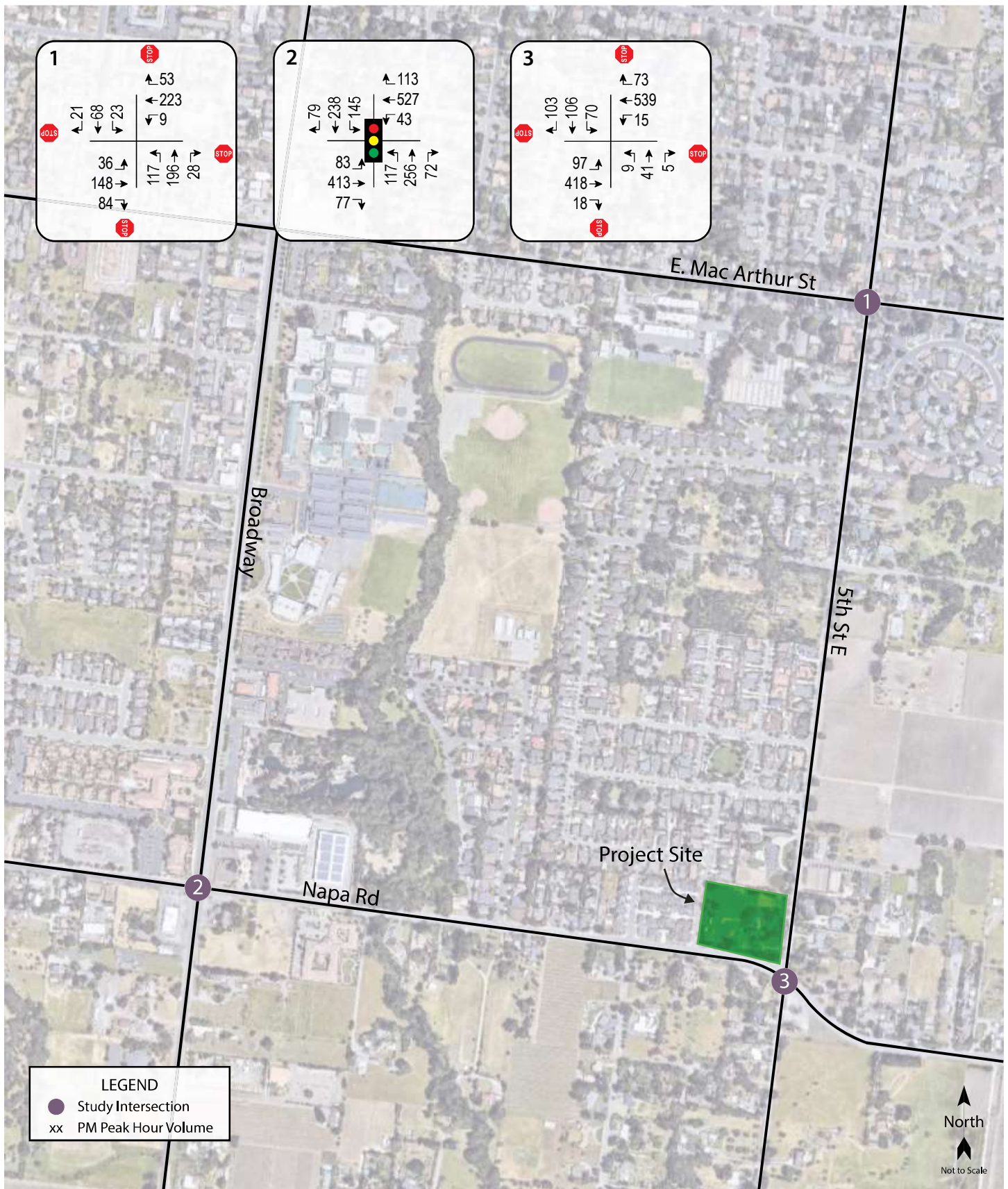
Finding – East MacArthur Street/5th Street East and Broadway/Napa Road-Leveroni Road are expected to operate acceptably at LOS D or better under Future conditions. Napa Road/5th Street East would operate at LOS F but would improve to LOS B with the addition of a traffic signal, as planned by the City.

