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PROPOSED MITIGATED NEGATIVE DECLARATION

SAN PABLO GENERAL PLAN AMENDMENT AND SAN PABLO AVENUE SPECIFIC PLAN AMENDMENT 2017 (CITY HALL PROPERTY)

PREPARED FOR

City of San Pablo

August 14, 2017

EMC PLANNING GROUP INC.
A LAND USE PLANNING & DESIGN FIRM

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SAN PABLO GENERAL PLAN AMENDMENT AND SAN PABLO AVENUE SPECIFIC PLAN AMENDMENT 2017 (CITY HALL PROPERTY)

PREPARED FOR

City of San Pablo

Michele Rodriquez, Development Services Director

13831 San Pablo Avenue

San Pablo, CA 94806

Tel 510.215.3031

PREPARED BY

EMC Planning Group Inc.

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August 14, 2017

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CITY OF SAN PABLO
Development Services / Administration

CITY OF SAN PABLO
City of New Directions

San Pablo
All-America City
NATIONAL CIVIC LEAGUE
2014

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

In compliance with the California Environmental Quality Act (CEQA), the City of San Pablo has undertaken environmental review for the proposed San Pablo General Plan Amendment and San Pablo Avenue Specific Plan Amendment 2017 (City Hall Property), and intends to adopt a Mitigated Negative Declaration. The City of San Pablo invites all interested persons and agencies to comment on the proposed project.

Lead Agency: City of San Pablo

Project Location: 13831 San Pablo Avenue, San Pablo

Project Description: The proposed project includes specific plan and general plan amendments for the existing City Hall site to allow for redevelopment of a portion of the site. The specific plan and general plan amendments consist of changing the land use designation from Public/Institutional to a new designation, Mixed Use Center City Hall Site, and would allow for reuse of much of the site as mixed use (commercial and residential) or residential only. The remainder parcel will remain as public/institutional for parkland.

Public Review Period: Begins – Monday, August 22, 2017
Ends – Monday, September 11, 2017

Proposed Mitigated Negative Declaration is Available for Public Review at these Locations:

San Pablo City Hall Development Services
13831 San Pablo Avenue, Building 3, San Pablo, CA 94806

San Pablo Library
13751 San Pablo Avenue
San Pablo, CA 94806

http://sanpabloca.gov/1177/Planning-Zoning

13831 San Pablo Avenue, Building 3 ● San Pablo, CA 94806
Main: 510-215-3030 ● *Fax*: 510-215-3014
www.SanPabloCA.gov

Address Where Written Comments May be Sent:

Michele Rodriguez, Development Services Director
City of San Pablo
13831 San Pablo Avenue, Building 3
San Pablo, CA 94806

Public Hearing:

Date: October 17, 2017 Planning Commission
Time: 6:30 PM
Location: City of San Pablo
13831 San Pablo Avenue, San Pablo
City Council Chambers, Building 2

CITY OF SAN PABLO
City of New Directions

San Pablo All-America City 2014
NATIONAL CIVIC LEAGUE

PROPOSED MITIGATED NEGATIVE DECLARATION

In Compliance with the California Environmental Quality Act (CEQA)

Project Name San Pablo General Plan Amendment and San Pablo Avenue Specific Plan Amendment 2017 (City Hall Property)

Lead Agency City of San Pablo

Project Proponent City of San Pablo

Project Location 13831 San Pablo Avenue, San Pablo

Assessor's Parcel Numbers 411-330-37, 38, and 39

Project Description The proposed project site includes an amendment to the San Pablo Avenue Specific Plan, and corresponding amendments to the San Pablo General Plan 2030. The specific plan and general plan amendments consist of changing the land use designation from Public/Institutional to a new designation, Mixed Use Center City Hall Site, and would allow for reuse of much of the site as mixed use (commercial and residential) or residential only. Public/Institutional uses are allowed within the Mixed Use Center City Hall Site designation, in part to accommodate the existing Alvarado Adobe, Blume House and Bunk House, and the Teixeira Home.

Written Comments To
Michele Rodriguez, Development Services Director
City of San Pablo
13831 San Pablo Avenue, Building 3
San Pablo, CA 94806
email: MicheleR@sanpabloca.gov
fax: 510.215-3014

Proposed Findings The City of San Pablo is the custodian of the documents and other material that constitute the record of proceedings upon which this decision is based.

The initial study indicates that the proposed project has the potential to result in significant adverse environmental impacts. However, the mitigation measures identified in the initial study would reduce the impacts to a less than significant level. There is no

substantial evidence, in light of the whole record before the lead agency (City of San Pablo) that the project, with mitigation measures incorporated, may have a significant effect on the environment. See the following project-specific mitigation measures:

Mitigation Measures

Biological Resources

BIO-1 Future developers of the project site shall comply with City of San Pablo Municipal Code-Section 12.16.010 and shall obtain a permit issued by the Director of Public Works prior to trimming or removing ornamental vegetation on the project site. Future developers of the project site shall be responsible for implementing this mitigation measure with oversight by the City of San Pablo. Compliance with this measure shall be documented and submitted to the Director of Public Works.

Cultural Resources

CR-1 Prior to approval of future project development applications, the developer shall submit an evaluation by a qualified historian that the development plans are designed to allow continued public access to the Blume House and Alvarado Adobe Museum. Plans shall also be designed to harmonize with a visual focus on the City's nineteenth- and early twentieth-century history to assist with maintaining the significant role of the buildings in maintaining and developing San Pablo's community identity into the future. The evaluation shall be subject to review and approval by the City of San Pablo Development Services Director.

CR-2 Prior to issuance of a demolition permit for the existing City Hall buildings, the developer shall contract with a qualified historian to review construction plans and to monitor construction activities to prevent accidental adverse effects to the Bloom House, Bunk House, Teixeira Home, and Alvarado Adobe Museum from vibration, dust and debris, and accidental mechanical damage. The historian's scope of work and qualifications shall be submitted to the City of San Pablo Development Services Director for review and approval prior to issuance of a demolition permit. The historian shall submit weekly construction monitoring reports to the Development Services Director with recommendations for corrective action should demolition activities be shown to be adversely affecting the structures. The developer shall implement corrective actions deemed necessary by the Development Services Director.

CR-3 Prior to issuance of a demolition permit for the existing City Hall buildings or a grading permit, whichever comes first, the developer shall submit an archaeological resources monitoring and reporting plan and implement the plan to ensure any archaeological resources accidentally discovered during the redevelopment process are

identified and receive adequate protection. The plan shall be prepared by a qualified archaeologist and shall include, but not be limited to the following components:

a. Timing and duration of demolition, grading, and construction, and when the archaeological monitor is required to be present;

b. Frequency of monitoring reports (e.g. weekly, bi-weekly, etc.) to be prepared by the archaeological monitor and delivered to the Development Services Director;

c. Measures to be implemented should archaeological resources be discovered during construction activities, which may include, but not be limited to, suspension of construction activities, impact avoidance, preservation in place, excavation, documentation, and/or data recovery.

The archaeological resources monitoring and reporting plan shall be subject to review and approval by the Development Services Director.

CR-4 The developer of any redevelopment project shall include the following language in all grading, site work, and construction plans to identify required actions in the event of an accidental discovery or recognition of any human remains: “If human remains are found during earth-moving, grading, or construction activities, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner of Contra Costa County is contacted to determine that no investigation of the cause of death is required. If the coroner determines the remains to be Native American the coroner shall contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent (MLD) from the deceased Native American. The MLD may then make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and associated grave goods as provided in Public Resources Code Section 5097.98. The landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further disturbance if: a) the Native American Heritage Commission is unable to identify a MLD or the MLD failed to make a recommendation within 48 hours after being notified by the commission; b) the descendent identified fails to make a recommendation; or c) the landowner or his authorized representative rejects the recommendation of the descendent, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.”

Geology & Soils

GEO-1 Prior to approval of future development plans, the developer shall have a licensed soil or geotechnical engineer prepare a geotechnical report to address hazards from shrink-swell soil potential, as well as address seismic safety and liquefaction concerns, if any. The recommendations of the licensed engineer for design of project improvements to reduce associated hazards shall be incorporated into the design of the project. Site preparation and cut and fill operations shall be conducted under the observation of the licensed engineer. The report shall be subject to the review and approval of the Director of Public Works.

INITIAL STUDY

SAN PABLO GENERAL PLAN AMENDMENT AND SAN PABLO AVENUE SPECIFIC PLAN AMENDMENT 2017 (CITY HALL PROPERTY)

PREPARED FOR

City of San Pablo

Michele Rodriquez, Development Services Director

13831 San Pablo Avenue

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Appendices

Figures

Tables

A. BACKGROUND

Project Title	San Pablo General Plan Amendment and San Pablo Avenue Specific Plan Amendment 2017 (City Hall Property)
Lead Agency Contact Person and Phone Number	Michele Rodriguez, Development Services Director 510.215.3031
Date Prepared	July 2017
Study Prepared by	EMC Planning Group Inc. 301 Lighthouse Avenue, Suite C Monterey, CA 93940 Ron Sissem, MRP, Principal Teri Wissler Adam, Senior Principal Sally Rideout, Principal Planner Andrea Edwards, Senior Biologist
Project Location	San Pablo Avenue west of Church Lane in the City of San Pablo
Project Sponsor Name and Address	City of San Pablo 13831 San Pablo Avenue San Pablo, CA 94806
General Plan Designation	San Pablo Avenue Specific Plan Public/Institutional
Zoning	San Pablo Avenue Specific Plan Public/Institutional

Setting

The project site is located within the San Pablo Avenue Specific Plan boundary at 13831 San Pablo Avenue, as presented in Figure 1, Location Map. The 4.46-gross acre is comprised of Assessor's parcel numbers 411-330-37, 38, and 39. Uses at the site include the following:

1. Five existing buildings which comprise the existing City of San Pablo City Hall (3.75 acres).
2. Parking facilities associated the City Hall that include uncovered parking and covered parking with installed solar roof.

3. The Alvarado Adobe, California Historical Landmark No. 512, which currently operates as a museum. The adobe, along with the associated grounds, is also known as Alvarado Square.
4. The Blume House and its accompanying Bunk House, also currently operates as a museum. Although not listed on the federal or state historic registers, they are listed in the San Pablo General Plan 2030 as buildings of local historical significance. The Blume House and Bunk House were relocated to the site from their original location.
5. The Teixeira Home. Although not listed on the federal or state historic registers, it is listed in the San Pablo General Plan 2030 as a building of local historical significance. It is used for City Hall functions and as a youth center.

Approximately 53 people are employed at City Hall in the following departments: Public Works, Development Services, City Manager's Office, Finance, Information Technology, Community Services, Code Enforcement, Recycle More, and Read Aloud. City Hall consists of one and two-story buildings, with approximately 50,000 square feet of building floor area and a building footprint of approximately 32,000 square feet.

Surrounding roadways, land uses, and features include San Pablo Avenue, the San Pablo Police Department, office and retail to the north; Wildcat Creek, a City-operated senior center and a residential neighborhood to the south; the redeveloping Mixed Use Center South portion of San Pablo Specific Plan area to the east; and the Las Montanas Supermarket to the west. Figure 2, Aerial Photograph, identifies the existing uses on the site and the surrounding land uses.

Description of Project

The proposed project includes specific plan and general plan amendments for the existing City Hall site to allow for redevelopment of a portion of the site. Project components and assumptions are discussed below.

Specific Plan and General Plan Amendments

The proposed project site includes an amendment to the *San Pablo Avenue Specific Plan*, and corresponding amendments to the *San Pablo General Plan 2030*. No amendments to the San Pablo Zoning Ordinance are required. The specific plan and general plan amendments consist of changing the land use designation from Public/Institutional to a new designation, Mixed Use Center City Hall Site, and would allow for reuse of much of the site as mixed use (commercial and residential) or residential only. Public/institutional uses are allowed within the Mixed Use Center City Hall Site designation, in part to accommodate the existing Alvarado Adobe, Blume House and Bunk House, and the Teixeira Home. The proposed text and map amendments to the specific plan and general plan are presented in Appendix A, Specific Plan and General Plan Amendment.

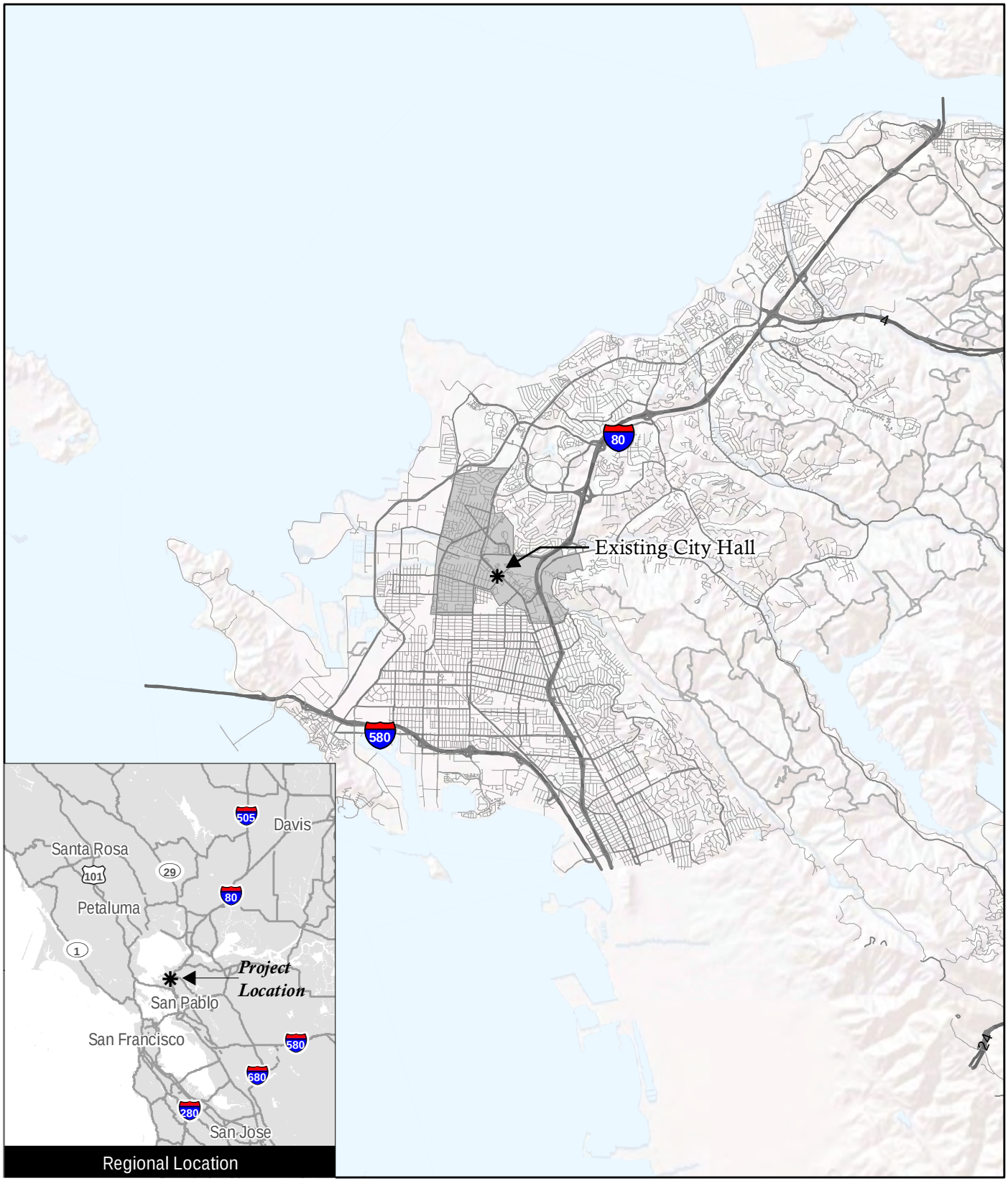

Figure 1

Location Map

San Pablo General Plan Amendment and San Pablo Avenue Specific Plan Amendment 2017 (City Hall Property) Initial Study

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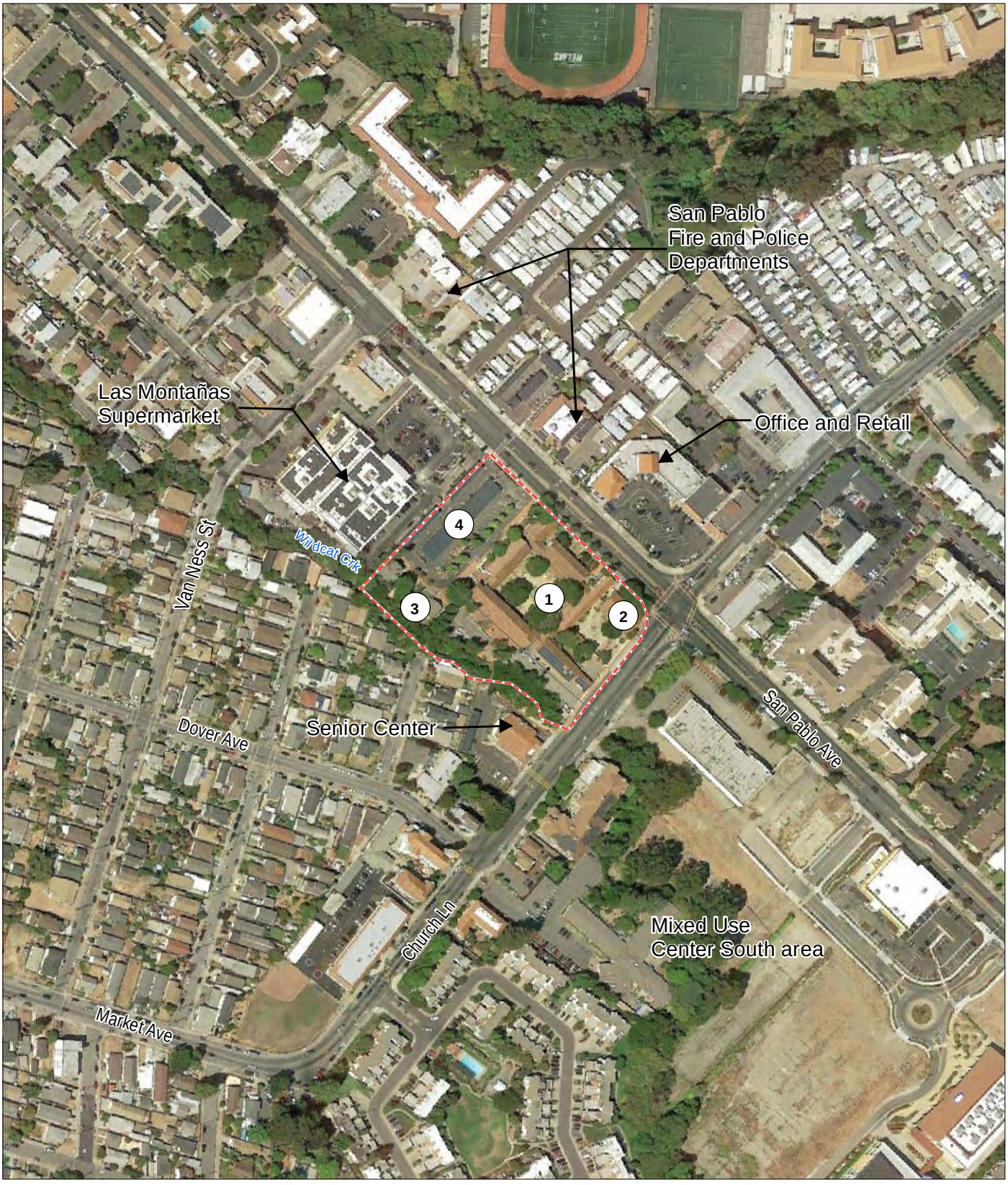

0 300 feet

Existing City Hall Site

1 City Hall

2 Alvarado Adobe

3 Blume House, Bunk House, and Texeira Home

4 Parking with Solar Structure

Source: Esri 2017

Figure 2

Aerial Photograph

San Pablo General Plan Amendment and San Pablo Avenue Specific Plan Amendment 2017 (City Hall Property) Initial Study

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The Mixed Use Center City Hall Site designation is limited to the 4.46-acre City Hall site. This designation describes a new high-intensity mixed-use destination in an area with high growth potential. The Mixed Use Center City Hall Site designation aims to compliment the Mixed Use Center South site, located across Church Lane to the south, which has been undergoing redevelopment as a major new activity center and new citywide and regional destination for the City of San Pablo.

Uses within the Mixed Use Center City Hall Site designation may include commercial, office (including medical offices), residential, institutional, and hotel. Typical heights are expected to be two to five stories, with a maximum height of 60 feet. The maximum FAR is 2.5 and the maximum residential density allowed is 60 units per gross acre (included within the FAR limit).

Existing City Hall Site Reuse Scenarios

No project to redevelop the project site has been proposed at this time. For purposes of this environmental analysis, two reuse scenarios that are consistent with the specific plan and general plan amendments were developed to identify the potential environmental effects associated with reuse of the site. The two scenarios are a mixed use commercial/residential project, and an all-residential project. The two scenarios are presented in Table 1, Mixed Use and All Residential Scenarios.

Table 1 Mixed Use and All Residential Scenarios

Land Use Scenario	Land Use	Residential Units/Density	Commercial Square Footage
Mixed Use	Commercial/Retail Residential – High Density	-- 105 (28 DU/Ac)	32,000
All Residential	Residential – High Density	145 (39 DU/Ac)	--

SOURCE: EMC Planning Group 2016

NOTE: Dwelling units are per gross acre.

Mixed Use Scenario

A maximum probable mixed use project development scenario consistent with this new designation was developed for analysis in this initial study. It consists of a mix of high density residential use and non-residential use. The residential component would consist of a mix of studio, one bedroom, and two bedroom apartments on floors two, three, and four of a four-story building. A total of 105 dwelling units could be accommodated at a density of 28 units per gross acre, with a projected population of about 326 (105 residential units x 3.1 persons per household. The non-residential component would include 32,000 square feet of building square footage on the ground floor. This scenario considers land demand for a setback from Wildcat Creek, parking, and on-site open space.

All Residential Scenario

A second scenario was developed for a maximum probable high density residential only project consistent with the Mixed Use Center City Hall Site designation. This scenario also accounts for land demand for a creek setback, parking, and open space. A mix of studio, one bedroom, and two bedroom apartments is assumed on four floors. This scenario would allow approximately 145 dwelling units, for a density of 39 units per gross acre, with a projected population of about 450 (145 residential units x 3.1 persons per household).

Environmental Analysis Methodology

CEQA Guidelines section 15146 provides direction on the degree of specificity required in the environmental analysis. The degree of specificity will correspond to the degree of specificity involved in the underlying activity. For example, environmental analysis on a construction project will necessarily be more detailed in the specific effects of the project than will be on the adoption of a local general plan or comprehensive zoning ordinance (e.g., the general plan and specific plan amendment on the existing City Hall site) because the effects of the construction can be predicted with greater accuracy.

The environmental analysis on a project such as the amendment of a local general plan should focus on the secondary effects that *can be expected to follow* from the adoption or amendment, but the analysis need not be as detailed as it would be on the specific construction projects that might follow. The secondary effects that can be expected to follow from the proposed general plan and specific plan amendments are development of the site consistent with the amendments. Therefore, this initial study will evaluate the proposed general plan and specific plan amendments, and the anticipated future reuse of the site at a level commensurate with the level of detail in the project description. If a future specific project proposed for the site is consistent with the project description presented in this initial study, no further environmental review may be necessary. However, if a future project has potential to result in new impacts or substantially greater impacts than evaluated in this initial study, additional environmental review may be necessary. City staff will make this determination at the time an application for development of the site is submitted.

In most instances, a greater environmental impact could occur with the mixed use project scenario. Therefore, this initial study evaluates the mixed use project scenario unless otherwise indicated within the various topic sections.

Baseline Environmental Conditions

The analysis of impacts includes consideration of baseline environmental effects resulting from operations of the existing City Hall. See a description of the baseline environmental conditions in the setting presented earlier in this initial study.

Other Public Agencies Whose Approval is Required

None

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

The City of San Pablo has been contacted by a tribe traditionally and culturally affiliated with the area and has requested consultation. The consultation process is summarized in Section 17 of this initial study.

B. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, as indicated by the checklist on the following pages.

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

C. DETERMINATION

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ✓ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (1) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Michele Rodriguez, Development Services Director Date

D. Evaluation of Environmental Impacts

Notes

1. A brief explanation is provided for all answers except "No Impact" answers that are adequately supported by the information sources cited in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer is explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers take account of the whole action involved, including off-site as well as on-site, cumulative as well a project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once it has been determined that a particular physical impact may occur, then the checklist answers indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less-Than-Significant Impact with Mitigation Measures Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The mitigation measures are described, along with a brief explanation of how they reduce the effect to a less-than-significant level (mitigation measures from section XVII, "Earlier Analyses," may be cross-referenced).
5. Earlier analyses are used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier document or negative declaration. [Section 15063(c)(3)(D)] In this case, a brief discussion would identify the following:
    a. "Earlier Analysis Used" identifies and states where such document is available for review.
    b. "Impact Adequately Addressed" identifies which effects from the checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and states whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. "Mitigation Measures"—For effects that are "Less-Than-Significant Impact with Mitigation Measures Incorporated," mitigation measures are described which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances, etc.) are incorporated. Each reference to a previously prepared or outside document, where appropriate, includes a reference to the page or pages where the statement is substantiated.
7. "Supporting Information Sources"—A source list is attached, and other sources used or individuals contacted are cited in the discussion.
8. This is the format recommended in the CEQA Guidelines as amended January 2011.
9. The explanation of each issue identifies:
    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any to reduce the impact to less than significant.

1. AESTHETICS

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Have a substantial adverse effect on a scenic vista? (1, 2, 3, 4, 7, 10)	❑	❑	❑	✓
b.	Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway? (1, 2, 3, 4, 7, 8, 10)	❑	❑	❑	✓
c.	Substantially degrade the existing visual character or quality of the site and its surroundings? (1, 2, 3, 4, 7, 10)	❑	❑	✓	❑
d.	Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area? (10)	❑	❑	❑	✓

Comments:

a. Impacts to scenic vistas were studied in the general plan EIR (2011) and the specific plan EIR (2011). The EIRs determined that development that would block panoramic views or views of significant landscape features or landforms (mountains, oceans, rivers, or significant man-made structures) as seen from public viewing areas would result in a significant impact (p. 3.12-4). The project site is located within the San Pablo Avenue corridor, which is located in a low-lying plain with little or no view of these scenic resources. Further, the project site is currently developed. Therefore, redevelopment of the existing City Hall site would have no impact on scenic resources. No mitigation is required.

b. Interstate 80 is the only highway that passes through San Pablo, and this section of I 80 is neither designated nor eligible as a scenic highway. Additionally, the project site is not visible from the highway. Therefore, the proposed project would have no impact on visual resources when viewed from eligible or designated scenic state highways.

c. The proposed specific plan amendment would allow for buildings up to five stories in height – substantially taller than the existing two story City Hall structures.

However, the site is located within a highly urbanized area and although redevelopment of the site would change its visual character, the existing visual character or quality of the site would not be degraded.

The project site is adjacent to Wildcat Creek, which is a visual resource within the specific plan area. Any future project proposed for the site must comply with applicable specific plan policies for development adjacent to Wildcat Creek. Specific Plan Implementing Policy OSC-I-10 requires the city and developers to maintain, protect, and enhance San Pablo's creeks, including Rheem, San Pablo, and Wildcat creeks, as local and aesthetic resources, with approaches including, but not limited to: establishing a Creek Improvement Program to widen, day-light, and improve San Pablo and Wildcat creeks for the enjoyment of residents; strengthening storm water management requirements for properties adjacent to the creek areas by applying techniques that maintain or restore nature character; enforcing restrictions on planting invasive species near creek areas; identifying and working with property owners to take advantage of unique opportunities where human active use (e.g. through trail development) would enhance creek appreciation without disrupting ecological function; working with developers to "daylight" portions of creeks that have historically been channelized underground under existing paved areas (e.g. parking lots); and requiring minimum setbacks from the top of the creek bank for development proposed adjacent to creeks, in keeping with city regulations and best management practices.

Implementation of this policy will ensure that potential significant visual impacts to Wildcat Creek would be less than significant.

d. Redevelopment of the project site would not result in a measurable increase in light and glare, as this site is already developed with existing City Hall and associated parking and it is unlikely that a proposed future use would require lighting that is more intense that typical urban uses. Therefore, the potential impacts from increased light and glare would be minimal and less than significant. No mitigation is required.

2. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts on agricultural resources are significant environmental effects and in assessing impacts on agriculture and farmland, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use? (1, 2, 3, 4)	❑	❑	❑	✓
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract? (1, 2, 3, 4)	❑	❑	❑	✓
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? (1, 2, 3, 4)	❑	❑	❑	✓
d. Result in the loss of forest land or conversion of forest land to non-forest use? (1, 2, 3, 4)	❑	❑	❑	✓
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use? (1, 2, 3, 4)	❑	❑	❑	✓

Comments:

a-e. The existing City Hall site is fully developed and is located in an established urban area. The site is within the city limits and is not designated as prime farmland or subject to a Williamson Act land conservation contract. The site is not zoned for agriculture or timber harvesting or forest land. Therefore, the proposed project would not convert agricultural or forest land to urban uses and would not conflict with zoning for timberland or forest land.

3. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan? (1, 2, 3, 4, 7, 17, 18, 20, 21)	❑	❑	❑	✓
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation? (17, 19)	❑	❑	✓	❑
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)? (17, 19)	❑	❑	✓	❑
d. Expose sensitive receptors to substantial pollutant concentrations? (3, 4, 17, 23, 24)	❑	❑	✓	❑
e. Create objectionable odors affecting a substantial number of people? (9)	❑	❑	❑	✓

Comments:

a. The Bay Area Air Quality Management District (air district) *California Environmental Quality Act Air Quality Guidelines* (air quality guidelines) indicate that consistency with *Spare the Air Cool the Climate Final 2017 Clean Air Plan* (2017 clean air plan) is based on three tests: 1) does the project support the primary goals of the 2017 clean air plan?; 2) does the project include applicable control measures from the 2017 clean air plan?; 3) does the project disrupt or hinder implementation of any 2017 clean air plan control measures?

The primary goals of the 2017 clean air plan are to attain air quality standards, achieve equity in exposure to toxic air contaminants, and meet state greenhouse gas emissions reduction goals. Strategies to achieve these goals that are applicable to urban redevelopment include directing new development to areas that are well-served by transit, and conducive to bicycling and walking; and implementing clean

energy and energy efficiencies for new and re-modeled buildings. The proposed project would result in the redevelopment of a portion of the City Hall site with either mixed commercial/residential uses or all residential uses. The proposed project is intended to intensify development adjacent to the Mixed Use Center South site, which has been undergoing redevelopment as a major new activity center, and would provide a walkable destination for residents at the project site. The San Pablo Avenue corridor is well-served by bus transit with routes serving Hilltop Mall, Contra Costa College, the Richmond and El Cerrito del Norte BART stations, downtown Oakland, and the Transbay Terminal in San Francisco. The project site is connected by quiet side streets that provide bicycling routes to adjacent communities, and the Wildcat Creek Trail currently ends less than one-half mile to the west. The proposed project would be served by transit and the site is conducive to walking and bicycling. Future development on the project site would comply with the current state energy code requirements. Additionally, the San Pablo General Plan and the San Pablo Avenue Specific Plan include detailed policies directed toward facilitating transit use, carpooling, walking, and bicycling. The proposed project would support the primary goals of the 2017 clean air plan.

The 2017 clean air plan includes 85 control measures, most of which are applicable for regional or government implementation or specific to industrial processes. Control measure TR-10, in part, supports implementation of Plan Bay Area and air quality and climate change as addressed in local general plans. Other control measures could be applicable to specific development projects when details on those are available. Plan Bay Area calls for focusing 78 percent of new housing and 62 percent of new jobs in priority development areas. The project site is identified as within a priority development area (Plan Bay Area, Appendix 2, Map 30). The proposed project is consistent with control measure TR-10 because it would intensify residential development in a priority development area, served by transit and conducive to walking and bicycling, as discussed above. The proposed project would be supportive of control measure TR-10, and would not impede other control measures. The proposed project would not conflict with or obstruct the 2017 clean air plan.

b/c. The San Francisco Bay Air Basin is in non-attainment for ozone and particulate matter (PM_{10} and $PM_{2.5}$). The air district has established thresholds of significance for criteria air pollutant emissions from new development.

Based on the mixed use future development scenario, the California Emissions Estimator Model (CalEEMod) was used to model criteria air pollutant emissions from project operations (automobile trips, on-site combustion from appliances, etc.). Table 2, Criteria Air Pollutant Thresholds and Project Emissions, presents the air

district's thresholds and daily emissions modeled for the mixed use development scenario. The mixed use development scenario would result in a greater number of vehicle trips and correspondingly a higher volume of emissions from mobile sources (vehicles) than would the residential-only development scenario. Therefore, these results represent a higher anticipated volume of criteria air pollutant emissions than would be expected from the residential-only development scenario. As indicated in the table, the emissions under a mixed use development scenario would be below the air district thresholds; the proposed project would have a less-than-significant impact on criteria air pollutant emissions.

Table 2 Criteria Air Pollutant Thresholds and Project Emissions

Emission Sources	Reactive Organic Gases (ROG)	Nitrogen Oxides (NOx)	Particulate Matter (PM_{10})	Particulate Matter ($PM_{2.5}$)
Summer	49.87	16.15	16.37	10.46
Winter	49.36	16.91	16.37	10.46
Air District Threshold	54	54	82	52

SOURCE: EMC Planning Group 2017; Bay Area Air Quality Management District 2017.
NOTE: Amounts may vary due to rounding

d. The project site is identified as being within an impacted community where the exposure to toxic air contaminants is relatively high in comparison to other areas. The San Pablo Avenue Specific Plan EIR analysis concluded that exposure to toxic air contaminants would be a less-than-significant impact, but directed more detailed consideration for individual projects. The air district's online database of permitted air emission sources was consulted for point sources within 1,000 feet of the project site. The following point sources were identified:

- City of San Pablo Police Station (back-up generator, cancer risk: 16.85, hazard index: 0.006, $PM_{2.5}$: 0.030), and (fuel pump 200 feet away, cancer risk: 0.606, hazard index: 0.001, $PM_{2.5}$: no data); and
- Contra Costa County Fire Station #70 (fuel pump 500 feet away, no data listed).

The police station generator is expected to run only occasionally, and the toxic air emissions would be negligible when averaged with non-operating time. The fueling pumps are assumed to be low volume, since they supply only city vehicles. The closest fuel pump, at the police station, has risk factors well below the 10 cases per one million cancer risk threshold and the 1.0 hazard risk threshold. In accordance with the air district's distance adjustment spreadsheet, the listed risks would be multiplied by 0.197 to account for the 200-foot distance, and would be negligible at the project site. At 500 feet distant, the fire station fuel pump risk factors would be

multiplied by 0.046. Although no data is listed for this fuel pump, the distance reduction factor would reduce a cancer value as high as 215 cases per one million to below the threshold. Data for commercial gasoline stations in the area was checked, and the highest listed cancer risk was about 40 cases per one million. Therefore, it is assumed risk from the fuel pump at the fire station would be below the threshold at the project site. Toxic air contaminant impacts would be less than significant.

e. Future mixed use or residential only uses would not result in odors.

4. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service? (1, 10, 12, 13, 14)	❑	❑	❑	✓
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service? (1, 3, 10, 12)	❑	❑	❑	✓
c. Have a substantial adverse effect on federally protected wetlands, as defined by section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filing, hydrological interruption, or other means? (10)	❑	❑	❑	✓
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (10)	❑	❑	❑	✓
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (10, 15)	❑	✓	❑	❑
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (10)	❑	❑	❑	✓

Comments:

a. The developed project site is situated on the U.S. Geological Survey Richmond quadrangle map. A search of the California Department of Fish and Wildlife *California Natural Diversity Database* was conducted for the Petaluma Point, Mare Island, Benicia, San Quentin, Richmond, Briones Valley, San Francisco North, Oakland West, and Oakland East quadrangles to evaluate potentially occurring special-status species in the project vicinity. Records of occurrence for special-status plants were reviewed for those same quadrangles in the California Native Plant Society *Inventory of Rare and Endangered Plants*. A U.S. Fish and Wildlife Service threatened and endangered species list was also generated for Contra Costa County.

Special-status species are generally rare, restricted in distribution, declining throughout their range, or have a critical, vulnerable stage in their life cycle that warrants monitoring. They typically occur in relatively undisturbed areas and are largely found within unique natural habitats. Most regionally occurring special-status species are not expected to occur on the developed project site due to the lack of suitable habitats.

The following General Plan – Open Space and Conservation Element (OSC) policies protect special-status species and are applicable to the proposed project. The conclusions of this initial study assume that the City will require future development to comply with these policies as conditions of approval.

OSC-I-8 If site work or construction (i.e., ground clearing or grading, including removal of trees or shrubs) activities are to occur during the nesting bird breeding season (February 1 through August 31), the City will require a pre-construction survey by a qualified wildlife biologist, assessing potential special-status bird nesting habitat within 500 feet of the project site, no more than two weeks in advance of the planned activity. All identified nests should be buffered from the construction activity as recommended by the biologist and confirmed by City staff, in accordance with the nature of the construction and nesting activities.

OSC-I-9 For any development projects involving removal of mature trees and/or demolition of vacant buildings (both potential habitats for special-status bats), require a pre-construction survey by a qualified wildlife biologist to determine if bats are present using an acoustic detector. Require implementation of feasible recommendations of the biologist on removal of trees with signs of bat activity during a period least likely to adversely affect the bats, or the creation of a "no disturbance" buffer, if a viable alternative.

Implementation of these policies will prevent adverse impacts to special-status species potentially occurring on the project site.

b. Wildcat Creek, located immediately adjacent to the project site, contains a narrow band of moderate quality riparian habitat. The following OSC policies protect creeks/riparian habitat and are applicable to the proposed project.

OSC-I-4 …Require assessments of biological resources prior to approval for any development within 300 feet of any creeks, wetlands, or other sensitive habitat areas.

OCS-I-6 Prohibit the use of invasive plant species, such as pampas grass and ivies, adjacent to wetlands, riparian areas, or other sensitive habitats.

OSC-I-10 …Enforcing restrictions on the planting of invasive species near creek areas; …Requiring minimum setbacks from the top of the creek bank for development proposed adjacent to creeks…

Further, in compliance with Specific Plan Table 4-1 Development Standards, no buildings are allowed within a 30-foot setback from the creek. The proposed specific plan amendment includes language to clarify this development standard, as follows, "Setbacks Adjacent to Creeks – Minimum 30' setback from top of bank. No buildings are allowed within the 30' setback. Improvements allowed within the 30' foot setback but outside of the drip line (canopy) of the existing riparian trees include, but may not be limited to, bike and pedestrian paths, low intensity outdoor uses (parks, outdoor eating areas) and other improvements e.g. parking."

No sensitive natural communities or riparian habitats exist on the project site, and implementation of the above policies will prevent indirect adverse impacts to adjacent riparian habitat. Clarification of uses allowed within the 30-foot setback as proposed will assist with the development review process.

c. Though adjacent to Wildcat Creek, the project site does not contain wetlands or waterways. Therefore, no impacts to wetland or waterway resources potentially under the jurisdiction of the U.S. Army Corps of Engineers, the California Department of Fish and Wildlife, or the Regional Water Quality Control Board will occur.

d. Wildcat Creek likely provides a local movement corridor for common, urban-tolerant wildlife. The proposed project will not impact this movement corridor or any native wildlife nursery site. Therefore, no impacts to wildlife movement corridors or native wildlife nursery sites will occur.

e. The proposed project will not conflict with general plan policies protecting biological resources as discussed above. However, the *City of San Pablo Municipal Code*, Chapter 12.16 – Trees, Shrubs and Plants in Public Places, Section 12.16.010 requires a permit to trim or remove ornamental vegetation on public property. This section states that "it is unlawful for any person to cut, trim, remove, mutilate, injure or in any way impair the growth of any tree, shrub or plant being or growing in or on public ground or parking strip in the city without a permit issued by the director of public works..."

The project site contains ornamental vegetation. Trimming or removing ornamental vegetation on the project site without a City permit would be a significant adverse environmental impact. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level.

Mitigation Measure

BIO-1 Future developers of the project site shall comply with City of San Pablo Municipal Code-Section 12.16.010 and shall obtain a permit issued by the Director of Public Works prior to trimming or removing ornamental vegetation on the project site. Future developers of the project site shall be responsible for implementing this mitigation measure with oversight by the City of San Pablo. Compliance with this measure shall be documented and submitted to the Director of Public Works.

f. **Habitat Conservation Plans**. The project site is not within an adopted habitat conservation plan area boundary. Therefore, the proposed project will not conflict with any adopted habitat conservation plan.

5. CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5? (1, 2, 16)	❑	✓	❑	❑
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5? (1, 2, 10, 16)	❑	✓	❑	❑
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (1, 2, 4)	❑	❑	❑	✓
d. Disturb any human remains, including those interred outside of dedicated cemeteries? (1, 2, 4)	❑	✓	❑	❑

Comments:

a. An historic resource assessment report was prepared for the San Pablo City Hall and associated buildings (WSA 2017) to determine the historical significance of the buildings on site, and to determine if the proposed project could have an effect on the historical significance of the buildings. The report includes a review of the historical significance of the Blume House and Bunk House, the Teixeira Home, the Alvarado Adobe Museum, and the five City Hall buildings.

Historical Significance of On-site Buildings

Blume House and Bunk House

Based on evaluation of historical context and inspection by an architectural historian, WSA recommends that the Blume House and Bunk House are eligible for the California Register of Historical Resources (CRHR) based on their well-preserved architectural characteristics representative of late-19th- and early 20th-century agricultural properties in western Contra Costa County. The Blume House is also considered to be a Building of Historical Significance (No. 15) in the San Pablo General Plan 2030, and a "Structure of Historical Significance" according to the Contra Costa County Historic Resources Inventory. As such, WSA recommends that both buildings be considered as historical resources for the purposes of CEQA.

Teixeira Home

The Teixeira Home appears to lack sufficient integrity to effectively communicate its association with the Teixeira family who settled in San Pablo in the first decades of the 20th century. In addition, it displays no architectural features consistent with a ca. 1890 construction date as previously recorded in state and local documentation. WSA recommends that it is not eligible for CRHR listing. However, the building was considered to be of local historical significance for its association with "one of San Pablo's leading families" at the time its 1975 Department of Parks and Recreation Historic Resources Inventory form was completed, and it is listed as a Building of Historical Significance (No. 16) in the San Pablo General Plan 2030, and "Structure of Historical Significance" according to the Contra Costa County Historic Resources Inventory. As such, WSA recommends that the Teixeira Home be considered an historical resource for the purposes of CEQA.

Alvarado Adobe Museum

The Alvarado Adobe Museum is a reconstruction built in 1978 near the location of Juan B. Alvarado and Martina Maria (Castro) Alvarado's circa 1843 adobe home. The location itself was designated as California Historical Landmark No. 512 in 1953, the year before the original adobe was torn down. Although the museum is less than 50 years old at the time of reporting (May 2017), it is listed as a Building of Historical Significance (No. 45) in the San Pablo General Plan 2030, and is a "Site Relating to Important Person in History" in the Contra Costa County Historic Resources Inventory. The adobe is also listed with the theme "Exploration/Settlement" in the 1976 California Inventory of Historic Resources. As such, WSA recommends that the Alvarado Adobe Museum be considered an historical resource for the purposes of CEQA.