Project Description

The proposed project includes annexation of a currently vacant parcel at 20455 5th Street East to the City of Sonoma. The 2.96-acre parcel is designated as Mixed Use in the City of Sonoma's General Plan and is within the City's Sphere of Influence/Urban Growth Boundary. The proposed project would include 59 multifamily housing units – or 20 units per acre – which is the maximum permitted under the MX zoning designation.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 for "Multifamily Housing" (Low-Rise) (ITE LU #220). As shown in Table 5, the potential residential development is expected to generate an average of 432 trips per day, including 27 trips during the a.m. peak hour and 33 during the p.m. peak hour. As noted previously, only the p.m. peak hour was evaluated but the a.m. peak hour trip generation is shown to highlight that the p.m. peak hour has a higher trip generation. An existing single-family residence is located on the property but is not a primary residence and is not generally occupied, so was not considered in the trip generation estimate.



Traffic Impact Study for the Annexation of 20455 5th Street East
Figure 3 – Future Traffic Volumes

Table 5 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Multifamily Housing	59 du	7.32	432	0.46	27	6	21	0.56	33	21	12

Note: du = dwelling unit

Trip Distribution

The trip distribution pattern used to allocate new project trips to the street network was determined based on the anticipated work commuting patterns, trip distribution rates applied for nearby studies, engineering judgment, and local knowledge of traffic conditions. Under Future Conditions, it is expected that the trip distribution would generally be the same as under Existing Conditions. The distribution assumptions applied and resulting trips are shown in Table 6.

Table 6 – Trip Distribution Assumptions

Route	Percent	Daily Trips	AM Trips	PM Trips
To/from northwest via Broadway	35%	151	10	12
To/from north via 5 th St	20%	86	5	7
To/from west via Leveroni Rd	15%	65	4	5
To/from south via Broadway	15%	65	4	5
To/from east via Napa Rd	15%	65	4	5
TOTAL	100%	432	27	33*

Note: * = Due to rounding, the sum of trips is more than the trip generation

Intersection Operations

Existing plus Project Conditions

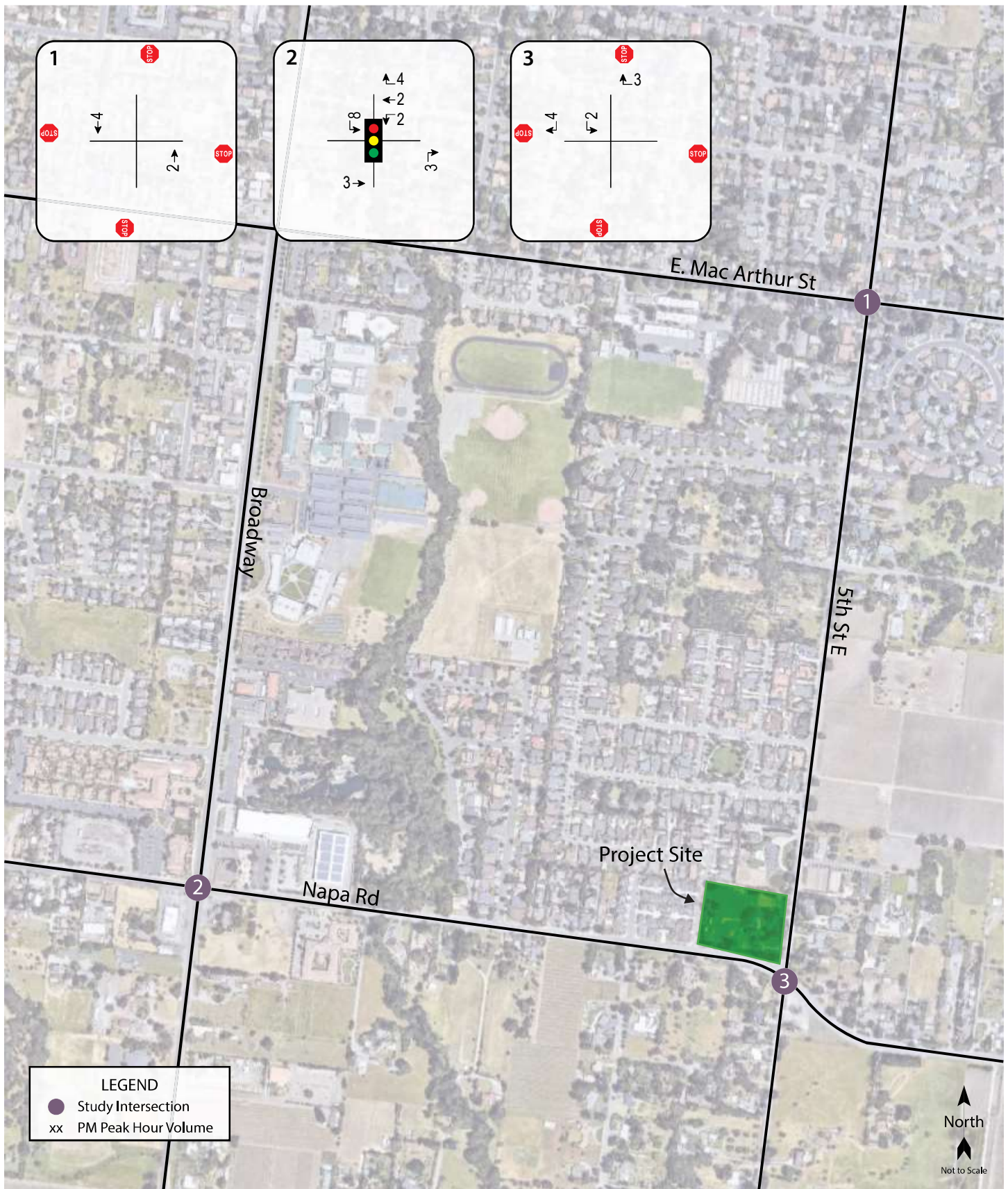
Upon the addition of project-related traffic to the Existing volumes, all study intersections are expected to remain at the same Levels of Service. These results are summarized in Table 7. Project volumes are shown in Figure 4.