City Hall Complex

The five-building 1978 San Pablo City Hall complex and its associated landscaping is less than 50 years old and is not recommended as eligible for the CRHR at this time. The San Pablo City Hall complex does embody characteristics of urban revitalization and historical preservation/commemoration efforts of the late 1970s, and was designed by architect Walter Thomas Brooks, well known for his residential and civic buildings inspired by natural geometries, and renowned landscape architect Lawrence Halprin. The complex is not currently listed or designated as historically significant by the city, county, or state, and as such is not currently an historical resource for the purposes of CEQA.

General Plan Policies

The following General Plan – Open Space and Conservation Element (OSC) policies protect historic resources and are applicable to the proposed project. The conclusions of this initial study assume that the City has complied with, or will require compliance with these policies as conditions of approval for future redevelopment of the project site.

"OSC-I-13 Establish and maintain a register of historic and potentially historic resources in San Pablo.

A historic preservation register is the primary planning tool used to identify, record, and evaluate historic properties within a community, neighborhood, project area, or region. The City may use the list of historical buildings in the General Plan Map Atlas as a starting point to create a register of sites/buildings San Pablo may wish to designate as landmarks and/or important historical resources. The register can form an important component of the local preservation program, and can ultimately contribute to community knowledge of local history."

"OSC-I-14 Preserve and build upon the historic and multicultural identity of Alvarado District as a defining element of the city."

"OSC-1-15 Help to ensure that new development analyzes and avoids potential impacts to historic, archaeological, and paleontological resources by:

- Requiring a records review for development proposed in areas that are considered archaeologically or paleontologically sensitive;
- Requiring pre-construction surveys and monitoring during any ground disturbance for all development in areas of historic or archaeological sensitivity;
- Implementing appropriate measures as a condition of project approval—measures such as avoidance, preservation in place, excavation, documentation, and/or data recovery—in order to avoid any identified cultural resource impacts.

In the event that historical, archaeological, or paleontological resources are accidentally discovered during construction, grading activity in the immediate area shall cease and materials and their surroundings shall not be altered or collected. A qualified archaeologist or paleontologist must make an immediate evaluation and avoidance measures or appropriate mitigation should be completed, according to CEQA Guidelines. The State Office of Historic Preservation has issued recommendations for the preparation of Archaeological Resource Management Reports that may be used as guidelines."

Project Analysis

The proposed project would enable future redevelopment of the site. Future redevelopment activities will likely include demolition of the five existing City Hall buildings. This analysis assumes that all other buildings on the project site would be preserved in place.

The Blume House and Bunk House, Teixeira Home, and Alvarado Adobe Museum are all considered historical resources for the purpose of CEQA. Any project proposed on a site located adjacent to them (e.g. the remainder of the project site) must be reviewed to consider its potential adverse effects on the significance and integrity of these buildings. Factors to consider in this review are summarized below for each of the associated buildings.

The Blume House and Bunk House are recommended as eligible for the CRHR based on architectural style. As they have been relocated from their original location and setting, adjacent modern development on the current location of the City Hall complex is unlikely to cause effects detrimental to their eligibility as historical resources. In order to protect their integrity of workmanship, materials, and design, WSA recommends that construction in the vicinity of these buildings be planned and monitored as appropriate to prevent adverse effects to the Blume House and Bunk House from vibration, dust and debris, and accidental mechanical damage.

The Teixeira Home and Alvarado Adobe Museum, while not individually eligible for the CRHR, are buildings of local- and county-level historical significance due to their association with individuals and events important in San Pablo's past. Both are currently situated within an urban environment containing mixed commercial, residential, and institutional uses. Future redevelopment of the City Hall complex is unlikely to cause effects detrimental to the significance of these buildings, provided that adequate construction planning and monitoring are conducted in order to prevent adverse effects from vibration, dust and debris, and accidental mechanical damage.

In addition to their significance as historical resources, the Blume House and Alvarado Adobe Museum actively communicate San Pablo's history to the public through their use as museums. Future development of the project site could affect public accessibility to and visibility of these buildings. Development plans designed to allow continued public access to the Blume House and Alvarado Adobe Museum, and to harmonize with a visual focus on the City's nineteenth- and early twentieth-century history could help to maintain the significant role of these buildings in maintaining and developing San Pablo's community identity into the future.

Implementation of the following mitigation measures, consistent with the general plan policies and project analysis presented above, would reduce potential impacts associated with future redevelopment of the site to a less-than-significant level.

Mitigation Measures

CR-1 Prior to approval of future project development applications, the developer shall submit an evaluation by a qualified historian that the development plans are designed to allow continued public access to the Blume House and Alvarado Adobe Museum. Plans shall also be designed to harmonize with a visual focus on the City's nineteenth- and early twentieth-century history to assist with maintaining the significant role of the buildings in maintaining and developing San Pablo's community identity into the future. The evaluation shall be subject to review and approval by the City of San Pablo Development Services Director.

CR-2 Prior to issuance of a demolition permit for the existing City Hall buildings, the developer shall contract with a qualified historian to review construction plans and to monitor construction activities to prevent accidental adverse effects to the Bloom House, Bunk House, Teixeira Home, and Alvarado Adobe Museum from vibration, dust and debris, and accidental mechanical damage. The historian's scope of work and qualifications shall be submitted to the City of San Pablo Development Services Director for review and approval prior to issuance of a demolition permit. The historian shall submit weekly construction monitoring reports to the Development Services Director with recommendations for corrective action should demolition activities be shown to be adversely affecting the structures. The developer shall implement corrective actions deemed necessary by the Development Services Director.

b/d. The project site is located adjacent to Wildcat Creek. Native American cultural sites are often associated with surface water features. Coupled with the fact that known habitation sites exist in the City of San Pablo, there is a high likelihood that unrecorded Native American cultural sites, including the potential for burial sites, exist at the project site, because of its location next to the creek (specific plan EIR, page 3.11-3).

General Plan Policies

The following General Plan – Open Space and Conservation Element (OSC) policies protect archaeological resources and are applicable to the proposed project. The conclusions of this initial study assume that the City has complied with, or will require compliance with these policies as conditions of approval for future redevelopment of the project site.

OSC-1-15 Help to ensure that new development analyzes and avoids potential impacts to historic, archaeological, and paleontological resources by:

- Requiring a records review for development proposed in areas that are considered archaeologically or paleontologically sensitive;
- Requiring pre-construction surveys and monitoring during any ground disturbance for all development in areas of historic or archaeological sensitivity;
- Implementing appropriate measures as a condition of project approval—measures such as avoidance, preservation in place, excavation, documentation, and/or data recovery—in order to avoid any identified cultural resource impacts.

In the event that historical, archaeological, or paleontological resources are accidentally discovered during construction, grading activity in the immediate area shall cease and materials and their surroundings shall not be altered or collected. A qualified archaeologist or paleontologist must make an immediate evaluation and avoidance measures or appropriate mitigation should be completed, according to CEQA Guidelines. The State Office of Historic Preservation has issued recommendations for the preparation of Archaeological Resource Management Reports that may be used as guidelines.

Project Analysis

The project site is developed with the existing City Hall complex and therefore, an archaeological field survey would not have yielded any additional information. However, it is possible that demolition, grading, and construction activities associated with future redevelopment of the project site could result in accidental discovery of significant archaeological resources, the destruction of which would be a significant adverse environmental impact. Implementation of the following mitigation measures, consistent with the general plan policies and project analysis presented above, would reduce the potential impacts to a less-than-significant level.

Mitigation Measures

CR-3 Prior to issuance of a demolition permit for the existing City Hall buildings or a grading permit, whichever comes first, the developer shall submit an archaeological resources monitoring and reporting plan and implement the plan to ensure any archaeological resources accidentally discovered during the redevelopment process are identified and receive adequate protection. The plan shall be prepared by a qualified archaeologist and shall include, but not be limited to the following components:

a. Timing and duration of demolition, grading, and construction, and when the archaeological monitor is required to be present;

b. Frequency of monitoring reports (e.g. weekly, bi-weekly, etc.) to be prepared by the archaeological monitor and delivered to the Development Services Director;

c. Measures to be implemented should archaeological resources be discovered during construction activities, which may include, but not be limited to, suspension of construction activities, impact avoidance, preservation in place, excavation, documentation, and/or data recovery.

The archaeological resources monitoring and reporting plan shall be subject to review and approval by the Development Services Director.

CR-4 The developer of any redevelopment project shall include the following language in all grading, site work, and construction plans to identify required actions in the event of an accidental discovery or recognition of any human remains: "If human remains are found during earth-moving, grading, or construction activities, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner of San Contra Costa County is contacted to determine that no investigation of the cause of death is required. If the coroner determines the remains to be Native American the coroner shall contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent (MLD) from the deceased Native American. The MLD may then make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and associated grave goods as provided in Public Resources Code Section 5097.98. The landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further disturbance if: a) the Native American Heritage Commission is unable to identify a MLD or the MLD failed to make a recommendation within 48 hours after being notified by the commission; b) the descendent identified fails to make a recommendation; or c) the landowner or his authorized representative rejects the recommendation of the descendent, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner."

c. Paleontological resources are the mineralized (fossilized) remains of prehistoric plant and animal life exclusive of human remains or artifacts. Fossil remains such as bones, teeth, shells, and leaves are found in geologic deposits (rock formations) where they were originally buried (specific plan EIR, page 3.11-5). No known significant paleontological resources exist within the specific plan area (specific plan EIR, page 3.11-10). No mitigation measures are required.

6. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42? (4)	❑	❑	✓	❑
(2) Strong seismic ground shaking? (4)	❑	❑	✓	❑
(3) Seismic-related ground failure, including liquefaction? (4)	❑	❑	✓	❑
(4) Landslides? (4)	❑	❑	❑	✓
b. Result in substantial soil erosion or the loss of topsoil? (4)	❑	❑	✓	❑
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? (4)	❑	❑	✓	❑
d. Be located on expansive soil, creating substantial risks to life or property? (4)	❑	✓	❑	❑
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (4)	❑	❑	❑	✓

Comments:

a/c. (1) The San Francisco Bay Area is considered a region of high seismic activity. The U.S. Geological Survey (USGS) along with the California Geological Survey (CGS, formerly known as California Division of Mines and Geology) and the Southern

California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities which has evaluated the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the state of California over the next 30 years. The result of the evaluation indicated a 63 percent likelihood that such an earthquake event will occur in the Bay Area.

The Bay Area contains both active and potentially active faults, four of which extend into Contra Costa County. Only one—the Hayward Fault—extends into the San Pablo Avenue Specific Plan planning area.

The Hayward Fault extends northwestward along the western base of the East Bay Hills for a distance of 45 miles. The fault trace passes through a small portion of northern Santa Clara County, western Alameda County, and the northwestern portion of Contra Costa County, including through the northern portion of the San Pablo Avenue Specific Plan planning area (specific plan Figure 3.7-1 Regional Faults). The Hayward Fault is classified as a historically active fault because there is evidence of displacement in 1836 and 1968. The potential maximum estimated ground shaking from an earthquake on the Hayward Fault ranges from moderate (MM VI) to strong (MM VII) in the eastern part of the county, to very strong (MM VIII) and very violent (MM X) in the western portions of the county nearest the fault.

The Hayward Fault is located approximately ¾ of a mile east of the project site. Therefore, future redevelopment of the project site would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault.

(2) The strongest ground shaking anticipated to occur in San Pablo will be triggered by the Hayward Fault, due to immediate proximity. Damage in areas near the fault and those underlain by estuarine deposits near creeks and the shoreline to the west could be extensive. Earthquakes on other faults will produce lower-intensity shaking in the city (specific plan EIR, page 3.7-6). Moreover, new development in the planning area is subject to the same stringent building standards as all development in California, and those stringent standards are designed to reduce vulnerability to seismic events for which California is well known. While this assessment does not assume all risk can be mitigated, mandatory compliance with the building codes and construction standards established in the California Building Code (based on the Uniform Building Code), the requirements of the City of San Pablo Municipal Code, and policies contained in the General Plan would reduce vulnerability to seismic-related ground shaking to a level that is less than significant.

(3) Areas with high liquefaction potential within the county are those underlain by Bay Mud or artificial fill along the shoreline of the Bay, the delta lowlands, and in areas of poorly drained soils on basins, valley fill, and floodplains. Most of the lowland areas of San Pablo are mapped as having potentially moderate, high, or very high liquefaction hazards, with the highest hazard areas occurring along the San Pablo and Wildcat creeks. The potential for liquefaction on the project site is very low to very high (specific plan EIR, Figure 3.7-2 Liquefaction Susceptibility).

The California Building Standards Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. In addition, the CBC contains necessary California amendments that are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC. However, proposed new development and redevelopment will also be subject to the most current Uniform Building Code standards which require specific design parameters for construction in various seismic environments. The purpose of these parameters is to ensure construction of buildings that will resist collapse during an earthquake. These parameters do not protect buildings from all earthquake shaking hazards, but are designed to reduce hazards to a manageable level. Redevelopment of the project site would reduce vulnerability compared to existing conditions by replacing older, non-

conforming structures with ones that are fully "up to code." Therefore, future redevelopment of the project site would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving liquefaction of the soils (specific plan EIR, page 3.7-13).

(4) The project site is level and is not subject to landslides.

b. The project site is currently developed. The Soil Survey for Contra Costa County indicates the hazard of erosion of site soils varies from slight where gently sloping, to moderate in the hilly areas at the northern and eastern edges of the San Pablo Avenue Specific Plan area. However, erosion hazards from redevelopment of the project site would be highest during construction activities because excavation, backfilling, grading, and demolition can expose areas of loose soil that, if not properly stabilized, can be subject to soil loss and erosion by wind and storm water runoff. Concentrated storm water runoff, if not managed or controlled, can eventually result in significant soil loss that can threaten foundations and undermine sidewalks and roadways. Redevelopment of the project site would disturb greater than one acre and therefore, will be required to obtain a National Pollutant Discharge Elimination System (NPDES) General Construction Permit which must include a Storm Water Pollution Prevention Plan (SWPPP). These SWPPPs typically contain numerous erosion control measures that effectively reduce the potential for erosion and loss of topsoil (specific Plan EIR, page 3.7-18). Therefore, redevelopment of the site would not result in substantial soil erosion or the loss of topsoil.

d. About 70 percent of the soils that underlie the San Pablo Specific Plan area are expansive soils which possess severe building site restrictions based on their shrink-swell potential. The project site is located on soils with severe shrink-swell (expansive) potential (specific plan EIR, Figure 3.7-2 Liquefaction Susceptibility). Inadequate soil and foundation engineering on weak or unconsolidated soils (such as poorly engineered artificial fill) could cause soils and overlying structures to settle unevenly, thereby weakening structural facilities. Low-strength soils subjected to settlement could, over time, cause damage to underground utilities such as pipelines and tunnels. Structures placed directly on expansive soils could be subject to seasonal shrink-swell effects, causing structural damage and possibly damage to underground utilities (specific plan EIR, page 3.7-19). Therefore, redevelopment of the project site has the potential to create substantial risks to life or property. This would be considered a significant, adverse environmental impact. Implementation of the following mitigation measure would reduce this potential impact to a less-than-significant level.

Mitigation Measure

GEO-1 Prior to approval of future development plans, the developer shall have a licensed soil or geotechnical engineer prepare a geotechnical report to address hazards from shrink-swell soil potential, as well as address seismic safety and liquefaction concerns, if any. The recommendations of the licensed engineer for design of project improvements to reduce associated hazards shall be incorporated into the design of the project. Site preparation and cut and fill operations shall be conducted under the observation of the licensed engineer. The report shall be subject to the review and approval of the Director of Public Works.

e. A future project on the project site would connect to the existing sewer system and would not include the use of septic tanks or alternative wastewater disposal systems.

7. GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (1, 2, 3, 4, 9, 17)	❑	❑	✓	❑
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? (1, 2, 3, 4, 9, 17)	❑	❑	❑	✓

Comments:

The proposed project is within the City of San Pablo, which is located in the San Francisco Bay Air Basin. The Bay Area Air Quality Management District (air district) is charged with managing air quality within the basin. The air district implements policies and programs designed to ensure that air quality meets standards established under federal and state laws.

California Assembly Bill 32 (Global Warming Solutions Act). In September 2006, the Governor signed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 is the statewide framework for evaluating the contribution of individual development projects located within the boundaries of individual lead agencies to achieving or hindering the statewide reduction goal. The strategies the state is to implement to achieve the 2020 goal are embedded in scoping plans. The scoping plan was first approved by the CARB Board in 2008 and the first update was approved in 2014. With the adoption of AB 32, local and regional agencies began to align their CEQA processes and craft GHG thresholds of significance to be consistent with the year 2020 reduction goal.

California Senate Bill 32 (California Global Warming Solutions Act of 2006: Emissions Limit). Senate Bill (SB) 32 was adopted in September 2016. It sets a new statewide GHG emissions reduction target of at least 40 percent below 1990 levels by the end of 2030. It represents an interim GHG reduction target designed to ensure that the state continues to adopt rules and regulations that keep the state on track to meet the 2050 statewide GHG reduction goal of 80 percent below 1990 levels by 2050 set forth in Executive Order S-03-05. The emissions reduction goal set in SB 32 sets expectations for GHG emissions reductions in the state in the post-AB 32 2020 environment given that emissions reduction goals set forth in

AB 32 should will have been reached by 2020. With SB 32, the Legislature passed companion legislation AB 197, which provides additional direction for developing the Scoping Plan. CARB has completed an update to the scoping plan to reflect the 2030 target codified by SB 32.

Thresholds of Significance. State CEQA Guidelines Section 15064.4 addresses the approach for evaluating the significance of greenhouse gas (GHG) emissions effects. Lead agencies are encouraged to use a model or models to estimate GHG emissions volumes then determine whether the emissions exceed a threshold that the lead agency determines to be significant. State CEQA Guidelines Section 15064.7(c) states that when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts.

The air district is the only agency that, to date, has developed a plan for GHG emissions reductions that can be utilized by the City of San Pablo. The air district has published comprehensive guidance on evaluating, determining significance of, and mitigating GHG impacts of projects and plans. The guidance is contained in the *California Environmental Quality Act Air Quality Guidelines* (Bay Area Air Quality Management District 2017) (air quality guidelines). The 2010 version of the air quality guidelines was the first to include draft thresholds of significance for GHG emissions and screening criteria designed to assess project types and intensities whose GHG emissions would not exceed project-specific GHG standards of significance. These thresholds are included in the most recent update to the air quality guidelines (May 2017).

The air district thresholds are based on GHG reductions needed within the air basin by 2020, including from new land development projects, for the district to contribute its fair share to the statewide reductions identified in AB 32 and the 2014 scoping plan. The thresholds apply only to year 2020 reduction goals; they are not designed to enable the district to meet the reduction target of 40 percent below business-as-usual or 80 percent below business-as-usual as identified SB 32 and Executive Order B-30-15, respectively.

The air district's thresholds of significance for project-level, operational-related GHG emissions are as follows:

- Compliance with a qualified GHG Reduction Strategy; or
- Meet one of the following thresholds:
    - 1,100 metric tons or less of CO_2e per year; or
    - 4.6 metric tons CO_2e or less per service population (residents and employees) per year.

If annual emissions of operational-related GHGs exceed these levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change. The GHG efficiency threshold of 4.6 metric tons per service population is used as the applicable threshold. This threshold is appropriate for use with mixed use projects especially as it takes into consideration the GHG "efficiency" of a project rather than its mass emissions (total emissions volume). Mixed use projects tend to be more GHG efficient than other types of land use projects.

Background – San Pablo Avenue Specific Plan EIR. The air district's guidance included in its air quality guidelines was used as a basis for determining the significance of GHG impacts associated with buildout of the *San Pablo Avenue Specific Plan* (2011) (specific plan) and in the *San Pablo Avenue Specific Plan Final Impact Report* (2011) (specific plan EIR). The specific plan EIR utilized the air district's 4.6 metric tons CO_2 equivalent (MT CO_2e) per service population (residents + employees) per year project-level threshold of significance to evaluate potential GHG emission impacts of implementing the specific plan.

The specific plan EIR determined that with implementation of *San Pablo General Plan 2030* public review draft policies (November 2010) assumed to be adopted prior to adoption of the specific plan, and implementation of policies contained in the specific plan, buildout of the specific plan would result in estimated GHG emissions of 4.4 MT CO2e per service population per year.

General plan policies identified in the specific plan EIR that would serve to reduce GHG emissions include the following: C-I-1 C-I-2; C-I-6, C-I-13, C-I-14, C-I-16, C-I-21, C-I-26, C-I-27, and C-I-33, which aim to improve circulation efficiency, reduce vehicle miles traveled, and reduce transportation-related energy use; OSC-1-17 which directs the city to prepare a Greenhouse Gas Emissions Reduction Plan and OSC-I-26 and promotes energy efficiency in architectural design for new construction ; HEA-I-4 and HEA-I-11 which encourages the city to implement transportation demand management (TDM) programs and support the use of clean fuel and "climate friendly" vehicles.

Specific plan policies identified in the Specific Plan EIR that would serve to reduce GHG emissions include the following: 3-G-1 through 3-G-6 which aims to improve transit access increase use, thereby reducing vehicle miles traveled and associated emissions; 3-G-13 which encourages the use of TDM strategies to minimize traffic contributions from new and existing development and 3-G-14, which promotes public and privately-run alternative modes of transit, such as shuttles, along the San Pablo Avenue corridor; 3-I-1 through 3-I-20; which aim increase pedestrian and bikeway use thereby reducing vehicle miles traveled and associated emissions; 3-I-25 through 3-I-30 which directs the city to improve roadway circulation and connectivity thereby reducing vehicle miles travels and associated emissions;

3-I-45 through 3-I-51 which encourages the use of carpools, vanpools and TDM programs; and DG-41 through DG-49 which are policies related to sustainable building design would also help to reduce energy use.

The specific plan's estimated GHG emissions of 4.4 MT CO_2e per service population per year is below the air district's project level threshold for significance of 4.6 MT CO_2e per service population per year; therefore, GHG emissions generated with implementation of the specific plan would be less than significant.