Table 7 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection	Existing Conditions		Existing plus Project	
	Delay	LOS	Delay	LOS
1. E. MacArthur St/5 th St E	9.7	A	9.7	A
2. Broadway/Napa Rd-Leveroni Rd	33.6	C	34.2	C
3. Napa Rd/5 th St E	31.1	D	32.3	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Finding – Upon the addition of project-generated traffic to Existing volumes the study intersections are expected to operate acceptably at the same Levels of Service.



Future plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Future volumes, two of the three study intersections are expected to operate acceptably at LOS D or better. Napa Road/5th Street East is expected to continue to operate at LOS F but would improve to LOS B with signalization. The Future plus Project operating conditions are summarized in Table 8.

Table 8 – Future and Future plus Project Peak Hour Intersection Levels of Service

Study Intersection	Future Conditions		Future plus Project	
	PM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. E. MacArthur St/5 th St E	20.1	C	20.5	C
2. Broadway/Napa Rd-Leveroni Rd	39.7	D	40.4	D
3. Napa Rd/5 th St E	65.5	F	67.5	F
Signalized	14.0	B	14.2	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text = deficient operation; Shaded cells = potential improvements

A traffic signal would be required at the Napa Road/5th Street East intersection to achieve acceptable operations under Future volumes. Since the project is expected to contribute to the increase in delay at the intersection, its proportional share of the cost of the traffic signal was calculated. Using the methodology prescribed in the *Caltrans Guide for the Preparation of Traffic Impact Studies*, 2002, it was found that the project would contribute 3.1 percent of future traffic growth at the Napa Road/5th Street East intersection. This value is based on p.m. peak hour traffic volumes and a comparison between the Existing Conditions and Future plus Project Conditions. Proportional share worksheets are provided in Appendix B.

Finding – Upon the addition of project-generated traffic to Future volumes, the intersections of East MacArthur Street/5th Street East and Broadway/Napa Road-Leveroni Road are expected to operate acceptably. The Napa Road/5th Street East intersection is expected to continue operating at LOS F and would improve to LOS B with traffic signalization.

Recommendation – To alleviate the project’s contribution to traffic at the Napa Road/5th Street East intersection, the applicant should contribute 3.1 percent of the cost to construct a traffic signal at this location.

Vehicle Miles Traveled

Senate Bill (SB) 743 established a change in the metric to be applied for determining traffic impacts associated with development projects. Rather than the delay-based criteria associated with a Level of Service analysis, the increase in Vehicle Miles Traveled (VMT) as a result of a project is now the basis for determining impacts. Because the City of Sonoma has not yet adopted a standard of significance for evaluating VMT, guidance provided by the California Governor’s Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory*, 2018, was used. This document indicates that a residential project generating vehicle travel that is 15 or more percent below the existing countywide residential VMT per capita may indicate a less-than-significant transportation impact.

Based on data from the recently updated SCTA travel demand model, the City of Sonoma has a baseline average residential VMT of 30.16 miles per capita. Applying OPR’s guidance, a residential project generating a VMT that is

15 percent or more below the citywide baseline, or 25.64 miles per capita or less, would have a less-than-significant VMT impact. The SCTA model includes traffic analysis zones (TAZ) covering geographic areas throughout Sonoma County. The 20455 5th Street East project site is located within TAZ 827, which has a baseline VMT per capita of 29.49 miles. As a result, to reduce the project-related VMT to a level below the threshold for that TAZ, a VMT reduction of 13.1 percent would be required.

The VMT associated with residential development projects are influenced by numerous factors, including the broader land use context, density of the proposed project, and the availability of transit service. The publication *Quantifying Greenhouse Gas Mitigation Measures*, California Air Pollution Control Officers Association (CAPCOA), 2010, includes methodologies to determine the VMT reductions associated with various project characteristics and strategies. For the proposed residential project at 20455 5th Street East, since the density of 20 units per acre is higher than the typical residential density of 7.6 units per acre, the project is estimated to generate 11.4 percent fewer VMT than would otherwise be expected. However, this reduction is not sufficient to fully mitigate the project impact, as shown in Table 9.

Table 9 – Vehicle Miles Traveled Analysis Summary

VMT Metric	Citywide Baseline VMT Rate	Significance Threshold (15% below baseline)	Project TAZ VMT Rate	Project VMT Rate Based on Density	Resulting Significance
Residential VMT per Capita (Citywide)	30.16	25.64	29.49	26.14	Potentially Significant

Note: VMT Rate is measured in VMT/Capita, or the number of daily miles driven per resident

The application of one or more additional VMT reduction strategies would be required to achieve a less-than-significant VMT impact for the project. The expected VMT reductions for the strategies identified in the CAPCOA report are highly context-dependent, can therefore vary considerably, and would therefore need to be tailored to fit the characteristics and context of the project. Examples of measures that could reduce the VMT impact to less-than-significant are listed in Table 10.

Table 10 – Examples of VMT Reduction Strategies

Mitigation Measure	Description	Range of VMT Reduction
Housing density	Higher density compared to typical residential density in suburban locations (7.6 units per acre)	0.8-30.0%*
Pedestrian network improvements	Provision of on-site pedestrian connections and connections to off-site network.	0-2.0%*
Proximity to bike paths or bike lanes	Project located within ½ mile of existing Class I path or Class II bike lane	0.625%*
Bike parking	Provide bike parking for multi-unit residential projects where garages are not available	**
Bike sharing	Shared bikes or electric bikes to provide access to commercial sites, offices, and other land uses	**
Diversity of land uses	Include commercial uses to reduce need for off-site trips	**

* Source: CAPCOA; ** Estimates as a stand-alone strategy not available from research

Finding – The project would be expected to have a potentially significant transportation impact on vehicle miles traveled.

Recommendation – A set of strategies should be identified to mitigate the project’s VMT impacts. Estimated VMT reductions would be based on research of the effectiveness of each strategy and the broader context of the project.

Alternative Modes

Pedestrian Facilities

Given the proximity of the project to commercial land uses and schools along the Broadway corridor, it is reasonable to assume that some project residents will want to walk, bicycle, and/or use transit to travel to and from the project site. Nearby destinations include Broadway Market and the bus stop for Sonoma County Transit Routes 34 and 40 approximately one-half mile to the west at the intersection of Broadway/ Napa Road-Leveroni Road.

Sidewalks are not currently present along the project frontages on 5th Street East, Napa Road, and Jones Street, resulting in connectivity gaps to surrounding land uses. Existing sidewalks along neighborhood streets within the adjacent residential development provide access to the Sonoma City Trail, which provides a direct connection to the center of Sonoma.

Aside from the project site, sidewalks along the north side of Napa Road are present with the exception of two parcels. Until this gap in the sidewalk network is eliminated, project residents would need to walk along the bike lanes on Napa Road, which serve as a shoulder. The safest option for pedestrians traveling from the project site toward Broadway would be to walk along the south side of the roadway against traffic. Along 5th Street East, sidewalks are missing along the parcel immediately north of the project.

Finding – Pedestrian facilities serving the project site are currently inadequate.

Recommendations – Sidewalks should be provided along the project frontages and at off-site locations on Napa Road and 5th Street East to provide sidewalk connectivity between the project and surrounding land uses.

Bicycle Facilities

The existing bike lanes on Napa Road provide access to destinations throughout the area. Bicyclists could also access the Sonoma City Trail, approximately one-half mile from the project, continuing on the 2nd Street bike route to within one block of Sonoma Plaza. Existing bicycle facilities, including the bike lane on Dewell Drive together with shared use of minor streets, provide adequate access for bicyclists.

Finding – Bicycle facilities serving the project site are adequate.