Methodology. The proposed project is within the specific plan boundary and assumed to buildout by 2020. Therefore, the air district's 4.6 MT CO_2e per service population per year threshold of significance used in evaluating the specific plan buildout is also appropriate for determining impacts of the proposed project.

GHG emissions from construction of the proposed project, and from the annual operations of the proposed project, have been estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 software. The air district does not require quantification of GHG emissions generated during the construction process, as the air district considers that construction GHG emissions are sufficiently reduced through required implementation of construction phase air quality control measures. For a detailed discussion of the modeling methodology and CalEEMod inputs and results please refer to the *San Pablo Mixed Use Project AQ/GHG Emissions Assessment* memorandum ("GHG/AQ memo") and results included in Appendix B.

a. **Greenhouse Gas Emissions.** The project site contains existing uses that generate GHG emissions, and the proposed project would generate GHG emissions during its long-term operation. The total net project GHG emissions volume is the projected project volume less the existing GHG emissions. These emissions are forecast using CalEEMod (refer also to Appendix B) and are discussed individually below.

   Existing Operational GHG Emissions. As identified in Section A, Background, of this initial study, the project site contains the existing City Hall, which would be removed to enable future development of the site with a mixed use project. According to the CalEEMod modeling results GHG emissions produced by existing City Hall operations are an estimated 1,139.98 MT CO_2e per year.

   Operational Emissions Estimate. Projected unmitigated operational GHG emissions are reported in Table 3, Unmitigated Operational GHG Emissions of the GHG/AQ memo, included in Appendix B. The proposed project would generate an estimated 1,834.58 MT CO2e per year.

CalEEMod incorporates GHG emissions reductions that accrue from two key state legislative programs - the Pavley standards and Low Carbon Fuel Standard, as described in the Regulatory Setting section above. GHG emissions reductions will also result statewide from implementation of other state legislation and regulations enacted to implement the 2008 and 2014 Scoping Plans. These reductions are beyond the control of project applicants, but GHG emissions from operation of the project would be reduced as a result. Therefore, the projected annual emissions volume of 1,834.58 MT CO_2e per year is conservative; the total annual volume would be lower.

Annual Carbon Sequestration Offset. EMC Planning Group estimated that redevelopment of the project site could result in the removal of 14 trees and the replanting of 52 trees on the site. Tree planting would generate a carbon sequestration offset of 26.90 MT CO_2e per year over a 20-year active life cycle for new trees. For reporting purposes the calculated annual carbon sequestration offset is deducted from the annual unmitigated GHG emissions generated by the proposed project.

GHG Emissions Attributable to the Proposed Project. The total net unmitigated GHG emissions attributable to the proposed project are determined by comparing existing emissions with the projected operational emissions, and any sequestration reductions applicable to the project. The net annual GHG emissions volume attributable to the proposed project is 667.70 MT CO2e (1,834.58 MT CO2e projected emissions-26.90 MT CO2e sequestration offset-1,139.98 MT CO2e existing City Hall emissions).

A summary of the net project GHG emissions is presented in Table 4, Summary of Net Projected GHG Emissions (MT CO_2e per Year) of the GHG/AQ memo in Appendix B.

Service Population. Redevelopment of the City Hall site per the assumed mixed use project scenario could result in a population increase of about 326 (105 residential units x 3.1 persons per household). The proposed project is projected to generate 80 jobs (Proposed General Plan Amendment, Table 1.5-6 Additional Jobs by Land Use Type, 2017). Therefore, the service population for the mixed use project is 406 (326 residents + 80 employees).

Conclusion. The total projected GHG emissions volume attributable to the proposed project is 667.70 MT CO_2e per year. The service population is 406. Therefore, the proposed project would generate 1.64 MT CO_2e per service population per year (667.70 MT CO_2e/406 service population). This is substantially below the air district's threshold of significance of 4.6 MT CO_2e per service population per year. Project

emissions will actually be lower than estimated here, as the emissions volumes used do not reflect reductions that will occur with implementation of general plan and specific plan policies referenced above.

The GHG emissions under the projected mixed use development scenario would be far below the air district threshold; therefore, the proposed project would have a less-than-significant impact from generation of GHG emissions. No mitigation measures are required.

The mixed use development scenario would result in a greater number of vehicle trips and correspondingly a higher volume of GHG emissions from mobile sources (vehicles) than would the residential-only development scenario described in Table 1 of this initial study. Transportation (mobile) source emissions are typically the predominant source of GHG emissions in a land use project's emissions profile. Therefore, emissions from a residential-only project would likely be even lower than for the mixed use scenario evaluated above and emissions from such a project are highly likely to be below the GHG efficiency threshold of significance described above. No mitigation measures are required.

Note: The state goal to reduce GHG emissions to 40 percent below 1990 levels by 2030 as required by SB 32 will require that the air district and the city consider increasingly more stringent thresholds of significance than those currently recommended by the air district to meet the statewide year 2020 reduction goal embedded in AB 32. If the proposed project does not build out prior to 2020, it may be subject to more stringent thresholds of significance in years 2021 through 2030. Even if this were the case, the proposed project is substantially below the 2020 threshold of significance as presented above. Further, the analysis presented in this initial study does not consider GHG reductions that would accrue to the proposed project from implementation of the general plan or the specific plan policies noted above, nor does the analysis include GHG reductions from implementation of a number of applicable state legislative requirements/regulations (e.g. mobile source emissions reductions from implementation of the Advanced Clean Cars program). Therefore, should operations begin after 2020, even with potentially more stringent thresholds of significance, it is likely that GHG emissions from a mixed use project at the site will remain below the threshold of significance in effect in the project completion year.

Note also that mixed use development located on an urban infill parcel with immediate access to transit and to a mix of other land use types is considered to be highly GHG efficient and climate friendly. This type of development is preferred from a GHG impact standpoint relative to the vast majority of land use development that does not have these characteristics.

b. **Conflict with Applicable GHG Reduction Plan.** The proposed project would conflict with AB 32 if the GHG emissions it generates interfere with the state's ability to achieve GHG emissions reduction targets set forth in the scoping plan for the 2020 target year. As described in section "a" above, the thresholds of significance are designed to determine whether GHG emissions from a specific project located within the air district would hinder the state's ability to achieve the statewide 2020 emissions reduction goal embodied in AB 32. Project emissions would be below the thresholds. Therefore, the proposed would not conflict with AB 32.

8. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (9)	❑	❑	❑	✓
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (9)	❑	❑	❑	✓
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (9)	❑	❑	❑	✓
d.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, create a significant hazard to the public or the environment? (11)	❑	❑	❑	✓
e.	For a project located within an airport land-use plan or, where such a plan has not been adopted, within two miles of a public airport or a public-use airport, result in a safety hazard for people residing or working in the project area? (2)	❑	❑	❑	✓
f.	For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area? (2)	❑	❑	❑	✓
g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (9, 10)	❑	❑	❑	✓

h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands area adjacent to urbanized areas or where residences are intermixed with wildlands? (1, 2, 3, 4, 10)	❑	❑	❑	✓

Comments:

a-c. The proposed project will likely result in the future development of a mixed use or all residential redevelopment project. These land use types do not routinely involve the transport, use, storage or disposal of hazardous materials of types and/or at volumes that create a significant hazard to the general public or to the safety of schools located within one-quarter mile of the project site.

d. The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5.

e/f. There are no airports or airstrips in the vicinity of San Pablo (General Plan Draft EIR, page 3.2-28).

g. The proposed project consists of redevelopment of property within the City of San Pablo's urban core and does not include any changes to the existing circulation system. Therefore, the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

h. Although the project site is immediately adjacent to Wildcat Creek, the site is within the city's urban core and therefore, would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands area adjacent to urbanized areas or where residences are intermixed with wildlands.

9. HYDROLOGY AND WATER QUALITY

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Violate any water quality standards or waste discharge requirements? (1, 2, 3, 4, 9)	❑	❑	❑	✓
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., would the production rate of preexisting nearby wells drop to a level which would not support existing land uses or planned uses for which permits have been granted? (4, 9)	❑	❑	❑	✓
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in *substantial erosion or siltation on- or off-site?* (4, 9)	❑	❑	✓	❑
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface run-off in a manner which would result in *flooding on- or off-site?* (4, 9, 22)	❑	❑	✓	❑
e.	Create or contribute run-off water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted run-off? (4, 9)	❑	❑	✓	❑
f.	Otherwise substantially degrade water quality? (4, 9)	❑	❑	❑	✓
g.	Place housing within a 100-year flood hazard area as mapped on Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? (4, 9, 22)	❑	❑	❑	✓
h.	Place within a 100-year flood hazard area structures which would impede or redirect flood flows? (4, 9, 22)	❑	❑	❑	✓

i.	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam? (4)	❑	❑	❑	✓
j.	Be subject to inundation by seiche, tsunami, or mudflow? (4)	❑	❑	❑	✓

Comments:

a. Redevelopment of the project site will be implemented to existing standards. Therefore, the proposed project would not violate any water quality standards or waste discharge requirements.

b. Water supply is not supplied to the City of San Pablo from groundwater resources. The project site is already developed; its future redevelopment would not increase impervious surfaces and would not interfere with groundwater recharge. Therefore, the proposed project would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

c. The project site is currently developed and largely covered with impervious surfaces. Future redevelopment of the site would not alter the existing drainage pattern of the site or area such that substantial erosion or siltation on- or off-site would not occur.

d. Portions of the project site are located within the 100-year flood zone and the 500-year flood zone (specific plan EIR, Figure 3.5-1 and Giuliani & Kull, Inc. topographic survey). General plan implementing policy SN-I-7 requires "new development within a flood plain to comply with the City's Floodplain Management and Flood Damage Prevention Ordinance [Municipal Code Chapter 15.8] and to submit hydrologic studies, identify site development and construction methods, and implement appropriate mitigated measures to minimize surface water run-off. Developers will be required to provide an assessment of a project's potential impacts on the local drainage system as part of the development review process. If development is round to have a negative impact on storm drainage, mitigation measures, such as the creation of permanent or temporary detention or retention basins, provision of additional landscape areas and green roofs, installation of pump stations, and developers of both project site will be required to comply with the use of permeable paving in driveways, walkways and parking areas, may be required." Compliance with this general plan policy and the City's Floodplain Management and Flood Damage Prevention Ordinance would reduce potentially significant flooding impacts to a less-than-significant level.

e. The project site is already 100 percent developed with impervious surfaces, with the exception of some landscaping. Therefore, the proposed project would not create or contribute run-off water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted run-off.

f. The proposed project would not otherwise substantially degrade water quality.

g. The City of San Pablo will not allow redevelopment of the project site to include housing within the 100-year flood hazard area, unless the development complies with the City's Floodplain Management and Flood Damage Prevention Ordinance [Municipal Code Chapter 15.8].

h. The City of San Pablo will not allow redevelopment of the project site to place structures within the 100-year flood hazard area unless the development complies with the City's Floodplain Management and Flood Damage Prevention Ordinance [Municipal Code Chapter 15.8].

i. The specific plan area is subject to flooding should either or both the San Pablo Dam and the Briones Dam fail. However, both dams are inspected regularly by East Bay MUD to ensure dam safety. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of the failure of a levee or dam.

j. According to the specific plan draft EIR (page 3.5-16), the project site is not subject to inundation by seiche, tsunami, or mudflow. The specific plan planning area is located sufficiently inland to be out of what would be considered a potential hazard area for seiches, tsunamis, and sea level rise. In addition, the relatively gentle topography and location of the planning area make the potential for mudflows remote.

10. LAND USE AND PLANNING

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Physically divide an established community? (9, 10)	❑	❑	❑	✓
b.	Conflict with any applicable land-use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? (1, 3, 9)	❑	❑	❑	✓
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan? (1, 2, 3, 4)	❑	❑	❑	✓

Comments:

a. The project site is currently developed. The proposed use is consistent with the surrounding land uses and therefore, would not physically divide an established community.

b. The proposed project consists of redevelopment of a developed site within the City of San Pablo, and will be redeveloped consistent with the policies of the San Pablo General Plan, the San Pablo Avenue Specific Plan, and the San Pablo Municipal Code.

c. The project site is not located within a habitat conservation plan or natural community conservation plan.

11. MINERAL RESOURCES

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Result in loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (4)	❑	❑	❑	✓
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land-use plan? (4)	❑	❑	❑	✓

Comments:

a/b. According to the specific plan EIR page 3.7-15, there are no known mineral resources within San Pablo or the specific plan area, and therefore the proposed project would have no impact on minerals resources.

12. NOISE

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in applicable standards of other agencies? (2, 4, 5)	❑	❑	✓	❑
b.	Result in exposure of persons to or generation of excessive ground-borne vibration or ground borne noise levels? (9)	❑	❑	✓	❑
c.	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? (2, 4, 5)	❑	❑	✓	❑
d.	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? (2, 4, 5)	❑	❑	✓	❑
e.	For a project located within an airport land-use plan or, where such a plan has not been adopted, within two miles of a public airport or public-use airport, expose people residing or working in the project area to excessive noise levels? (2)	❑	❑	❑	✓
f.	For a project located within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels? (2)	❑	❑	❑	✓

Comments:

a/c. A significant noise impact would occur if traffic generated by the project would substantially increase noise levels at sensitive receptors in the project vicinity. A substantial increase would occur if: a) the noise level increase is 5 dBA DNL or greater when noise levels in absence of the project-generated traffic noise increase are less than 60 dBA DNL, or b) the noise level increase is 3 dBA DNL or greater when noise levels in absence of the project-generated traffic noise increase are 60 dBA DNL or greater.

Traffic noise level increases were evaluated for the existing roadway network in the project vicinity at six study area intersections. Increases in traffic noise levels were calculated by comparing existing plus project traffic volumes to existing traffic volumes along the roadway segments. Traffic noise level increases along the majority of study area roadway segments were calculated to be, at most, about 0.2 dBA higher than existing conditions as a result of project-generated traffic. San Pablo Avenue, between 23rd Street and Church Lane, would experience the highest traffic noise increase, which was calculated to be 0.6 dBA above existing conditions.

Noise levels along study area roadways currently exceed a DNL of 60 dBA. A 3 dBA increase would, therefore, be considered substantial. Because the projected increases in traffic noise levels are less than 3 dBA, the noise impact due to the project along these roadway segments is less than significant.

A significant *cumulative* impact would occur if two criteria are met: 1) if the cumulative traffic noise level increase at noise-sensitive receptors is 3 dBA DNL or greater where noise levels would exceed 60 dBA DNL, or if the cumulative traffic noise level increase at noise-sensitive receptors is 5 dBA DNL where noise levels are below 60 dBA DNL; and 2) if the project would make a "cumulatively considerable" contribution to the overall traffic noise increase. A "cumulatively considerable" contribution would be defined as an increase of 1 dBA DNL or more attributable solely to the proposed project.

Cumulative traffic noise level increases were calculated by comparing the cumulative traffic volumes and the cumulative plus project volumes to existing traffic volumes. A traffic noise increase of 1.5 dBA CNEL or less was calculated under both cumulative scenarios (with and without the project) along all studied roadway segments. Furthermore, the project would not make a cumulatively considerable contribution to increased noise levels anticipated under cumulative conditions, as the cumulative contribution would be 0.5 dBA or less along all affected roadways. The cumulative noise impact due to the project along the affected roadway segments is less than significant.

b. Redevelopment of the project site could require construction techniques that cause excessive ground-borne vibration or ground borne noise levels, which would be considered a significant adverse environmental impact.

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Sources of ground vibration include large trucks and rail operations, and some construction activities such as pile driving and jackhammering. Several different methods are typically used to quantify vibration amplitude. One method is the peak particle velocity. The peak particle velocity is defined as the maximum instantaneous positive or negative peak of the vibration wave.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 inches/second peak particle velocity. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The adjacent historic structures could be adversely affected if redevelopment of the project site results in significant ground borne vibration. Mitigation Measure CR-2, presented in the Cultural Resources section of this initial study, requires a qualified historian to review construction plans associated with future redevelopment of the project site and to monitor construction activities to prevent accidental adverse effects to the Bloom House, Bunk House, Teixeira Home, and Alvarado Adobe Museum from vibration, dust and debris, and accidental mechanical damage. This mitigation measure would reduce potential, significant impacts associated with vibration, to a less-than-significant level.

d. Construction activities associated with redevelopment of the project site could result in substantial temporary or periodic increases in ambient noise levels in the project vicinity above levels existing without the project; thereby exposing sensitive receptors in the immediate vicinity to construction noise. The nearest sensitive noise receptors are residents living in homes located about 100 feet to the south/southwest of the project site across Wildcat Creek. The San Pablo Municipal Code, Chapter 9.12 Noise Control, 9.12.010-Specific Prohibitions, prohibits construction activities between the hours of 10:00 pm and 7:00 am, unless there is an emergency. Adherence to this section of the municipal code would ensure construction related noise impacts are less than significant.

e/f. There are no airports or airstrips in the vicinity of San Pablo (general plan draft EIR, page 3.2-28).

13. POPULATION AND HOUSING

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)? (1, 9)	❑	❑	❑	✓
b.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? (9)	❑	❑	❑	✓
c.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? (9)	❑	❑	❑	✓

Comments:

a. Redevelopment of the City Hall site per the assumed mixed use project scenario could result in a population increase of about 326 (105 residential units x 3.1 persons per household).

Redevelopment of the City Hall site per the assumed all residential scenario could result in a population increase of about 450 (145 residential units x 3.1 persons per household).

This population would be in addition to that planned for in the general plan or specific plan, as the general plan and specific plan amendments would enable population generating use on the site that was not previously anticipated.

According to the general plan, Table ES-1, Population, Housing Units, Households, and Jobs at Buildout, 2030 buildout of the general plan would result in a San Pablo population of 34,950. An increase of 326 persons is less than a one percent increase. An increase of 450 persons is approximately a 1.3 percent increase. Therefore, the proposed project would not result in a substantial population increase.

b. The proposed project does not displace existing housing.

c. The proposed project does not displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

14. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection? (2, 4, 9)	❑	❑	❑	✓
b. Police protection? (2, 4, 9)	❑	❑	❑	✓
c. Schools? (2, 4, 9)	❑	❑	❑	✓
d. Parks? (2, 4, 9)	❑	❑	❑	✓

Comments:

a. The Contra Costa County Fire Protection District provides fire and emergency services to the City of San Pablo. Besides fire-fighting and rescue, the fire protection district also provides first responder services such as supplemental basic life support and advanced life support. Transportation is provided by American Medical Response, a private ambulance service contracted by the fire protection district.

The fire protection district currently operates one fire station (Station #70) within the specific plan area. The fire station is located at 13928 San Pablo Avenue just north of the existing City Hall site. Station #70 is actively manned 24 hours a day, seven days a week. The fire protection district has set service level goals throughout its jurisdiction based upon nationally recognized standards. The fire protection district's goal is to deploy and initial full alarm assignment (five engine companies, one truck company and a battalion chief) within a ten minute response time to 90 percent of all emergency incidents. The project site is within a minute of the fire station, so can be adequately served by this station. No new fire protection facilities are necessary. Therefore, the proposed project would not result in adverse physical impacts associated with construction of new or physically altered governmental facilities.

b. Law enforcement services within San Pablo are provided by the San Pablo Police Department, whose offices are located just north of existing City Hall at 13880 San Pablo Avenue. Therefore, future uses within the site can be adequately served by the police department and no new facilities are necessary. Therefore, the proposed project would not result in adverse physical impacts associated with construction of new or physically altered governmental facilities.

c. The project site lies within the West Contra Costa Unified School District, which is responsible for providing elementary, middle, and high school education in West Contra Costa County. The nearest public schools include Dover Elementary School (1/2 mile west), Bayview Elementary School (one mile north), Downer Elementary School (3/4 mile southwest), Helms Middle School (1/4 mile north), Middle College High School for at risk students (1/2 miles north), and Richmond High School (traditional) (1/2 mile south). Students who may be living at the project site once it is redeveloped may attend these or other nearby schools in the school district, or private schools.

Table 3, Student Generation, presents the new student generation that could be anticipated under both the mixed use project scenario and the all residential project scenario.

Table 3 Student Generation

Development Scenario	Elementary School Students	Middle School Students	High School Students	Total Students
Mixed Use (105 Residential Units)	19	8	9	36
All Residential (145 Residential Units)	26	12	13	51

SOURCE: San Pablo Avenue Specific Plan, Page 3.8-23.
NOTES: Student Generation Rates
Elementary School Student Generation Rate (0.18 per multi-family unit)
Middle School Student Generation Rate (0.08 per multi-family unit)
High School Student Generation Rate (0.09 per multi-family unit)

According to the school district long range facilities master plan (page 43), 28,483 students were enrolled district-wide in the 2015/2016 school year. The possible maximum 51 students added to this enrollment from redevelopment of the project site represent an approximate 0.2 percent increase. Developers of the project site will be required to pay school impact fees, which represent their fair share for construction of new facilities. Therefore, the impacts would be mitigated.

d. There are seven parks in the City of San Pablo, varying in size from the 0.1 acre 14th Street Park (a neighborhood park) to the 11.6 acre Davis Park (one of the city's community parks.) A total of 22.0 acres of parkland are located within the city. Besides public parks, the City has a joint-use agreement with the West Contra Costa School District and Contra Costa College, which allows residents to use their recreation facilities during non-school hours.

Of the seven parks in San Pablo, only two–Wanlass Park and Kennedy Plaza–are located within the San Pablo Avenue Specific Plan area. There are several other parks that are located within walking distance of the specific plan area. These facilities serve existing residents and workers and will continue to be an important public amenity for new populations as the specific plan, including the project site, builds out.