Transit

Due to its location at the periphery of the City, extensive transit service is not available in the vicinity of the project site, although regular routes are available within an acceptable walking distance. The nearest bus stop is located one-half mile from the project site, near the intersection of Broadway/Napa Road-Leveroni Road; however, as noted above, continuous sidewalks are not available to enable pedestrians to easily access these stops. Existing transit routes are adequate to accommodate project-generated transit trips.

Finding – Transit facilities serving the project site are not adequate.

Recommendation – Elimination of the sidewalk gap along the north side of Napa Road, as recommended above, would also provide adequate access to the transit stop nearest to the project site.

Access and Circulation

Site Access

The project would need to be designed in accordance with applicable Federal, State, and local codes and regulations. The project site includes frontages along Napa Road, 5th Street East, and Jones Street. Site access would be taken from Jones Street and 5th Street East, while the existing access point on Napa Road would be eliminated. Along the Jones Street frontage the roadway is currently 24 feet wide, with sidewalks only on the west side of the street; the project frontage would be developed to match the segment immediately north of the site, which is 30 feet wide and includes sidewalks along both sides. Sidewalks would be added to the Napa Road and 5th Street East frontages to connect to the existing pedestrian network surrounding the project site.

Consideration would need to be given to sight distances when designing the new roadway connections. Locations would need to be field reviewed to ensure that adequate sight distance would be maintained in accordance with criteria from the Caltrans *Highway Design Manual*. Landscaping and trees would need to be planted and maintained to avoid impacting sight lines.

The proposed buildings would be no more than two stories tall, so the access driveways and on-site circulation would need to be designed to accommodate a standard fire truck.

Finding – Access to and from the project site is expected to be adequate.

CEQA Initial Study Checklist

The California Environmental Quality Act (CEQA) provide a checklist that defines the four areas in which a project can potentially have a significant traffic impact. Following are discussion of those four area and the project's identified impact.

- 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 with mitigation incorporated. The project site currently lacks sidewalks along all three project frontages, and there are sidewalk gaps along the north side of Napa Road between the project site and Broadway and along the west side of 5th Street East immediately north of the project. Sidewalks would need to be provided at these on-site and off-site locations to eliminate the existing gaps and achieve consistency with Policy 2.6 in the City's General Plan. With the incorporation of this mitigation, the project would not conflict with City policies related to circulation of other transportation modes and the impact would therefore be less than significant.

The City of Sonoma General Plan Circulation Element includes the following policies that pertain to the proposed project:

Policy 2.1: Implement the extensions and upgrades to the bicycle network identified in the City's Bicycle and Pedestrian Master Plan, with a focus on establishing safe routes to popular destinations.

Policy 2.6: Eliminate gaps and obstructions in the sidewalk system.

Implementation Measure C-8: As part of the development review process, the Planning and Public Works Departments shall review development projects to ensure that developers:

- Provide for complete streets to the extent feasible, facilitating walking, biking, and transit modes.
- Provide adequate emergency vehicle access.

- b. *Would the project conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?*

Less than significant with mitigation incorporated. The estimated per capita VMT for the project – after accounting for the project density – would be 26.14 which, while less than the citywide per capita VMT, is above the OPR-recommended threshold of 15 percent below the citywide average, or 25.64. With the application of TDM measures or other strategies, the project-related VMT could be mitigated to a level that would be less than significant.

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

Less than Significant. The project must be designed to meet applicable Federal, State and City codes and regulations, and as a result would not be expected to introduce any new hazards in terms of its design. Adequate sight lines would need to be provided and maintained at the proposed project access points. The existing access to the project site on Napa Road would be closed and the project access would instead be taken from Jones Street and 5th Street East. As Napa Road is classified as an arterial and the other two roads are classified as local streets, this would reduce the potential for traffic hazards associated with vehicles entering or exiting the project. The project would therefore have a less-than-significant impact with respect to an increase in hazards or incompatible uses.

With the construction of street connections to meet sight distance requirements and ongoing adherence to maintenance guidelines, the project would have a less-than-significant impact in terms of an increase in hazards due to design features or incompatible uses.

d. *Would the project result in inadequate emergency access?*

Less than significant impact. The site would need to be designed to meet all applicable City and State standards, including the California Fire Code. This would pertain to the project access points as well as internal streets. Buildings would be a maximum of two stories tall, so access requirements for a standard fire truck would be adequate. With conformance to these requirements, the project would have a less-than-significant impact with respect to emergency access.