Redevelopment of the project site could add up to 145 new homes within the specific plan area and the City of San Pablo. Specific plan policy 6-I-2 encourages provision of park land as part of new development rather than payment of impact or in-lieu fees. If a greater amount of land is required by the San Pablo Municipal Code than can be accommodated within the project site, in-lieu fees may be used to enhance other city parks with greater recreational amenities. Parks created or improved with in-lieu fees should be located as close to the specific plan area as possible. Although it is likely the city will requires some type of residential amenities associated with residential redevelopment of the project site, the site is not large enough to accommodate a park. Therefore, the city will require the payment of in-lieu fees, which mitigates the project's contribution to physical park impacts.

15. RECREATION

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Would the project increase the use of recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? (1, 3)	❑	❑	✓	❑
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment? (1, 3)	❑	❑	❑	✓

Comments:

General Plan and Specific Plan Wildcat Creek Trail Planning

According to general plan Figure 5-2, Planned Improvements, and Table 5.2-2, Major Transportation Improvements, Project No. 12, Wildcat Creek Trail, 23rd Street to Eastern San Pablo City Limits is planned to construct segments of Wildcat Creek Trail to the Bay Trail and Ridge Trail between 23rd Street and the eastern limits of the city. The project site is located along the northern site of the creek. The trail has been constructed along the opposite (southern side) of Wildcat Creek in the vicinity of the project site. It is not clear whether the City of San Pablo intends to construct, or will require the future developer to construct, the trail on the northern side of the creek as well.

a/b. Redevelopment of the project site may include up to 145 residential units (105 under the mixed use scenario and 145 under the all residential scenario). It is likely that project site residents would utilize trail systems in San Pablo; however, the increase in residents is relatively small and therefore, their use of the trail system would not result in significant adverse physical impacts.

16. TRANSPORTATION/TRAFFIC

Would the project:

		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? (25)	❑	❑	❑	✓
b.	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? (25)	❑	❑	❑	✓
c.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? (9)	❑	❑	❑	✓
d.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (9)	❑	❑	❑	✓
e.	Result in inadequate emergency access? (9)	❑	❑	❑	✓
f.	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreased the performance or safety of such facilities? (1, 25)	❑	❑	❑	✓

Comments:

a. Existing operations at City Hall generate approximately 1,300 daily trips, with 148 in the AM peak hour and 207 in the PM peak hour. The proposed project is expected to generate approximately 3,270 daily trips, with 100 in the AM peak hour and 249 in the PM peak hour. Therefore, the proposed project is expected to generate fewer AM peak hour trips than current City Hall uses on the site and more trips during the PM

peak hour. As a result, the traffic impact analysis included in Appendix C focused on the PM peak hour traffic. A detailed presentation of project vehicle trip generation is presented in Table 3-2 of the traffic report.

The addition of project traffic would result in slight increases in average delay at the study intersections as presented in Table 4-1 of the traffic report. However, the increases would not exceed the threshold of significance for increases in intersection delays identified in the traffic impact analysis. All study intersections are expected to operate at level of service D or better conditions under existing with project PM peak hour conditions. The proposed project would not cause existing levels of service at any of the study intersections to decline relative to conditions without the proposed project as shown in Table 4-1 of the traffic report. Levels of service with the proposed project would not exceed the applicable level of service threshold of significance identified in the traffic impact analysis. No mitigation measures are required.

b. The Contra Costa Transportation Authority (CCTA) serves as the Congestion Management Authority (CMA) for Contra Costa County. CCTA adopted the County's first Congestion Management Program (CMP) in October 1991. The most recent CMP is referred to as the 2015 CMP. The 2015 CMP requires an analysis of any project expected to generate more than 100 peak hour vehicle trips. Within the CMP there are action plans for specific regions that identify multi-modal traffic service objectives for specific freeways and roadway segments. The West County Action Plan for Routes of Regional Significance-Update 2014 includes the City of San Pablo. Discretionary projects that impact Routes of Regional Significance by generating greater than 100 trips shall comply with the requirements of the adopted action plans. Freeway segments and roadways in the project study area designated as Routes of Regional Significance include I-80 and San Pablo Avenue. However, as discussed in the traffic report, the proposed project does not generate more than 100 new trips and therefore does not meet the 100 peak period threshold for addressing traffic impacts to the CCTA designated Routes of Regional Significance. Therefore, the proposed project would not conflict with the applicable congestion management program.

c. The proposed project would enable the site to be redeveloped with a mixed use project or an all-residential project in the future. This type of redevelopment would not result in a change in air traffic patterns resulting in substantial safety risks.

d. No specific redevelopment project has yet been proposed for the project site. When a specific development project is proposed in the future, the City of San Pablo will, through its design review process, ensure that the design does not increase hazards due to a design feature.

e. No specific redevelopment project has yet been proposed for the site. When a specific development is proposed in the future, the City of San Pablo will, through its design review process, ensure that the design adequately provides emergency access.

f. The project site is located in a Pedestrian Priority Zone, as specified in the City of San Pablo's General Plan. Pedestrians are encouraged and accommodated through ample pedestrian amenities and a minimum sidewalk width of eight-feet in these zones. The proposed project is expected to maintain the existing sidewalk widths along the project site frontage on San Pablo Avenue and Church Lane. All sidewalk widths are eight feet or greater along the project frontage. The adjacent San Pablo Avenue/Church Lane intersection provides high-visibility crosswalks and pedestrian signal heads on all approaches to the intersection, which facilitate pedestrian access and circulation in the vicinity of the project site.

According to the traffic report, adequate transit service exists in the immediate vicinity of the project site to serve the proposed project.

Class II bicycle lanes are currently provided along the project site frontage on San Pablo Avenue and Church Lane. The proposed project is not expected to preclude implementation of future bicycle improvements within the study area.

Therefore, the proposed project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreased the performance or safety of such facilities. No mitigation measures are required.

17. TRIBAL CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
(1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources code section 5020.1(k), or ()	❑	❑	❑	✓
(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. ()	❑	❑	❑	✓

Comments:

a. Pursuant to AB 52 and CEQA (Public Resources Code § 21080.3.1.), the City of San Pablo sent a letter offering consultation to the Ione Band of Miwok Indians, who had requested notification. The City of San Pablo has also offered consultation to various tribes pursuant to SB 18. No requests for consultation were received by the city.

18. UTILITIES AND SERVICES SYSTEMS

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? (4, 26)	❑	❑	❑	✓
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (4, 26)	❑	❑	❑	✓
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (9)	❑	❑	❑	✓
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? (3, 4, 26)	❑	❑	❑	✓
e. Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (4, 26)	❑	❑	❑	✓
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid-waste disposal needs? (27)	❑	❑	❑	✓
g. Comply with federal, state, and local statutes and regulations related to solid waste? (27)	❑	❑	❑	✓

Comments:

a/b/e. **Wastewater.** The West County Wastewater District provides wastewater treatment services to the City of San Pablo. The district has a service area of 16.9 square miles. The wastewater collection system consists of 249 miles of sewer gravity pipelines, 17 lift stations, six miles of pressure force mains, and a water pollution control plant, with a capacity of 12.5 million gallons per day, located in North Richmond (West County Wastewater District website).

The sewer lines in San Pablo are aging, and made of vitrified clay pipe and some ductile iron. Certain zones within the sanitary sewer system experience high infiltration rates (i.e. water flowing into pipe joints) due to sewer line conditions and groundwater levels (Specific Plan EIR, page 3.8-12).

The Regional Water Quality Control Board administers regulations related to wastewater discharges under the Federal Water Pollution Control Act of 1972, as amended, more commonly known as the Clean Water Act. Wastewater discharges are guided by NPDES (National Pollutant Discharge Elimination System) permits granted by the regional board. The City of San Pablo does not establish standards related to the sewer system, instead, it requires all existing developments comply with standards established by the wastewater district and new developments receive certification from wastewater district as to the adequacy of their sanitary sewer systems.

Future redevelopment of the project site will be required to connect to the existing wastewater system and therefore, would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

The district's growth projections indicate flows to the water pollution control plant will not exceed the permitted capacity in the 20-year planning period. The district projects a population of 113,000 in 2030 (West County Wastewater District Master Plan Executive Summary, page 4). The proposed project could add up to 145 new residential units, with a population increase of approximately 450 persons (145 x 3.1 persons per household). Adding the proposed project's 450 persons represents an increase of 0.4 percent-less than one percent, which is negligible. Therefore, the proposed project would not require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, nor would it result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

b/d. **Water Demand**. East Bay Municipal Utility District is the regional entity formed to supply water to Alameda County and parts of Contra Costa County. The district provides drinking water to over 1.3 million customers and implements programs to conserve water and increase water supply. The district also manages several reservoirs in the two-county region. The district's water supply system collects, transmits, treats, and distributes high-quality water from its primary water source, the Mokelumne River in the Sierra Nevada, to its customers in the San Francisco Bay Area. The water supply system consists of a network of reservoirs, aqueducts, water treatment plants, and distribution facilities. Raw water from the Pardee Reservoir is

transported approximately 91 miles from its source to the East Bay treatment plants and reservoirs. The district operates five reservoirs within East Bay: Briones, Chabot, Lafayette, Upper San Leandro, and San Pablo (specific plan EIR, page 3.8-8).

The total capacity of the district's water supply system is constrained by the inherent dependence on seasonal rainfall and collected snowpack in the Sierra Nevada watershed. On an average annual basis, approximately 90 percent of the water used by the district comes from this source. The secondary source of water is the runoff from local watersheds at the district's terminal reservoirs in the East Bay area. The San Pablo Reservoir is located in a valley north of Orinda, and south of El Sobrante and Richmond, east of the Berkeley Hills.

The district must balance supply and demand to ensure that it meets customer water needs into the future. Both supply and demand can vary seasonally, and supply can decrease significantly during droughts which can last for several years. In order to have a diversified, robust water supply portfolio, the district considers a variety of scenarios in its long-term planning. In spite of the district' aggressive conservation and water recycling programs, Mokelumne River and local watershed supply is not sufficient to meet 2040 customer demands during multi-year droughts without achieving potentially significant water use reductions. Depending on conditions, during such droughts, the district may also need to acquire supplemental supplies to meet customer demands. However, with a combination of reductions in water use and acquisition of supplemental supplies, the district can provide adequate water service in all year types (East Bay Municipal Utility District 2015).

The project site (existing City Hall) currently uses water supplied by the district. The district uses 55 gallons per capital daily water use for indoor residential use, as reported in the 2015 urban water management plan, but does not include a rate for commercial/office. Therefore, in order to estimate water use from existing City Hall, a standard rate of 800 gallons per day per acre was utilized. Table 4, Existing and Projected Water Use, presents the estimated existing water use and the anticipated water demand under both the mixed use scenario and the all residential scenario.

Table 4 Existing and Projected Water Use

Scenario	Demand Rate	Calculation	Demand (AFY)
Existing City Hall	800 gpd/acre	800 (3.75 acres) (365) / 325,851	3.36
Mixed Use	800 gpd/acre (retail) 55 gpd/capita (residential)	800 (1.00 acre) (365) / 325,851 55 (326 persons) (365) / 325,851	21.00
All Residential	55 gpd/capita (residential)	55 (450 persons) (365) / 325,851	27.72

SOURCE: EMC Planning Group 2016 and East Bay Municipal Utilities District 2015

The proposed project could use up to 27.72 acre feet per year of water, which represents a 24.35 AFY or 725 percent increase over existing water use. Although this represents a significant increase in water use over existing project site conditions, the increase is much smaller when compare to the estimated water demand for the San Pablo Avenue Specific Plan, as presented in Table 3.8-11, Estimated Water Demand, in the specific plan EIR. Table 3.8-11 indicates that buildout of the existing specific plan area, without the proposed project, would increase the specific plan area population by 2,170 persons, from 4,000 to 6,170. The proposed project could add up to 450 persons if developed under the all residential scenario. This represents a population increase of 21 percent over existing specific plan buildout projections. Therefore, the estimated water demand within the specific plan area would increase by approximately 21 percent with implementation of the proposed project.

There are several general plan and specific plan policies in place to assist with mitigating the increase in water use. They are presented below. No other mitigation measures are necessary.

General Plan Policies

The following General Plan – Parks, Schools, Community Facilities & Utilities Element (PSCU) policies protect water resources and are applicable to the proposed project. The conclusions of this initial study assume that the City has complied with, or will require compliance with these policies as conditions of approval for future redevelopment of the project site.

PSCU-I-24 Establish water saving and conservation standards for new development. Standards may include, but are not limited to, the following:

- Require new residential developments to install low-flush toilets and water saving shower heads;
- Require new commercial, retail, and industrial developments to install low-flush toilets and auto shut-off faucets in public bathrooms; and
- Require the installation of water meters on all new multifamily residential units, mobile homes, and common interest developments, whether owner-occupied or rented, as well as on existing multifamily units at the time of sale, or at the time of condominium conversion as a part of the subdivision mapping process.

The City will work with property owners to increase awareness of both the environmental and the economic advantages of sub-metering. Properly done, sub-metering of multifamily buildings can cut apartment resident demand by 15 percent.

PSCU-I-26 Adopt a Water Conservation Ordinance to conserve water and reduce water waste in San Pablo. The Water Conservation Ordinance will establish restrictions on water uses such as lawn and landscape watering and the filling of fountains and swimming pools, as well as penalties for violations. It also will establish consumption reduction measures to be adopted when State or countywide water rationing is in effect. Landscape water conservation standards will apply to new development of more than 10,000 square feet. This ordinance also will:

- Require commercial and public right-of-way projects to submit planting plans, irrigation plans, irrigation schedules and water use estimates for City approval prior to issuance of building permits; and
- Require industrial projects to submit plans for water recycling and explain how water use will meet requirements of the National Pollutant Discharge Elimination System program during the plan review process. They are also required to submit irrigation plans for proposed landscaping.

PSCU-I-27 Promote water conservation through public education, including but not limited to the following:

- Encouraging educators to include water conservation in their curriculums;
- Promoting the use of drought resistant plants and turf in yards and gardens;
- Highlighting the availability of EBMUD water conservation programs to residents, including the free Residential Water Survey Program, Residential Landscape Rebate Program, Low-flush Toilet Replacement Program, High Efficiency Residential Clothes Washer Rebate Program and other programs; and
- Providing tips to households and businesses on water conservation.

The City will use its newsletter and website to promote water conservation, and may solicit assistance from EBMUD, environmental groups, and/or concerned citizens to provide education materials or staff time to assist in public outreach efforts.

Specific Plan Policies

The following specific plan policies protect water resources and are applicable to the proposed project. The conclusions of this initial study assume that the City has complied with, or will require compliance with these policies as conditions of approval for future redevelopment of the project site.

5-I-2 Promote efficient use and conservation of water in the design of new residential and commercial development. This includes the installation of water meters and low-flow showerheads, faucets and toilets.

DG-25 Encourage sustainable landscape design with the use of hardy, native, low-water consumption, drought-tolerant planting, as well as stormwater management systems. Utilize bioswales and rain gardens in street medians or landscape buffers. Employ moisture-sensitive irrigation systems.

c. The project site is 100 percent developed with impervious surfaces, with the exceptions of some landscaped areas. Therefore, future redevelopment of the site would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

f/g. According to CalRecycle, the West Contra Costa Integrated Waste Management Authority, with a population of 205,000 within its service boundary, generated 131,700 tons of solid waste, which equates to approximately 0.643 tons per capita per year in 2015. Future redevelopment of the project site could result in up to 145 new residential units with 3.1 persons per household, for a population of 450. Therefore, the proposed project could result in an additional 289 tons per year (450 x 0.643). This would represent less than one-half of one percent of the total solid waste generated within the West Contra Costa Integrated Waste Management Authority in 2015. The following general plan and specific plan policies assist with minimizing solid waste in the City of San Pablo.

General Plan Policies

The following General Plan – Parks, Schools, Community Facilities & Utilities Element (PSCU) policies solid waste and recycling and are applicable to the proposed project. The conclusions of this initial study assume that the City has complied with, or will require compliance with these policies as conditions of approval for future redevelopment of the project site.

PSCU-I-39 Require recycling collection services in all residential and non-residential buildings.

PSCU-I-40 Promote the importance of waste reduction and recycling, as well as the safe disposal of hazardous materials, to San Pablo residents and businesses owners.

PSCU-I-41 Establish design standards for new multifamily development in the Zoning Ordinance to make provisions for recycling part of the building design.

PSCU-I-42 Reduce construction waste in San Pablo by adopting a Waste Reduction and Construction Debris Recycling Ordinance that requires developers to:

- Reuse building materials, or use materials with recycled content, to the maximum extent possible;
- Submit a Construction and Demolition Materials Management Plan' indicating the estimated volume or weight of project construction and demolition materials, by materials type, to be generated; the maximum volume or weight of materials the project will divert; the vendor or diversion facility; and the volume or weight of residual materials that would be transported for disposal in a landfill;
- Schedule time for deconstruction and recycling activities to take place during project demolition and construction phases; and
- Divert at least 50 percent of recyclable debris (such as paper based boards, ceiling tiles, wood, or aluminum) generated from projects from landfill disposal to reuse or recycling options.

Specific Plan Policies

The following specific plan policies solid waste and recycling and are applicable to the proposed project. The conclusions of this initial study assume that the City has complied with, or will require compliance with these policies as conditions of approval for future redevelopment of the project site.

5-I-7 Require all new development to participate in all recycling and hazardous waste reduction and solid waste diversion programs in effect at the time of issuance of building permits.

DG-48 Divert waste from landfills by promoting reduction, reuse, recycling, and composting of materials during construction and through building materials selection.

DG-49 All development is subject to Alameda County's StopWaste.Org waste diversion, recycling, and composting standards, as adopted by City Council.

Therefore, future redevelopment of the project site would not result in significant impacts associated with solid-waste disposal needs.

19. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Does the project have the potential to degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory? (3, 4, 10, 12, 13, 14, 16)	❑	✓	❑	❑
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects) (3, 4, 5, 9, 10, 25)	❑	❑	✓	❑
c. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly? (3, 4, 9, 10)	❑	❑	❑	✓

Comments:

a. As presented in section 2, Biological Resources, of this initial study, the proposed project does not have the potential to degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

As presented in section 3, Cultural Resources, of this initial study, the proposed project does have the potential to have an effect on important examples of the major periods of California history or prehistory, including existing adjacent historic resources, and potentially undiscovered buried archaeological resource. However, implementation of mitigation measures CR-1, CR-2, CR-3, and CR-4 would ensure potential impacts associated with future redevelopment of the project site would be

avoided or mitigated to a less-than-significant level. Therefore, the proposed project would not have a significant effect on important examples of the major periods of California history or prehistory.

b. The proposed project would facilitate reuse/redevelopment of the project site and would be considered a redevelopment and infill project of very limited size. The significant or potentially significant impacts of the proposed project can be mitigated to a less-than-significant level with implementation of the mitigation measures presented herein. Therefore, the proposed project will not have impacts that are individually limited, but cumulatively considerable.

c. Based upon the analysis in this initial study, the proposed project does not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

E. SOURCES

1. *San Pablo General Plan 2030* (2011).

2. *San Pablo General Plan 2030 EIR* (2011).

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4. *San Pablo Avenue Specific Plan EIR* (2011).

5. Noise Analysis Memorandum. Illingworth and Rodkin. June 13, 2017.

6. San Pablo Municipal Code; accessed May 2017. Chapter 9.12 Noise Control, 9.12.010-Specific Prohibitions. http://www.codepublishing.com/CA/SanPablo/

7. Google Earth 2016.

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9. Project Description, Specific Plan and General Plan Amendments, Appendix A of this initial study.

10. Site Visit, March 24, 2017.

11. Department of Toxic Substances Control website, accessed March 9, 2017, https://www.envirostor.dtsc.ca.gov/public/

12. California Department of Fish and Wildlife (CDFW). 2017. *California Natural Diversity Database*; accessed March 2017. Records of occurrence for Petaluma Point, Mare Island, Benicia, San Quentin, Richmond, Briones Valley, San Francisco North, Oakland West, and Oakland East USGS quadrangles. https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data

13. California Native Plant Society (CNPS). 2017. *Inventory of Rare and Endangered Plants*; accessed March 2017. Species list for Petaluma Point, Mare Island, Benicia, San Quentin, Richmond, Briones Valley, San Francisco North, Oakland West, and Oakland East USGS quadrangles. http://www.cnps.org/inventory

14. U.S. Fish and Wildlife Service (USFWS). 2017. *Endangered Species Database*; accessed March 2017. Species list for Contra Costa County. http://www.fws.gov/endangered/

15. City of San Pablo. 2017. *San Pablo Municipal Code*; accessed March 2017. Title 12 – Streets, Sidewalks and Public Places, Chapter 12.16: Trees, Shrubs and Plants in Public Places. http://www.codepublishing.com/CA/SanPablo/

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18. Bay Area Air Quality Management District. *Clean the Air Spare the Climate Final 2017 Clean Air Plan.* April 19, 2017.

19. EMC Planning Group. San Pablo City Hall Mixed Use Project AQ/ GHG Emissions Assessment. May 8, 2017.

20. AC Transit Maps and Schedules. http://www.actransit.org accessed May 16, 2017.

21. Association of Bay Area Governments and Metropolitan Transportation Commission. *Plan Bay Area - Strategy for A Sustainable Region.* July 18, 2013.

22. Giuliani & Kull, Inc. Topographic Survey 13831 San Pablo Avenue. January 10, 2017.

23. Bay Area Air Quality Management District. Community Air Risk Evaluation website. http://www.baaqmd.gov/plans-and-climate/community-air-risk-evaluation-care-program, accessed May 17, 2017.

24 Bay Area Air Quality Management District. Contra Costa County Stationary Source Screening Analysis Tool. August 29, 2012.

25. *San Pablo City Hall Site Reuse Project Administrative Draft Transportation Impact Assessment*. Fehr & Peers June 2017.

26. East Bay Municipal Utility District. *East Bay Municipal Utility District Urban Water Management Plan 2015*. July 2016.

27. http://www.calrecycle.ca.gov/lgcentral/Reports/jurisdiction/diversiondisposal.aspx

All documents indicated in bold are available for review at the **City of San Pablo, 13831 San Pablo Avenue, San Pablo, CA 94806, 510.215.3030** during normal business hours.

All documents listed above are available for review at EMC Planning Group Inc., 301 Lighthouse Avenue, Suite C, Monterey, California 93940, (831) 649-1799 during normal business hours.

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APPENDIX A

SPECIFIC PLAN AND GENERAL PLAN AMENDMENTS

San Pablo General Plan Amendment and San Pablo Avenue Specific Plan Amendment (2017)

SAN PABLO GENERAL PLAN AMENDMENT

Chapter 1, Introduction

General Plan Page 1-17

Modify Table 1.5-1, Population and Housing Assumptions, as follows:

Table 1.5-1 Population and Housing Assumptions

Land Use Category	*Gross Acreage of Opportunity sites*	*Residential Mix*	*Housing Density (du/ac)*
Low Density Residential	4.8	100%	8.0
Medium Density Residential	3.2	100%	18.0
High Density Residential	17.3	100%	30.0
Mixed Use Center North	2.7	70%	60.0
Mixed Use Center South	16.1	20%	32.0
Mixed Use Center City Hall Site	4.46	70%	60.0
Commercial Mixed Use	28.6	50%	20.0
Residential Mixed Use	25.6	65%	14.0

1. Average household size assumed to be 3.1 persons per household. Secondary Unit average size assumed to be 1.5 persons per household.

Source: Dyett & Bhatia, 2010.

General Plan Page 1-18

Modify Table 1.5-2, Job Assumptions, to incorporate the following:

Table 1.5-2 Job Assumptions

Land Use Category	*Gross Acreage of Opportunity sites*	*Non-Residential Mix*	*Building Intensity (FAR)*[1]	*Employment Intensity*[2] *(Sq ft per job)*	*Potential Buildup Space*[3] *(Sq ft)*
Mixed Use Center North	2.7	30%	0.50	400	47,000
Mixed Use Center South	16.1	80%	0.70	400	491,900
Mixed Use Center City Hall Site	4.46	30%	0.50	400	32,000
Commercial Mixed Use	28.6	50%	0.50	400	390,200
Residential Mixed Use	9.9	35%	0.20	345	74,800
Neighborhood Commercial	13.3	100%	0.32	430	13,600
Regional Commercial	25.6	100%	0.32	510	334,000
Entertainment District Overlay	10.1	100%	0.60	600	264,000
Industrial Mixed Use	23.7	100%	0.40	500	333,900

[1]A building FAR or Floor Area Ratio, is used to calculate the total floor area of buildings on a lot based on the size of the lot.

[2] This factor is used to calculate the number of jobs a certain type of land use will accommodate. For example, the Industrial Mixed Use land use is expected to create 1 job per 500 square feet of floor area.

[3] Calculated on a "net" basis, after deducting land uses for rights-of-way and easements.

Source: Dyett & Bhatia, 2010.

General Plan Page 1-20

Modify Table 1.5-5, Additional Housing Units by Land Use Type, to incorporate the following:

Table 1.5-5 Additional Housing Units by Land Use Type

Housing Type	*Existing Units*	*Additional Units*	*Subtotal Units*	*Percent of Total Units*
Low Density Residential	4,520	50	4,570	~~40~~ 39
Medium Density Residential	1,870	---	1,870	16
High Density Residential	4,130	210	4,340	~~38~~ 37
Mixed Use Center North	---	120	120	1
Mixed Use Center South	---	130	130	1
Mixed Use Center City Hall Site	---	105	105	1
Commercial Mixed Use	---	360	360	3
Residential Mixed Use	---	120	120	1
Total[2]	**10,520**	**~~990~~ 1,095**	**~~11,510~~ 11,615**	**100**

[1]The additional units shown here is the net increase. It includes units created by proposed development and redevelopment projects, after subtracting existing underutilized units that need to be removed for redevelopment to take place.

[2]Totals may not add up due to rounding.

Source: Dyett & Bhatia, 2010.

General Plan Page 1-21

Modify Table 1.5-6, Additional Jobs by Land Use Type, as follows:

Table 1.5-6 Additional Jobs by Land Use Type

Land Use Category	*Jobs*	*Percent of Total*
Mixed Use Center North	100	4
Mixed Use Center South	950	~~36~~ 35
Mixed Use Center City Hall Site	80	3
Commercial Mixed Use	670	~~26~~ 25
Residential Mixed Use	140	5
Neighborhood Commercial	100	4
Regional Commercial	130	5
Entertainment District Overlay	440	~~17~~ 16
Industrial Mixed Use	80	3
Total	**~~2,610~~ 2,690**	**100**

Totals may not add up due to rounding.

Source: Dyett & Bhatia, 2010.

Chapter 3, Land Use and Physical Design

General Plan Page 3-10

Under the Mixed Use discussion, change the second sentence as follows: "There are ~~two~~ three mixed use center subcategories with different land use intentions, housing densities and typical FARs."

Add a new mixed use designation description – Mixed Use Center City Hall Site below the Mixed Use Center South description.

"Mixed Use Center City Hall Site. The Mixed Use Center City Hall Site designation is limited to the 4.46-acre City Hall site at 13813 San Pablo Avenue. Mixed-use development may be all residential or mixed use that may include commercial, office (including medical offices), residential, institutional, and hotel. Typical heights are expected to be two to five stories, with a maximum height of 60 feet. The maximum FAR is 2.5 and the maximum residential density allowed is 60 units per gross acre (included within the FAR limit)."

General Plan Page 3-11

Update Figure 3-2, General Plan Land Use Diagram to include the Mixed Use Center City Hall Site.

General Plan Page 3-15

Modify Table 3.2-1, San Pablo General Plan Land Use Density and Intensity Standards, as follows:

Table 3.2-1 San Pablo General Plan Land Use Density and Intensity Standards

	Floor Area Ratio (FAR; Includes all uses- non-residential and residential)		*Density (units per gross acre)*
Land Use Classification	*Minimum*	*Maximum*	*Range or Maximum*
Low Density Residential	—	—	Up to 12
Medium Density Residential	—	—	12.1 - 24
High Density Residential	—	—	24.1 - 60
Mixed Use Center North	0.30[2]	2.5	up to 80[1]
Mixed Use Center South	0.50[2]	2.5	up to 60[1]
Mixed Use Center City Hall Site	0.50[2]	2.5	up to 60[1]
Commercial Mixed Use	0.40[2]	1.5	up to 50[1,4]
Residential Mixed Use	_[5]	1.5	up to 50[1]
Neighborhood Commercial	0.30	1.0	—
Regional Commercial	0.30	0.75	—
Entertainment District Overlay	—	0.5 above base district maximum[3]	—
Industrial Mixed Use	0.30	0.60	—
Public Institutional	—	—	—
Parks/Recreation	—	—	—

1. Included within the FAR limit.
2. The frontage of a site along San Pablo Avenue is required to be devoted to active uses. Residential is not permitted at the ground level along San Pablo Avenue.
3. Additional FAR available for entertainment uses only.
4. Residential uses only allowed when commercial FAR is 0.5 or greater.
5. While no minimum FAR is specified, development along San Pablo Avenue must have active uses on the ground floor.

Source: City of San Pablo, 2010; Dyett & Bhatia, 2010.

General Plan Page 3-16

Modify Table 3.2-2, General Plan Buildout (Acres), as follows:

Table 3.2-2 General Plan Buildout (Acres)

Land Use	*Total At Plan Buildout*	*Percent of Total at Buildout*
Residential		
Low Density Residential	526.51	41%
Medium Density Residential	170.5	13%
High Density Residential	66.4	5%
Mixed Use		
Mixed Use Center North	2.7	0%
Mixed Use Center South	16.1	1%
Mixed Use Center City Hall Site	4.46	0%
Commercial Mixed Use	57.3	4%
Residential Mixed Use	13.9	1%
Commercial		
Neighborhood Commercial	41.1	3%
Regional Commercial	58.3	5%
Entertainment District	22.1	2%
Industrial		
Industrial Mixed Use	26.4	2%
Public		
Public Institutional	~~231.6~~ 227.14	18%
Parks, Recreation and Open Space	57.3	4%
Total[2]	**1,290.2**	**100%**

1. Does not include 85 acres of the Rollingwood residential area. This area is not within the existing city limits and has not been annexed into San Pablo.

2. Totals may not add up due to rounding.

Source: City of San Pablo, 2010; Dyett & Bhatia, 2010.

Chapter 10, Implementation and Monitoring

General Plan Page 10-8

Modify Table 10.1-1, Consistency Between the General Plan and Zoning, as follows:

Modify the Mixed Use Centers (north and south) row as follows:

"Mixed Use Centers (north and south and city hall site) MUCN, MUCS, MUCCHS"

SAN PABLO AVENUE SPECIFIC PLAN AMENDMENT

Chapter 2, Land Use

Specific Plan Page 2-7

Modify Table 2-1, Specific Plan Buildout, as follows:

Table 2-1 Specific Plan Buildout

AREA (IN ACRES)

	OPPORTUNITY SITES	OTHER SITES	TOTAL	PERCENT OF TOTAL
Residential				
Low Density Residential	--	4.2	4.2	2%
Medium Density Residential	0.6	23.3	23.9	11%
High Density Residential	5.7	31.4	37.1	17%
Mixed Use				
Mixed Use Center North	2.7	--	2.7	1%
Mixed Use Center South	16.1	--	16.1	8%
Mixed Use Center City Hall Site	--	4.46	4.46	2%
Commercial Mixed Use	12.6	5.1	17.7	8%
Residential Mixed Use	9.6	3.2	12.8	6%
Commercial				
Neighborhood Commercial	0.3	17.3	17.6	8%
Regional Commercial	24.2	2.5	26.7	12%
Entertainment District	10.1	12.0	22.1	10%
Public				
Public Institutional	--	~~24.1~~ 19.64	~~24.1~~ 19.64	~~11%~~ 9%
Parks/Recreation	4.2	5.6	9.8	5%
TOTAL	**86.1**	**128.7**	**214.8**	**100%**

1 Percents are rounded to the nearest whole number

Source: Dyett & Bhatia, 2010.

Specific Plan Page 2-8

Modify Figure 2-4, Land Use Diagram, to change the 4.46-acre City Hall site to Mixed Use Center City Hall Site and add the new designation to the legend.

Specific Plan Page 2-9

Modify the pie chart to reflect Table 2-1 changes.

Specific Plan Page 2-11

Add a new mixed use designation – Mixed Use Center City Hall Site.

Mixed Use Center City Hall Site. The Mixed Use Center City Hall Site designation is limited to the 4.46-acre City Hall site at 13813 San Pablo Avenue. Mixed-use development may be all residential or mixed use that may include commercial, office (including medical offices), residential, institutional, and hotel. Typical heights are expected to be two to five stories, with a maximum height of 60 feet. The maximum FAR is 2.5 and the maximum residential density allowed is 60 units per gross acre (included within the FAR limit).

Modify the text at the bottom of the page, to the left of the pictures, as follows:

Mixed Use Center

Large-scale mixed-use development. Mix of uses may include commercial, office, residential, institutional and hotel. Retail or other active uses are ~~required~~ encouraged on the ground floor to promote an active pedestrian environment within the Mixed Use Center North designation and Mixed Use Center South designation. Residential is allowed on the ground floor within the Mixed Use Center City Hall Site designation.

Specific Plan Page 2-16 and 2-17

Modify Table 2-2 to include Mixed Use Center City Hall Site to the Mixed Use Center (North and South) column. (Note: Table too large to incorporate here).

Change footnote limitations 1 as follows:

1. Residential use types not permitted on the ground floor along San Pablo Avenue except in the Mixed Use Center South District and the Mixed Use Center City Hall Site where residential use types are permitted on the ground floor with a use permit.

Specific Plan Page 2-18

Modify Table 2-3, San Pablo Avenue Specific Plan Land Use Density and Intensity Standards, as follows:

Table 2-3 SAN PABLO AVENUE SPECIFIC PLAN LAND USE DENSITY AND INTENSITY STANDARDS

Land Use Classification	Floor Area Ratio (FAR; Includes all uses-non-residential and residential)		Density (units per gross acre)
	Minimum	Maximum	Range or Maximum
Low Density Residential	—	—	up to 12
Medium Density Residential	—	—	12.1 - 24
High Density Residential	—	—	24.1 - 60
Mixed Use Center North	0.30[2]	2.5	—
Mixed Use Center South	~~–[2]~~ 0.50[2]	2.5	up to 60[1]
Mixed Use Center City Hall Site	0.50	2.5	up to 60[1]
Commercial Mixed Use	0.40[2]	1.5	up to 50[1,4]
Residential Mixed Use	–[5]	1.5	up to 50[1]
Neighborhood Commercial	0.30	1.0	—
Regional Commercial	0.30	0.75	—
Entertainment District Overlay	—	0.6 above base district maximum[3]	—
Public Institutional	—	—	—
Parks/Recreation	—	—	—

[1] Included within the FAR limit.

[2] The frontage of a site along San Pablo Avenue is required to be devoted to active uses. Residential is not permitted at the ground level along San Pablo Avenue.

[3] Additional FAR available for entertainment uses only.

[4] Residential uses only allowed when commercial FAR is 0.5 or greater.

[5] While no minimum FAR is specified, development along San Pablo Avenue must have active uses on the ground floor.

Source: Dyett & Bhatia, 2010.

Specific Plan Page 2-20

Modify Table 2-5, Residential Assumptions for Population and Housing, as follows:

TABLE 2-5 RESIDENTIAL ASSUMPTIONS FOR POPULATION AND HOUSING

LAND USE CATEGORY	RESIDENTIAL MIX	HOUSING DENSITY (DU/AC)
Low Density Residential	100%	8.0
Medium Density Residential	100%	18.0
High Density Residential	100%	30.0
Mixed Use Center North	70%	60.0
Mixed Use Center South	20%	32.0
Mixed Use Center City Hall Site	70%	60.0
Commercial Mixed Use	50%	20.0
Residential Mixed Use	65%	14.0

Note: Average household size assumed to be 3.1 persons per household. Secondary Unit average size assumed to be 1.5 persons per household.

Source: Dyett & Bhatia, 2010.

Specific Plan Page 2-20

Modify Table 2-6, Non-Residential Assumptions for Employment, as follows:

TABLE 2-6 NON-RESIDENTIAL ASSUMPTIONS FOR EMPLOYMENT

LAND USE CATEGORY	NON-RESIDENTIAL MIX	BUILDING DENSITY (FAR)	EMPLOYMENT INTENSITY[1] (SQ FT PER JOB)
Mixed Use Center North	30%	0.50	400
Mixed Use Center South	80%	0.70	400
Mixed Use Center City Hall Site	30%	0.50	400
Commercial Mixed Use	50%	0.50	400
Residential Mixed Use	35%	0.20	345
Neighborhood Commercial	100%	0.32	430
Regional Commercial	100%	0.32	510
Entertainment District Overlay	100%	0.60	600
~~Industrial Mixed Use~~	~~100%~~	~~0.40~~	~~500~~

[1] This factor is used to calculate the number of jobs a certain type of land use will accommodate. For example, the ~~Industrial~~ Mixed Use Center North land use is expected to create 1 job per ~~500~~ 400 square feet of floor area.

Source: Dyett & Bhatia, 2010.

Specific Plan Page 2-21

Modify Table 2-7, San Pablo Avenue Potential Buildout Summary, as follows:

Table 2-7 SAN PABLO AVENUE POTENTIAL BUILDOUT SUMMARY

		FOCUS AREAS					NEW DEVELOPMENT		
	EXISTING	CIRCLE-S	MISSION PLAZA	WEST SAN PABLO AVENUE	TOWNE CENTER	SOUTH SAN PABLO AVENUE	OTHER AREAS	TOTAL NEW	TOTAL
Residential (Units)	1,360	129	94	62	31	95	~~328~~ 433	~~739~~ 844	~~2,100~~ 2,204
Estimated Population	4,000	379	276	182	91	279	~~965~~ 1,291	~~2,172~~ 2,498	~~6,173~~ 6,499
Non-Residential (sq ft)	1,600,000	459,000	12,000	19,800	181,500	106,000	~~36,700~~ 68,700	~~815,000~~ 847,000	~~2,415,000~~ 2,447,000
Estimated Jobs	4,090	938	41	97	312	238	~~364~~ 444	~~1,990~~ 2,070	~~6,080~~ 6,160

Source: Dyett & Bhatia, 2010.

Specific Plan Page 2-23

Add the following new policies to address the new land use designation Mixed Use Center City Hall Site.

2-I-17 Encourage redevelopment of the Mixed Use Center City Hall Site, excluding the portion occupied by the historic Alvarado Adobe site, as a mixed use project with commercial uses and high density residential. Although a mixed use project is encouraged, a high-density residential only project is allowed with Design Review.

2-I-18 Incorporate the opportunity for outdoor gathering places along Wildcat Creek such as outdoor eateries for retail uses and outdoor passive amenities for residential uses in the Mixed Use Center City Hall Site.

Chapter 4, Urban Design and Building Development Standards

Specific Plan Page 4-40

Modify the column heading Mixed Use Center (North and South) in Table 4-1, Development Standards by Land Use, to read, "Mixed Use Center (North and South and City Hall Site)."

Modify "Setbacks Adjacent to Creeks – Minimum 30' setback from top of bank", to read,

"Setbacks Adjacent to Creeks – Minimum 30' setback from top of bank. No buildings are allowed within the 30' setback. Improvements allowed within the 30' foot setback but outside of the drip line (canopy) of the existing riparian trees include, but may not be limited to, bike and pedestrian paths, low intensity outdoor uses (parks, outdoor eating areas) and other improvements e.g. parking."

Chapter 7, Affordable Housing Strategy

Specific Plan Page 7-5

Modify the 1st sentence under Housing Sites in the San Pablo Avenue Planning Area, as follows:

"The Specific Plan assumes a buildout of 65.1 acres of residential land and ~~49.3~~ 53.76 acres of land designated as mixed use."

Specific Plan Page 7-5

Modify Table 7-2, Specific Plan Net Housing Unit Buildout Summary by Housing Type Area (2030), as follows:

Table 7-2 SPECIFIC PLAN NET HOUSING UNIT BUILDOUT SUMMARY BY HOUSING TYPE AREA (2030)

	CIRCLE-S	MISSION PLAZA	SOUTH SAN PABLO AVENUE	TOWNE CENTER	WEST SAN PABLO AVENUE	OTHER AREAS	TOTAL PLANNING AREA
Low Density				-1	-19	-2	**-22**
Medium Density			-1	-10	-6	137	**120**
High Density					-15	83	**68**
MU Center North		94				35	**129**
MU Center South	129						**129**
MU Center City Hall Site						105	**105**
Commercial MU			96	42		57	**195**
Residential MU					102	18	**120**
TOTAL DWELLING UNITS	**129**	**94**	**95**	**31**	**62**	~~328~~ 433	~~739~~ 844

Specific Plan Page 7-6

Modify Table 7-3, Specific Plan Housing Potential by Income Level, as follows:

TABLE 7-3 SPECIFIC PLAN HOUSING POTENTIAL BY INCOME LEVEL

General Plan Land Use	MUCN	MUCS	MUCCH	HDR	CMU	MDR	RMU	LDR	Total
Average Density (du/acre)	60	32	60	30	20	18	14	8	-
Very Low-Income (30-50% AMI)	19	19	--	10	-	-	-	-	48
Low-Income (50-80% AMI)									
Moderate-Income (80-120% AMI)	110	110	105	58	195	120	120	-22	~~691~~ 796
Above Moderate Income (Above 120% AMI)									
Total	**129**	**129**	**105**	**68**	**195**	**120**	**120**	**-22**	**~~739~~ 844**

Notes: MUCN - Mixed Used Center North, HDR - High Density Residential, CMU23 - Commercial Mixed Use, MUCS- Mixed Used Center South, LDR -Low Density Residential, MUCCH – Mixed Used Center City Hall Site.

Specific Plan Page 7-7

Revise Figure 7-1 to include the 4.46-acre project site as a Mixed Use Center.