Conclusions and Recommendations

Conclusions

- The proposed project is estimated to generate 432 trips per day, including 27 during the a.m. peak hour and 33 during the p.m. peak hour.
- All three study intersections are operating acceptably under Existing Conditions during the p.m. peak hour. The LOS at all study intersections would remain the same with the addition of project trips, indicating an acceptable effect on traffic operation.
- Under Future volumes, two of the study intersections would continue to operate acceptably. The Napa Road/5th Street East intersection is expected to operate at LOS F, both without and with the project. A traffic signal was recommended for this location in the General Plan and the project's proportional share contribution toward the cost of the signal was calculated based on its contribution to the increase in volumes at the intersection.
- There are currently no sidewalks along the project frontages. There are also gaps in the sidewalk network along the north side of Napa Road and north of the project site along 5th Street East making existing facilities inadequate
- Existing transit facilities would serve the project with the provision of the recommended pedestrian improvements along Napa Road.
- Existing bicycle facilities would adequately serve the project.
- Access to the site would be adequate via the proposed project street connections on Jones Street and 5th Street East. On-site circulation would be adequate to serve project traffic as well as emergency vehicles.
- The project would result in a potentially significant impact with respect to VMT, which would require mitigation.

Recommendations

- Sidewalks would need to be provided along the project frontages, as well as along the north side of Napa Road and the west side of 5th Street East to eliminate gaps in the sidewalk network. The on-site and off-site sidewalk improvements along Napa Road would create a continuous pedestrian connection from the project to Broadway, where the nearest transit stops and commercial land uses are located.
- Project-related VMT should be mitigated to a less-than-significant level through mitigations such as the inclusion of TDM measures. Additional analysis is required to develop recommendations to adequately mitigate this impact.

Study Participants and References

Study Participants

Principal in Charge	Dalene J. Whitlock, PE, PTOE
Principal	Zack Matley, AICP
Transportation Planner	Barry Bergman, AICP
Associate Engineer	Briana Byrne, TE
Assistant Planner	Jade Kim
Graphics	Cameron Wong
Editing/Formatting	Alex Scrobonia
Quality Control	Dalene J. Whitlock, PE, PTOE

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City of Sonoma 2020 General Plan: Circulation Element, City of Sonoma, 2016
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Appendix A

Intersection Level of Service Calculations



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HCM 6th AWSC

1: Fifth St E & E MacArthur St

03/16/2021

Intersection	20.1												
Intersection LOS	C												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Vol, veh/h	36	148	84	9	223	53	117	196	28	23	68	21	
Future Vol, veh/h	36	148	84	9	223	53	117	196	28	23	68	21	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	43	178	101	11	269	64	141	236	34	28	82	25	
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0	
Approach	EB	WB	WB	EB	WB	WB	NB	NB	SB	SB	SB	SB	
Oposing Approach	WB			EB			SB	SB			NB		
Oposing Lanes	1			1			1	1			1		
Conflicting Approach Left	SB			NB			EB	EB			WB		
Conflicting Lanes Left	1			1			1	1			1		
Conflicting Approach Right	NB			SB			WB	WB			EB		
Conflicting Lanes Right	1			1			1	1			1		
HCM Control Delay	17.8			19.1			25.2				12.7		
HCM LOS	C			C			D				B		
Lane	NBLn1	EBLn1	EBLn1	WBLn1	WBLn1	WBLn1	SBLn1	SBLn1					
Vol Left, %	34%	13%	3%	21%									
Vol Thru, %	57%	55%	78%	61%									
Vol Right, %	8%	31%	19%	19%									
Sign Control	Stop	Stop	Stop	Stop									
Traffic Vol by Lane	341	268	285	112									
LT Vol	117	36	9	23									
Through Vol	196	148	223	68									
RT Vol	28	84	53	21									
Lane Flow Rate	411	323	343	135									
Geometry Grp	1	1	1	1									
Degree of Util (X)	0.732	0.574	0.611	0.265									
Departure Headway (Hd)	6.412	6.401	6.406	7.077									
Convergence, Y/N	Yes	Yes	Yes	Yes									
Cap	563	562	560	503									
Service Time	4.482	4.478	4.482	5.176									
HCM Lane V/C Ratio	0.73	0.575	0.613	0.268									
HCM Control Delay	25.2	17.8	19.1	12.7									
HCM Lane LOS	D	C	C	B									
HCM 95th-ile Q	6.2	3.6	4.1	1.1									










Traffic Study for the Annexation of 20455 5th Street East
Future Conditions PM

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HCM 6th Signalized Intersection Summary