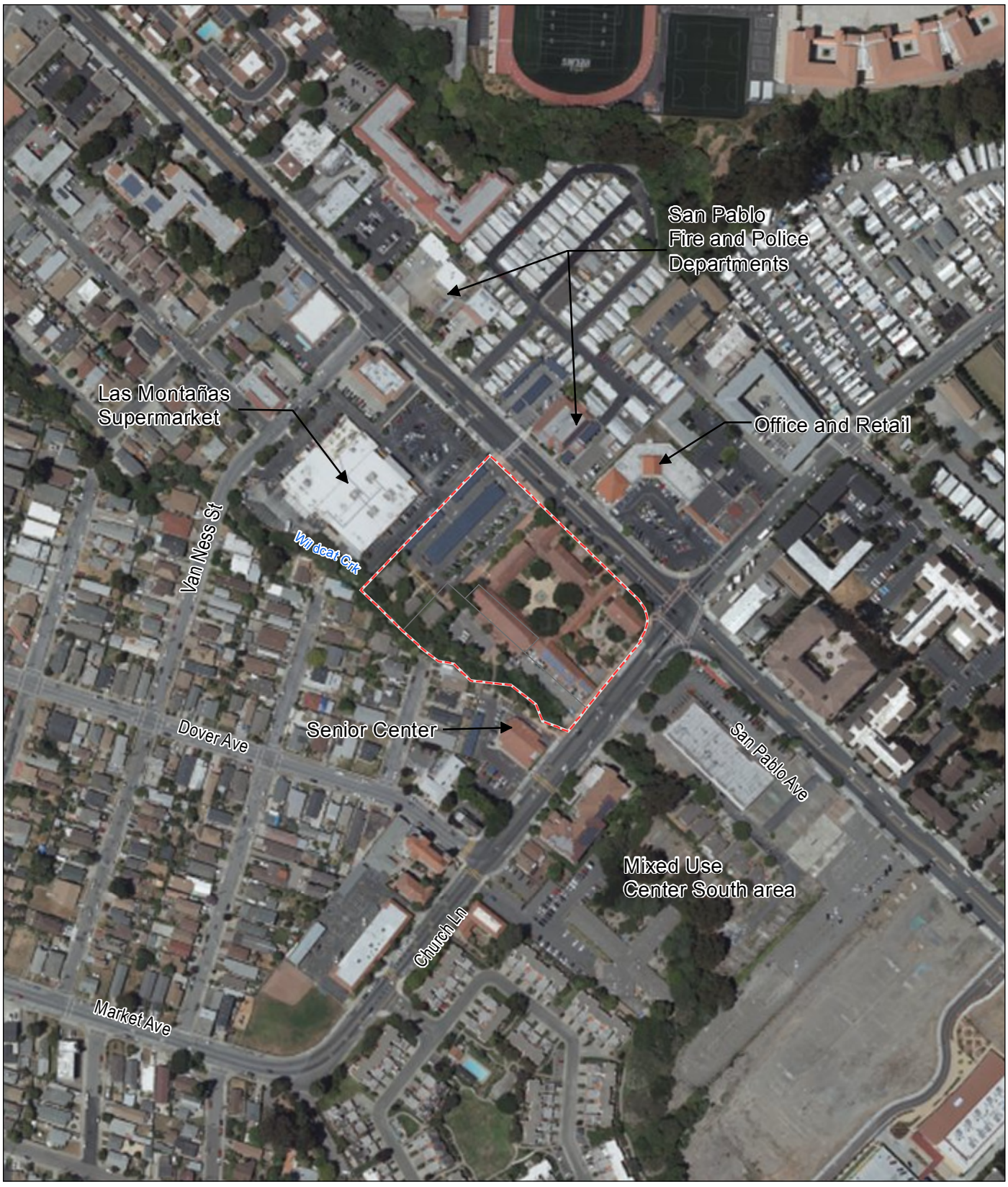
Specific Plan Page 7-10

Modify Table 7-5, Land Uses Permitting Residential Development by Acre, as follows:

TABLE 7-5 LAND USES PERMITTING RESIDENTIAL DEVELOPMENT BY ACRE

	Proposed Land Use – Opportunity Sites	Proposed Land Use – Non-Opportunity Sites	Total at Plan Buildout	Percent of Total Residential Buildout
Residential				
Low Density Residential	-	4.2	4.2	4%
Medium Density Residential	0.6	23.3	23.9	~~21%~~ 20%
High Density Residential	5.7	31.4	37.1	~~32%~~ 31%
Mixed Use				
Mixed Use Center North	2.7	-	2.7	2%
Mixed Use Center South	16.1	-	16.1	14%
Mixed Use Center City Hall Site	-	4.46	4.46	3%
Commercial Mixed Use	12.6	5.1	17.7	15%
Residential Mixed Use	9.6	3.2	12.8	11%
Total	**47.3**	**~~67.2~~ 71.66**	**~~114.5~~ 118.96**	**100%**

Note: Percents are rounded to the nearest whole number.



0 300 feet

Project Site

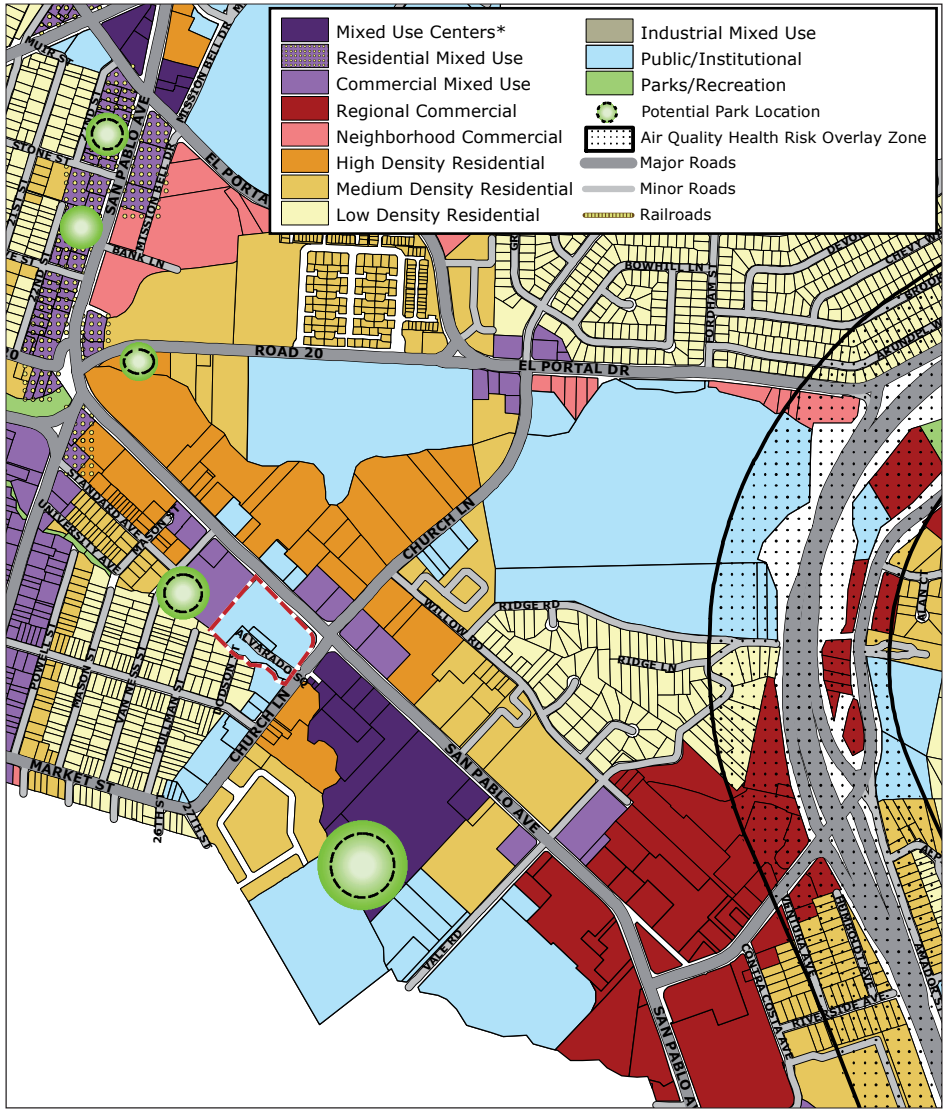
Source: Esri 2017

Figure 1

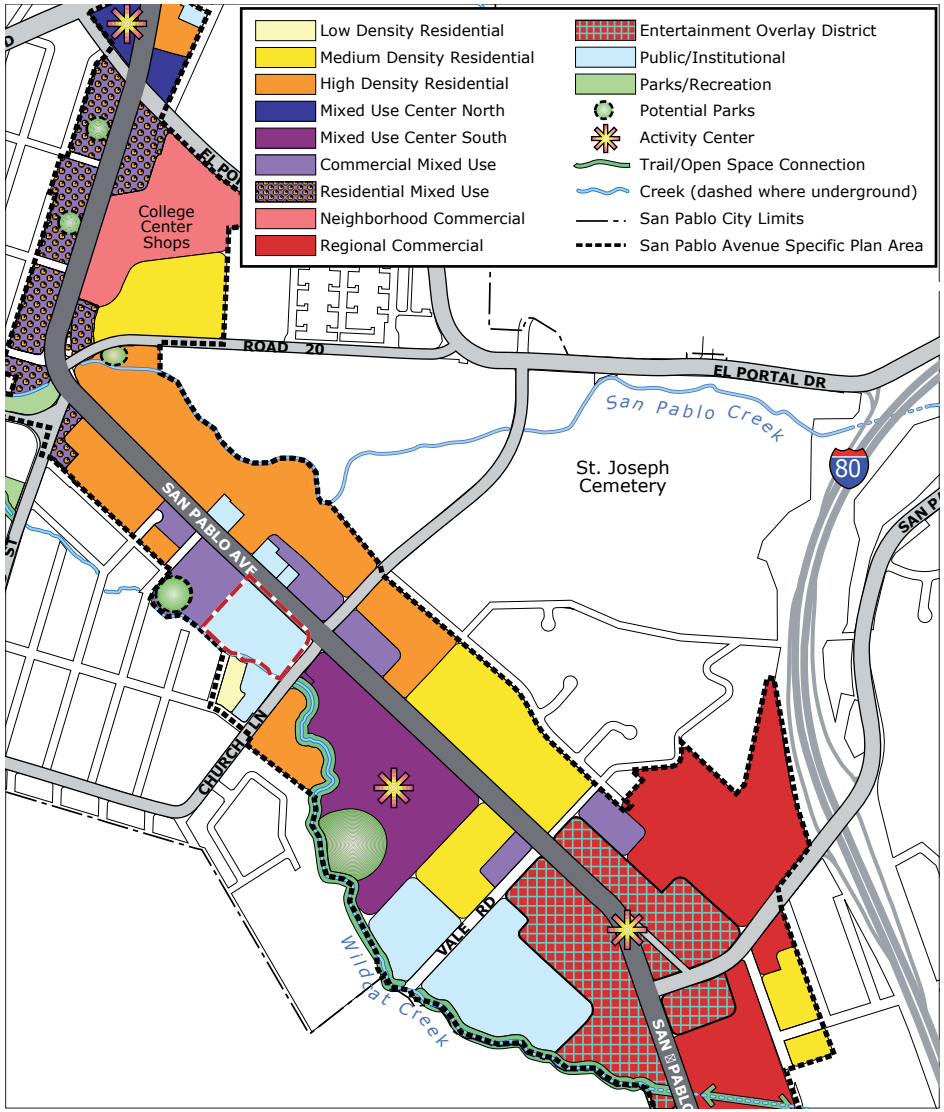
Project Site and Surrounding Use

San Pablo Avenue Specific Plan Amendment

General Plan Land Use Designations



San Pablo Avenue Specific Plan Land Use Designations



Source: City of San Pablo 2011, City of San Pablo 2011

Figure 2

General Plan and Specific Plan Land Use Designations

San Pablo Avenue Specific Plan Amendment

APPENDIX B

GHG/AQ MEMO

EMC PLANNING GROUP INC.
A LAND USE PLANNING & DESIGN FIRM

301 Lighthouse Avenue Suite C Monterey California 93940
Tel 831·649·1799 Fax 831·649·8399 www.emcplanning.com

To: **Teri Wissler Adam, Project Manager**

From: **Sally Rideout, Principal Planner**

Cc: **File ENV-706**

Date: **July 6, 2017**

Re: **San Pablo City Hall Mixed Use Project AQ/ GHG Emissions Assessment**

Project Description

The proposed project is a zoning change to allow mixed uses on a 4.46-acre site currently occupied by the San Pablo City Hall located in downtown San Pablo. The proposed zone change would allow construction of mixed use development on 3.75 acres of the site, which is currently occupied by the San Pablo City Hall. The existing City Hall would be removed to enable the new development. This assessment assumes that future mixed use development that would be permitted with approval of the zone change consists of a five-story building containing 32,000 square feet of retail commercial and office uses on the first floor, 105 residential apartments on the second through fourth floors, and surface parking. For purposes of this assessment, the potential future development scenario is considered to be the proposed project. The site is located within the San Francisco Bay Area Air Basin, which is within the jurisdiction of the Bay Area Air Quality Management District (air district). An initial study pursuant to the California Environmental Quality Act (CEQA) is being prepared by the City of San Pablo to identify any potentially significant environmental impacts that would result from development of the mixed use project.

MEMORANDUM

Scope of Assessment

This assessment provides an estimate of criteria air pollutants and greenhouse gas (GHG) emissions generated by existing and proposed land uses using the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 software. The CalEEMod platform is recommended by the California Air Resources Board (CARB) and accepted by the air district. Criteria air pollutants are reported in pounds per day and GHG emissions are reported in metric tons of carbon dioxide equivalents (MT CO_2e) per year. The air district approach to CEQA analyses for construction air quality and GHG emissions impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. Therefore, an estimate of construction emissions is not reported. Model results for existing City Hall and potential rezone project operational emissions are attached to this memorandum.

Emissions Model

The CalEEMod software utilizes U.S. Environmental Protection Agency (USEPA) AP-42 emission factors, CARB vehicle emission models studies and studies commissioned by other California agencies such as the California Energy Commission (CEC) and CalRecycle in its emissions calculations. Version 2016.3.1 utilizes the 2014 Title 24 building energy efficiency standards.

The model calculates indirect emissions from processes "downstream" of the project under evaluation such as GHG emissions from energy use, solid waste disposal, wastewater and water use. CalEEMod also estimates changes in carbon sequestration potential due to changes in vegetation, including agriculture, and can provide an estimate of a carbon "offset" that can be achieved from the life-cycle of newly planted trees.

Methodology

This assessment provides estimates of operational criteria air pollutant and GHG emissions for existing and proposed conditions described in more detail below. For modeling purposes, data inputs to the model take into account the type and size of proposed uses utilizing CalEEMod default factors for land use and vehicle trip generation based on the size metrics provided by the applicant in consultation with EMC Planning Group.

Assumptions

Unless otherwise noted, data inputs for the project model are based on the following primary assumptions:

1. The assumed operational date for development associated with the project is 2019.

2. Existing area and mobile-source operational emissions generated by the existing City Hall are assumed to be generally similar to missions that would be generated by the CalEEMod default land use subtype "Government Office Building". This default land use category would include an individual building or group of buildings containing either the entire function or simply one agency of a city, county, state, federal, or other governmental unit.

3. Operational emissions generated by the residential apartment uses are assumed to be generally similar to emissions that would be generated by the CalEEMod default residential land use subtype "Mid-rise Apartments", which are mid-rise apartments in rental buildings that have between 3 and 10 levels.

4. Operational emissions generated by anticipated commercial retail and office uses, the CalEEMod default retail land use subtype "Strip Mall", which is considered specialty retail by the Institute of Traffic Engineers (ITE) 9th edition. These specialty retail uses consist of a variety of retail shop types specializing in goods and services such as quality apparel, hard goods and services such as real estate offices, florists and small restaurants.

Operational Emissions Data Inputs

For operational emissions, the model calculates indirect criteria pollutant and GHG emissions from processes "downstream" of the project under evaluation such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model's default CO_2 intensity factor of 641 pounds/megawatt hour was reduced to 307. The 641 factor is based on Pacific Gas & Electric data from 2008, and it's projected 2019 rate of 307 was used to reflect the projected CO_2 intensity factor in the project completion year. The intensity factor has been falling, in significant part due to the increasing percentage of Pacific Gas & Electric's energy portfolio obtained from renewable energy. Emissions intensity data is from Pacific Gas & Electric's Greenhouse Gas Factors: Guidance for PG&E Customers, dated November 2015. For both existing and proposed conditions the estimates of area-source emissions from energy use, water and wastewater demand, and solid waste generation are

derived using the model default land use categories based on the project characteristics summarized in Table 1, Project Characteristics.

Table 1 Project Characteristics

Emission Sources	CalEEMod Default Land Use[1]	Existing Conditions[2,3]	Proposed Project[2,3]
City Hall	Government Office Building	50,000	0
Retail Commercial/Office	Strip Mall	0	32,000
Residential Apartments	Mid-rise Apartments	0	64,000
Parking Lot	Parking Lot	112 spaces	278
Paved access	Other Asphalt Surfaces	64,300	37,000
Sidewalks, Courtyards, etc.	Other Non-asphalt Surfaces	15,000	25,000

SOURCE: EMC Planning Group 2017

NOTES:

1. CalEEMod default land use subtype. Descriptions of the model default land use categories and subtypes are found in the CalEEMod Version 2016.3.1 User Guide available online at: http://www.aqmd.gov/caleemod/guide.htm.
2. Expressed in units of square feet, unless otherwise noted.
3. Numbers may vary due to rounding.

Results

GHG emissions model results are reported on an annual basis in metric tons of carbon dioxide equivalent (MT CO_2e). Criteria air pollutant emissions are expressed in pounds per day. All reported emissions results are unmitigated. Detailed model results for projected criteria pollutant emissions and projected annual GHG emissions under existing and projected future development conditions are included as attachments to this assessment.

Criteria Pollutant Emissions

The model reports winter and summer emissions based on climatic conditions within the air basin. The baseline for criteria air pollutants are accounted for in regional air quality plans, therefore the criteria pollutant emissions reported here include only the proposed uses. The modeling results for unmitigated operational criteria air pollutant emissions are presented in Table 2, Summary of Unmitigated Operational Criteria Air Pollutant Emissions.

Table 2 Summary of Unmitigated Operational Criteria Air Pollutant Emissions (Pounds per Day).

Emission Sources	Reactive Organic Gases (ROG)	Nitrogen Oxides (NOx)	Particulate Matter (PM_{10})	Carbon Monoxide (CO)
Summer	49.87	16.15	16.37	101.68
Winter	49.36	16.91	16.37	103.27

SOURCE: CalEEMod Results, EMC Planning Group 2017
NOTE: Amounts may vary due to rounding

Greenhouse Gas Emissions

Existing Operational GHG Emissions

Existing operational GHG emissions model results are reported on an annual basis in metric tons of carbon dioxide equivalent (MT CO_2e). According to the CalEEMod modeling results unmitigated operational GHG emissions from City Hall operations under existing conditions are an estimated 1,139.98 MT CO_2e per year.

Carbon Sequestration

EMC Planning Group reviewed aerial photographs and estimated that 14 trees would need to be removed from the site to accommodate the future development scenario and approximately 52 new trees (street trees, parking lot trees, etc.) could be planted on the site as part of the future development scenario. An estimate of the carbon sequestration potential resulting from planting 48 new trees (net) is included in this assessment. According to the model results, the estimated tree planting would result in a carbon sequestration potential of 26.90 MT CO_2e per year over a 20-year active life cycle for the new trees. For reporting purposes the calculated annual carbon sequestration potential is deducted "out-of-model" from the projected annual unmitigated GHG emissions generated by the proposed project.

Unmitigated Operational Emissions

The model results for unmitigated operational GHG emissions generated by the proposed project are summarized in Table 3, Unmitigated Operational GHG Emissions.

Table 3 Unmitigated Operational GHG Emissions (MT per Year)

Emissions	Bio CO_2	NBio CO_2	CH_4	N_20	CO_2e
Area Source	4.79	3.25	<0.01	<0.01	8.35
Energy	0.00	199.45	0.01	<0.01	200.92
Mobile Source	0.00	1,560.02	0.07	0.00	1,561.75
Waste	16.63	0.00	0.98	0.00	41.19
Water	2.92	9.75	0.30	<0.01	22.37
Total	24.33	1,772.47	1.38	0.01	1,834.58

SOURCE: CalEEMod Results, EMC Planning Group 2017.
NOTE: Amounts may vary due to rounding.

Net GHG Emissions Attributable to the Proposed Project

The total net unmitigated GHG emissions attributable to the proposed project are determined by comparing existing emissions with projected unmitigated operational emissions, and any carbon offsets applicable to the project. A summary of the projected unmitigated GHG emissions attributable to the proposed project is presented in Table 4, Net Unmitigated GHG Emissions (MT CO_2e per Year). The net annual GHG emissions attributable to the proposed project is 667.7 MT CO_2e per year.

Table 4 Net Unmitigated GHG Emissions (MT CO_2e per Year)[1]

Projected Annual Operations	Annual Carbon Offset	Projected Emissions[2]	Existing City Hall Emissions	Projected Net Emissions
1,834.58	<26.90>[3]	1807.68	<1,139.98>[3]	667.7

SOURCE: CalEEMod Results, EMC Planning Group 2017
NOTES:
1. Results may vary due to rounding.
2. Project emissions result is the difference between annual operational emissions less the annual carbon sequestration offset.
3. <brackets> indicate deductions.

Sources

1. BREEZE Software. A Division of Trinity Consultants. California Emissions Estimator (CalEEMod) Version 2016.3.1. September 2016. Available online at: http://www.aqmd.gov/caleemod.htm

2. BREEZE Software. A Division of Trinity Consultants. *CalEEMod User's Guide (Version 2016.3.1)*. September 2016. Available online at: http://www.aqmd.gov/caleemod/guide.htm

3. BAAQMD. *California Environmental Quality Act Air Quality Guidelines*. May 2012. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en.

4. Pacific Gas & Electric. Greenhouse Gas Factors: Guidance for PG&E Customers. November 2015. Accessed online April 6, 2017 at: https://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

APPENDIX C

TRAFFIC IMPACT ANALYSIS

City of San Pablo

Administrative Draft

San Pablo City Hall Site Reuse Project

Transportation Impact Assessment

Prepared by
FEHR & PEERS

2201 Broadway
Suite 400
Oakland, CA 94612
June 2017

CITY OF SAN PABLO
City of New Directions

San Pablo City Hall Site Reuse Project

Transportation Impact Assessment

Administrative Draft

Prepared for:
City of San Pablo

June 2017

OK16-0131.00

FEHR PEERS

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1.0 INTRODUCTION

This report presents the analysis and findings of the Transportation Impact Assessment (TIA) prepared for the San Pablo City Hall Site Reuse Project (Project) located in the City of San Pablo in Contra Costa County. This chapter discusses the TIA purpose, analysis methods, criteria used to identify impacts, and report organization.

1.1 STUDY PURPOSE

The study's purpose is to conduct a site-specific transportation impact analysis to evaluate the proposed Project's impact on the surrounding transportation network. The Project site is located at the existing City of San Pablo City Hall site bounded by San Pablo Avenue to the east, Church Lane to the south, Wildcat Creek to the west, and a supermarket to the north. **Figure 1-1** shows the Project site vicinity.

The City of San Pablo City Hall currently occupies the Project site, which is planned to be relocated to the southwest corner of the Gateway Avenue/Chattleton Lane intersection, approximately 1,000 feet southeast of the existing City Hall (Project) site. With the relocation of City Hall and associated uses, the existing City Hall site could be redeveloped with a variety of uses. The current proposed Project consists of amendments to the *San Pablo Avenue Specific Plan*, and corresponding amendments to the *San Pablo General Plan 2030*. For purposes of this analysis, two reuse scenarios consistent with the Specific Plan and General Plan amendments were developed to identify the potential transportation effects associated with reuse of the site. As presented in **Table 1-1**, two possible land use scenarios are presented: a multi-use commercial/residential project, and an all-residential project.