2: Broadway (SR 12) & Leveroni Rd/Napa Rd

03/16/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	83	413	77	43	527	113	117	256	72	145	238	79		
Future Volume (veh/h)	83	413	77	43	527	113	117	256	72	145	238	79		
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	0.98	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	1.00		
Work Zone On Approach	No	No	No	No	No	No	No	No	No	No	No	No		
Adj Sat Flow, veh/h	1856	1856	1856	1856	1856	1856	1856	1841	1856	1856	1841	1856		
Adj Flow Rate, veh/h	87	435	81	45	555	119	123	269	76	153	251	83		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3		
Cap, veh/h	108	643	120	65	590	126	152	672	185	186	737	237		
Arrive On Green	0.06	0.42	0.42	0.04	0.40	0.40	0.09	0.27	0.27	0.11	0.28	0.28		
Sat Flow, veh/h	1767	1517	282	1767	1476	316	1767	2529	697	1767	2586	832		
Grp Volume(V), veh/h	87	0	516	45	0	674	123	184	161	153	167	167		
Grp Sat Flow(s),veh/h	1767	0	1800	1767	0	1792	1767	1749	1477	1767	1749	1670		
Q Serve(g, s), s	4.6	0.0	22.0	2.4	0.0	34.4	6.5	8.2	8.5	8.1	7.2	7.5		
Cycle Q Clear(g_c), s	4.6	0.0	22.0	2.4	0.0	34.4	6.5	8.2	8.5	8.1	7.2	7.5		
Prop In Lane	1.00	0.16	1.00	0.18	1.00	0.18	1.00	0.47	1.00	0.50	1.00	0.50		
Lane Grp Cap(c), veh/h	108	0	763	65	0	716	152	465	393	186	498	476		
V/C Ratio(X)	0.81	0.00	0.68	0.70	0.00	0.94	0.81	0.40	0.41	0.82	0.34	0.35		
Avail Cap(c_a), veh/h	108	0	763	217	0	794	167	465	393	234	498	476		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(i)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	44.1	0.0	22.1	45.3	0.0	27.5	42.7	28.6	28.8	41.7	26.9	27.0		
Incr Delay (d2), s/veh	34.8	0.0	2.4	12.6	0.0	18.1	23.0	2.5	3.1	17.0	1.8	2.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.0	0.0	8.9	1.2	0.0	17.1	3.8	3.7	3.3	4.3	3.2	3.2		
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	78.9	0.0	24.5	57.9	0.0	45.6	65.7	31.1	31.9	58.7	28.7	29.0		
LnGrp LOS	E	A	C	E	A	D	E	C	C	E	C	C		
Approach Vol, veh/h	603			719			468				487			
Approach Delay, s/veh	32.3			46.4			40.5				38.2			
Approach LOS	C			D			D				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8						
Phs Duration (G+Y+Rc), s	7.5	44.3	12.2	31.1	9.8	42.0	14.0	29.3						
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0						
Max Green Setting (Gmax), s	11.7	36.2	9.0	27.1	5.8	42.1	12.6	23.5						
Max Q Clear Time (g_c+I1), s	4.4	24.0	8.5	9.5	6.6	36.4	10.1	10.5						
Green Ext Time (p_c), s	0.0	1.7	0.0	3.0	0.0	1.6	0.1	2.6						
Intersection Summary														
HCM 6th Ctrl Delay	39.7													
HCM 6th LOS	D													

Traffic Study for the Annexation of 20455 5th Street East
Future Conditions PM

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HCM 6th AWSC

3: Fifth St E & Napa Rd

03/16/2021

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection Delay, s/veh	65.5											
Intersection LOS	F											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	97	418	18	15	539	73	9	41	5	70	106	103
Traffic Vol, veh/h	97	418	18	15	539	73	9	41	5	70	106	103
Future Vol, veh/h	97	418	18	15	539	73	9	41	5	70	106	103
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	100	431	19	15	556	75	9	42	5	72	109	106
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Approach	EB	WB	WB	EB	WB	WB	NB	NB	SB	SB	SB	SB
Oposing Approach	WB	EB	EB	WB	WB	WB	SB	SB	NB	NB	SB	SB
Oposing Lanes	2	2	2	2	2	2	1	1	1	1	1	1
Conflicting Approach Left	SB	NB	NB	EB	EB	EB	WB	WB	WB	WB	WB	WB
Conflicting Lanes Left	1	1	1	2	2	2	2	2	2	2	2	2
Conflicting Approach Right	NB	SB	SB	WB	WB	WB	EB	EB	EB	EB	EB	EB
Conflicting Lanes Right	1	1	1	2	2	2	2	2	2	2	2	2
HCM Control Delay	32.6	118.6	118.6	13	13	13	13	13	13	13	13	13
HCM LOS	D	F	F	B	B	B	C	C	C	C	C	C

HCM 6th Signalized Intersection Summary

3: Fifth St E & Napa Rd

03/16/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	97	418	18	15	539	73	9	41	5	70	106	103
Traffic Volume (veh/h)	97	418	18	15	539	73	9	41	5	70	106	103
Future Volume (veh/h)	97	418	18	15	539	73	9	41	5	70	106	103
Initial Q (Ob), 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	1.00	1.00	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No	No	No	No	No	No	No
Adj Sat Flow, veh/h	1870	1856	1870	1870	1856	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	100	431	19	15	556	75	9	42	5	72	109	106
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	139	864	38	34	690	93	116	363	37	167	170	140
Arrive On Green	0.08	0.49	0.49	0.02	0.43	0.43	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1781	1764	78	1781	1601	216	113	1520	160	299	731	603
Grp Volume(V), veh/h	100	0	450	15	0	631	56	0	0	287	0	0
Grp Sat Flow(s),veh/h	1781	0	1842	1781	0	1817	1794	0	0	1634	0	0
Q Serve(g,s), s	2.5	0.0	7.6	0.4	0.0	14.0	0.0	0.0	0.0	4.8	0.0	0.0
Cycle Q Clear(g,c), s	2.5	0.0	7.6	0.4	0.0	14.0	1.1	0.0	0.0	7.5	0.0	0.0
Prop In Lane	1.00	0.04	1.00	0.04	1.00	0.12	0.16	0.09	0.25	0.37	0.00	0.37
Lane Grp Cap(c), veh/h	139	0	902	34	0	783	507	0	0	477	0	0
V/C Ratio(X)	0.72	0.00	0.50	0.44	0.00	0.81	0.11	0.00	0.00	0.60	0.00	0.00
Avail Cap(c,a), veh/h	192	0	1509	192	0	1489	1023	0	0	967	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	20.9	0.0	8.0	22.5	0.0	11.5	14.1	0.0	0.0	16.5	0.0	0.0
Incr Delay (d2), s/veh	7.7	0.0	0.4	8.9	0.0	2.0	0.1	0.0	0.0	1.2	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	1.2	0.0	1.9	0.2	0.0	4.1	0.4	0.0	0.0	2.4	0.0	0.0
Unsig. Movement Delay, s/veh	28.6	0.0	8.4	31.4	0.0	13.5	14.2	0.0	0.0	17.7	0.0	0.0
LnGrp Delay(d),s/veh	C	A	A	C	A	B	B	A	A	B	A	A
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h	550			646			56			287		
Approach Delay, s/veh	12.1			13.9			14.2			17.7		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2	3	4	6	7	8						
Phs Duration (G+Y+Rc), s	14.8	4.9	26.7	14.8	7.6	24.0						
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0						
Max Green Setting (Gmax), s	25.0	5.0	38.0	25.0	5.0	38.0						
Max Q Clear Time (g_c+I1), s	3.1	2.4	9.6	9.5	4.5	16.0						
Green Ext Time (p_c), s	0.2	0.0	2.6	1.4	0.0	3.9						
Intersection Summary												
HCM 6th Ctrl Delay				14.0								
HCM 6th LOS				B								

Traffic Study for the Annexation of 20455 5th Street East
Future Conditions PM (Mitigated)

Synchro 8 Report
W-Trans

Traffic Study for the Annexation of 20455 5th Street East
Future Conditions PM

W-Trans
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Appendix B

Proportional Share Fee Calculations



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Equitable Share Calculations Napa Road/5th Street East

		Total Volume Entering the Intersection of	
		Intersection of 60455 5th Street E	
	PM	Existing	PM
Project Trips (T)	9	Future Year	1503

Description of Project Improvement:

Signalization of the all-way stop-controlled intersection of Napa Road and 5th Street East.

Calculation of Project Share

$$P = T / (TB - TE)$$

where:

P = Equitable Share

T = Project trips during the affected peak hour

TB = Build-out volumes

TE = Existing volumes

T	9
TB	1503
TE	1214
P	3.1%

Total Estimated Cost of Improvement \$0

Equitable Share Contribution **\$0**

Equitable Share (per Caltrans "Guide for the Preparation of Traffic Impact Studies")