TABLE 1-1
PROJECT LAND USE ALTERNATIVES

Land Use Scenario	Land Use	Residential Units	Square Footage
Multi-Use	Commercial/Retail Residential – High Density	105	32,000
All Residential	Residential – High Density	145	--

Sources: EMC Planning Group, April 2017.

LEGEND

Project Site | City Hall Relocation | # Study Intersection | City Boundary

Figure 1-1

Project Study Area

For purposes of the TIA, the Project evaluation presented in this report focuses on the 105-residential unit multi-use scenario. The multi-use scenario is expected to generate higher daily and peak hour vehicle trips compared to the all-residential scenario (as presented in Chapter 3); therefore, the transportation impact analysis conservatively focuses on the land use scenario with the greater vehicle trip generation potential. The following specific land use types are assumed for the multi-use scenario: 105 multi-family dwelling units and 32,000 square-feet of general retail.

1.2 STUDY LOCATIONS AND ANALYSIS SCENARIOS

Study intersections for analysis of the proposed Project were selected in coordination with City of San Pablo staff. The following intersections, as shown on Figure 1-1, were selected:

1. San Pablo Avenue/23rd Avenue/Road 20
2. Church Lane/El Portal Drive
3. San Pablo Avenue/Church Lane
4. San Pablo Avenue/Gateway Avenue
5. San Pablo Avenue/Vale Road
6. San Pablo Avenue/San Pablo Dam Road

For this study, the following scenarios were evaluated during the typical evening (4:00 to 6:00 PM) peak period when redevelopment of the site is expected to result in net-new vehicle trip generation:

- ***Existing –*** Existing (2017) conditions based on February and May 2017 traffic counts and the existing roadway system configuration.
- ***Existing with Project –*** Existing (2017) volumes plus traffic volumes from the reuse of the existing City Hall site , considering traffic shifts of existing City Hall activity to the new City Hall building.
- ***Cumulative without Project –*** Forecasts for the Cumulative scenario are based on traffic growth derived from vehicle volumes in the 2040 Contra Costa Transportation Authority (CCTA) Travel Forecasting Model. This scenario also assumes existing City Hall activities would be relocated to the new City Hall building.
- ***Cumulative with Project –*** Cumulative (2040) without Project forecast conditions plus Project-related traffic.

1.3 ANALYSIS METHODS

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow from a vehicle driver's perspective based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (free flow operating conditions) to LOS F (congested operating conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result and operations are designated LOS F. In the City of San Pablo, the maximum level of acceptable delay is associated with LOS mid-D (up to 45 seconds of delay) with the exception of intersections along San Pablo Avenue, where the Congestion Management Program (CMP) for Contra Costa County has adopted LOS E (around 80 seconds of delay) as the maximum. The CMP also provides an exception for the San Pablo Avenue/San Pablo Dam Road intersection, where the City of San Pablo has adopted LOS F as the maximum LOS threshold.

1.3.1 SIGNALIZED INTERSECTIONS

Traffic conditions at signalized intersections were evaluated using Transportation Research Board (TRB) as documented in the 2010 *Highway Capacity Manual* (2010 HCM) for vehicles. The HCM 2010 method calculates control delay at an intersection based on inputs such as traffic volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors. Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. These delay estimates are considered meaningful indicators of driver discomfort and frustration, fuel consumption, and lost travel time. The relationship between LOS and control delay is summarized in **Table 1-2**. All study intersections are controlled by a traffic signal.

TABLE 1-2
SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Signalized Criteria (Delay in Seconds)[1]
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Notes:
1. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay.

Source: *Highway Capacity Manual,* Chapter 19 (Signalized Intersections), Transportation Research Board, 2010.

1.4 REGULATORY SETTING

1.4.1 CITY OF SAN PABLO

The Project could have a significant impact on the transportation network if it causes an increase in traffic that is substantial in relation to the traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or delay and congestion at intersections), or change the condition of an existing street (e.g., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load and capacity of the street system. Significance criteria are used to determine if a project impact is considered significant, and therefore, requires mitigation. The City of San

Pablo strives to maintain LOS mid-D operations at signalized intersections, with the exception of intersections along San Pablo Avenue where LOS E is the threshold. The City of San Pablo established an exemption for the intersection at San Pablo Avenue/San Pablo Dam Road, where the adopted threshold is LOS F.

1.4.2 REGIONAL AGENCIES

The Contra Costa Transportation Authority (CCTA) serves as the Congestion Management Authority (CMA) for Contra Costa County. CCTA adopted the County's first Congestion Management Program (CMP) in October 1991. The most recent CMP is referred to as the 2015 CMP. The 2015 CMP requires an analysis of any project expected to generate more than 100 peak hour vehicle trips. Within the CMP there are Action Plans for specific regions that identify multi-modal traffic service objectives (MTSOs) for specific freeways and roadway segments. The *West County Action Plan for Routes of Regional Significance-Update 2014* includes the City of San Pablo. Discretionary projects that impact Routes of Regional Significance by generating greater than 100 trips shall comply with the requirements of the adopted Action Plans. Freeway segments and roadways in the project study area designated as Routes of Regional Significance include I-80 and San Pablo Avenue. However, as discussed in Chapter 3, the Project does not generate more than 100 new trips and therefore does not meet the 100 peak period threshold for addressing traffic impacts to the CCTA designated Routes of Regional Significance.

1.4.3 SIGNIFICANCE CRITERIA

Significance criteria are used to determine if a project impact is considered significant and therefore requires mitigation. For the study intersections on San Pablo Avenue, classified as a route of regional significance by CCTA, the level of service (LOS) standards identified in the *2014 Draft West County Action Plan for Routes of Regional Significance* will be used. CCTA has established the following Multi-Modal Transportation Service Objectives (MTSO) for San Pablo Avenue in the *2014 Draft West County Action Plan for Routes of Regional Significance*:

- Maintain LOS "E" or better at all signalized intersections along San Pablo Avenue

Based on the MTSOs, impacts would be considered significant if the project causes any of the following to occur at intersections along San Pablo Avenue:

- Signalized intersection operations to change from LOS E or better to LOS F; and
- Deterioration in already unacceptable operations (i.e., LOS F) at signalized intersections by an increase in volume-to-capacity ratios of more than 0.01 or a change in average delay of more than five seconds.

The significance criteria above apply to all intersections along San Pablo Avenue within the City of San Pablo, except for the San Pablo Avenue/San Pablo Dam Road intersection; as stated in Policy C-I-8 of *San Pablo General Plan 2030*, LOS F is acceptable at this intersection. According to Policy GME-I-17, the LOS standard for the El Portal Drive/Church Lane intersection is to maintain an LOS mid-D (45 seconds of delay) or better. CCTA utilizes the *Highway Capacity Manual* (2010) methodology for analyzing LOS. Additional significance criteria to be considered as part of the study include:

1. Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?
2. Would the Project substantially increase traffic hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
3. Would the Project result in inadequate emergency access?
4. Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The City of San Pablo has not yet adopted significance criteria to evaluate Vehicles Miles Traveled (VMT). The following thresholds of significance, as determined from guidance provided by the Office of Planning and Research (OPR), will be used to determine the level of significance of potential project impacts on VMT:

- For residential projects, a project would cause substantial additional VMT if it exceeds existing regional household VMT per capita minus 15 percent.
- For office projects, a project would cause substantial additional VMT if it exceeds the existing regional VMT per employee minus 15 percent.
- For retail projects, a project would cause substantial additional VMT if it results in a net increase in total VMT.

VMT impacts would be considered less-than-significant for a project if any of the identified screening criteria are met:

1. **Small Projects:** The project generates fewer than 100 vehicle trips per day
2. **Low-VMT Areas:** The project meets map-based screening criteria by being located in an area that exhibits below threshold VMT, or 15 percent or more below the regional average

3. **Transit Priority Areas:** The project is located in a Transit Priority Area or within one half-mile of a major transit corridor or stop[1] and satisfies the following:

    a. Has a Floor Area Ratio (FAR) greater than 0.75.

    b. Includes less parking for use by residents, customers, or employees of the project than other typical nearby uses, or less than required by the City (if parking maximums pertain to the site) or allowed without a conditional use permit (if minimums and/or maximums pertain to the site).

    c. Is consistent with the applicable Sustainable Communities' Strategy (as determined by the lead agency, with input from the Metropolitan Transportation Commission).

If the criteria above are not met, OPR guidance specifies that a project generating 15 percent less than citywide VMT would be considered less-than-significant.

1.5 REPORT ORGANIZATION

This report is divided into six chapters as described below:

- **Chapter 1 – Introduction** discusses the purpose and organization of the report.
- **Chapter 2 – Existing Conditions** describes the transportation system in the Project vicinity, including the surrounding roadway network evening peak period intersection turning movement volumes, existing bicycle, pedestrian, and transit facilities, and intersection operations.
- **Chapter 3 – Project Characteristics** presents relevant Project information, such as the Project components and Project trip generation, distribution, and assignment.
- **Chapter 4 – Existing with Project Conditions** addresses the existing conditions plus the Project, and discusses Project vehicular impacts.
- **Chapter 5 – Cumulative Conditions** addresses the future (year 2040) conditions, both without and with the Project, and discusses Project vehicular impacts.
- **Chapter 6 – Other Thresholds** addresses the multimodal and VMT impact evaluation for the proposed Project.

[1] Major transit stop is defined in CEQA Section 21064.3 as a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

2.0 EXISTING CONDITIONS

This chapter describes transportation facilities in the Project study area, including the surrounding roadway network, transit, pedestrian, and bicycle facilities in the Project site vicinity. Existing intersection operations are also described.

2.1 ROADWAY SYSTEM

The Project site is located on San Pablo Avenue between Church Lane and Van Ness Street. Interstate-80, located approximately 0.8 miles to the east of the Project site, provides regional access to the site. Other roadways in the area include San Pablo Avenue, San Pablo Dam Road, 23rd Street, Church Lane, Vale Road, and El Portal Drive. Major roadways in the project vicinity are described below.

Interstate 80 (I-80) is an eight-lane north-south freeway in the project vicinity connecting San Francisco to the East Bay and beyond. One travel lane in each direction is designated as a high-occupancy vehicle lane, restricting use to vehicles with three or more passengers (including the driver). Interchanges at San Pablo Dam Road and El Portal Drive provide access between the Project site and the I-80 freeway. I-80 is designated as a Route of Regional Significance by CCTA.

San Pablo Avenue is a north-south major arterial extending through the City of San Pablo, connecting to Richmond in the north and south. Within the study area, San Pablo Avenue is a four-lane arterial that operates as a major transit and commercial corridor through the City of San Pablo. On-street parking is prohibited near the project site. Sidewalks are continuous along San Pablo Avenue and the posted speed limit is 35 miles per hour (mph). A five-foot Class II bike lane is provided along both directions of San Pablo Avenue near the Project site. San Pablo Avenue is designated as a Route of Regional Significance by CCTA.

San Pablo Dam Road is a four-lane east-west arterial extending from San Pablo Avenue in the west to the City of Orinda in the southeast. The posted speed limit in the vicinity of the Project site is 30 mph. Sidewalks are provided on this roadway west of I-80. On-street parking is not permitted. San Pablo Dam Road is designated as a Route of Regional Significance by CCTA.

23rd Street is a two- to four-lane north-south arterial connecting Interstate-580 (I-580) in the south with San Pablo Avenue in the north. The posted speed limit in the vicinity of the Project site is 25 mph. Sidewalks are provided on this roadway. On-street parking is permitted on select segments of the corridor. A five-foot Class II bike lane is provided along both directions of 23rd Street in the vicinity of the Project site. 23rd Street is designated as a Route of Regional Significance by CCTA.

Church Lane is a two-lane, north-south arterial between El Portal Drive in the north and Market Avenue in the south. The posted speed limit in the vicinity of the project site is 25 to 30 mph. Sidewalks are provided on this roadway and Class II bicycle lanes are provided on a portion of this roadway in the study area. On-street parking is permitted.

El Portal Drive is a two- to four-lane, east-west arterial connecting I-80 in the east to Rumrill Boulevard in the west. Sidewalks are provided along the roadway. On-street parking is prohibited along El Portal Drive. The posted speed limit in the vicinity of the project site is 25 to 30 mph.

Other roadways in the project area include Road 20, Vale Road, and Van Ness Street. These roadways are two-lane roadways. Vale Road and Road 20 are designated as "avenues" and Van Ness Street is designated as a local street by the *City of San Pablo General Plan*. A map of the project study area and study intersections is shown on Figure 1-1.

2.2 EXISTING PEDESTRIAN AND BICYCLE FACILITIES

2.2.1 EXISTING PEDESTRIAN FACILITIES

The proposed Project is located in a Pedestrian Priority Zone, as specified in the City of San Pablo's General Plan. Pedestrians are encouraged and accommodated through ample pedestrian amenities and a minimum sidewalk width of eight-feet in these zones. Pedestrian facilities within the project vicinity include sidewalks, crosswalks, and pedestrian signals. San Pablo Avenue, Church Lane, 23rd Avenue, Vale Road, San Pablo Dam, and El Portal all provide sidewalks on both sides of the street. Existing sidewalk widths near the Project are generally eight feet or wider. The Church Lane/San Pablo Avenue intersection – the intersection adjacent to the Project site – provides crosswalks across all four legs of the intersection and pedestrian signal heads.

2.2.2 EXISTING BICYCLE FACILITIES

Typical bicycle facilities include the following:

- Multi-Use Trails (Class I) – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically 8 to 10 feet wide excluding shoulders and are generally paved.
- Bike lanes (Class II) – These facilities provide a dedicated area for bicyclists within the paved street width using striping and appropriate signage. These facilities are typically 5 to 6 feet wide.
- Bike routes (Class III) – These facilities are along streets that do not provide sufficient width for dedicated bicycle lanes. Signage and pavement markings inform drivers to expect bicyclists.

- Separated Bikeway (Class IV) – These facilities provide a dedicated area for bicyclists within the paved street width through physical separation from vehicle traffic. Separation may include, but is not limited to, grade separation, flexible posts, physical barriers, or on-street parking.

Existing bicycle facilities within the Project vicinity include the following:

- Class II bike lanes along both directions of Church Lane between El Portal Drive and Willow Road, and between San Pablo Avenue and Villa Drive.
- Class II bike lanes along both directions of San Pablo Avenue between Evans Avenue and 23rd Street.
- Class II bike lanes along both directions of 23rd Street between Costa Avenue and Road 20.

2.3 EXISTING TRANSIT SERVICE

The Alameda-Contra Costa Transit District (AC Transit) is the primary bus service provider in 13 cities and adjacent unincorporated areas in western Alameda and Contra Costa counties, with Transbay service to destinations in San Francisco, San Mateo, and Santa Clara Counties. Five AC Transit bus routes (routes 72, 72R, 76, L, and LC), plus two school routes (route 669 and 679) operate within one block of the Project site. **Table 2-1** outlines bus stops and their amenities. Table 2-2 provides service information for the AC Transit routes that operate within the study area.

TABLE 2-1
EXISTING BUS STOPS NEAR THE PROJECT SITE

Direction	Nearest Bus Stop Location	Route	Bus Stop Facilities
WB	Church Lane, north of San Pablo Avenue	76, 669, 679, L, LC	Bus stop sign
EB	Church Lane, north of San Pablo Avenue	76, 669, 679, L, LC	Bus stop sign
WB	Church Lane, south of San Pablo Avenue	76	Bus stop sign and bench
NB	San Pablo Avenue, north of Van Ness Street	72, 72R	Shelter, trash receptacle, and bus stop sign
SB	San Pablo Avenue, south of Van Ness Street	72, 72R	Bus stop sign, bench, and trash receptacle

Source: AC Transit website, June 2017.

TABLE 2-2
AC TRANSIT ROUTE DESCRIPTIONS

Route	Route Description	Hours of Operation[1]	Headways (minutes)[1]
72	Provides bus service along San Pablo Avenue, connecting Contra Costa College to the north with the El Cerrito Del Norte BART station, Oakland Amtrak, and other regional destinations to the south.	5:00 AM - 12:00 AM (5:00 AM – 2:00 AM)	15 (30)
72R	Provides rapid bus service to Contra Costa College and Downtown Oakland via San Pablo Avenue.	6:00 AM - 7: 30 PM (7:00 AM – 8:00 PM)	12 (15)
76	Provides service between El Cerrito del Norte BART and Hilltop Mall via Cutting Blvd., Market St., Church Ln., Rd 20, Birmingham Dr. and Shane Rd.	5:40 AM – 9:30 PM (6:30 AM – 8:30 PM)	15 – 30 (30)
L[2]	Provides Transbay bus service to San Francisco from San Pablo during peak hours.	3:00 PM - 9:00 PM	15 – 30 (N/A)
LC[2]	Provides Transbay bus service to San Pablo from San Francisco during peak hours.	3:00 PM - 9:00 PM	15 – 30 (N/A)
669[2]	Provides bell-time bus service between Contra Costa College and Juan Crespi Middle School via El Portal Drive, Church Lane, and San Pablo Dam Road.	7:30 AM – 8:30 AM, 1:45 PM – 4:30 PM	60 – 75 (N/A)
679[2]	Provides bell-time bus service between Contra Costa College to Juan Crespi Middle School via El Portal Dr., Church Lane, San Pablo Dam Rd., May Rd., Valley View Rd., Appian Way and Fitzgerald Dr.	7:45 AM – 8:20 AM, 1:45 PM – 3:20 PM	60 (N/A)

Notes:
1. Weekend hours of operation and headways are provided in parenthesis.
2. Routes L, LC, 669, and 679 are commuter and school routes and do not operate on the weekends.

Source: AC Transit website, March 2017.

Local adult fares, as of June 2017, are $2.10, and youth and senior fares are $1.05. Local adult day passes are $5.00, and youth and senior day passes are $2.50. Transbay adult fares are $4.20. Monthly passes are also available for both local and Transbay services. Fares are paid on the bus, and passengers must have exact change. AC Transit also honors Clipper, a Bay Area transit fare card.

2.4 EXISTING VEHICLE COUNTS

Weekday evening (4:00 to 6:00 PM) peak period intersection turning movement counts, including separate counts of pedestrians and bicyclists, were collected at all existing study intersections. All intersection data,

except for the San Pablo Avenue/Gateway Avenue and San Pablo Avenue/San Pablo Dam Road intersections, were collected on Wednesday, May 10, 2017, a typical weekday with local schools in session, moderate weather, and no observed traffic incidents. The San Pablo Avenue/Gateway Avenue counts were collected on Tuesday, February 14, 2017 and the San Pablo Avenue/San Pablo Dam Road counts were collected on Tuesday, May 16, 2017. Evening peak hour intersection turning movement volumes are summarized on **Figure 2-1** along with existing lane configurations and traffic control. The traffic count data collection worksheets are provided in **Appendix A**.

2.5 EXISTING INTERSECTION OPERATIONS

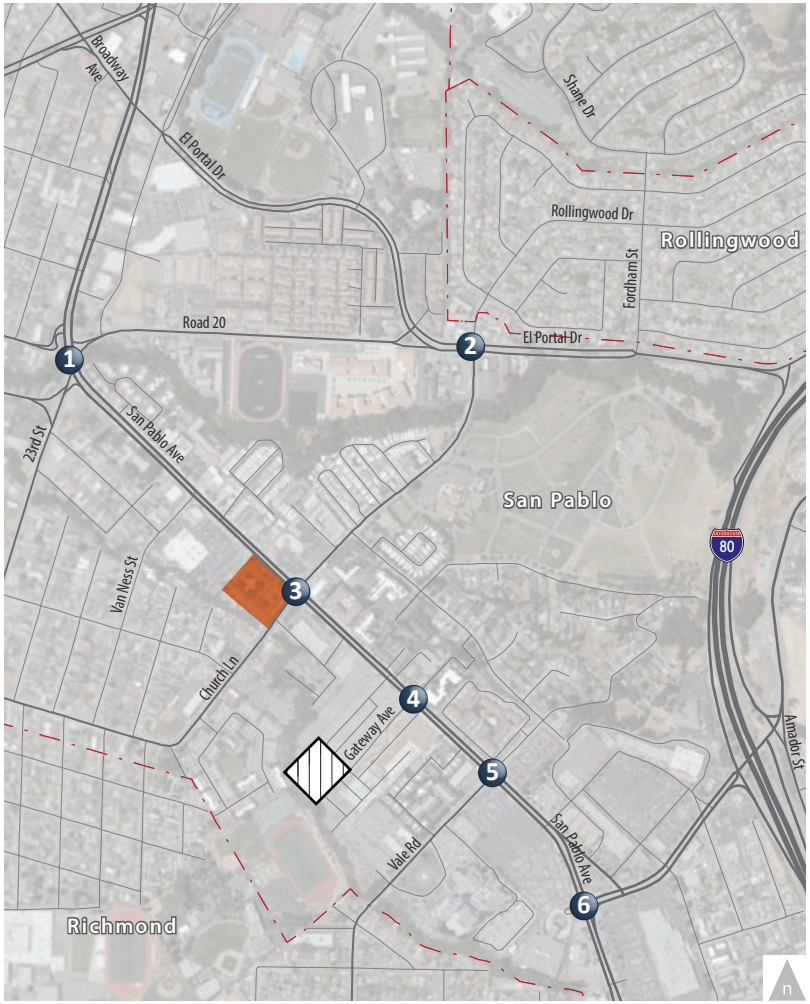
Existing intersection traffic operations were evaluated for the weekday PM peak hour using the methods described in Chapter 1. As discussed in Chapter 3, the proposed Project is expected to generate fewer AM peak hour trips than current site uses and more trips during the PM peak hour. As a result, the analysis summarized in this report focuses on the PM peak hour.

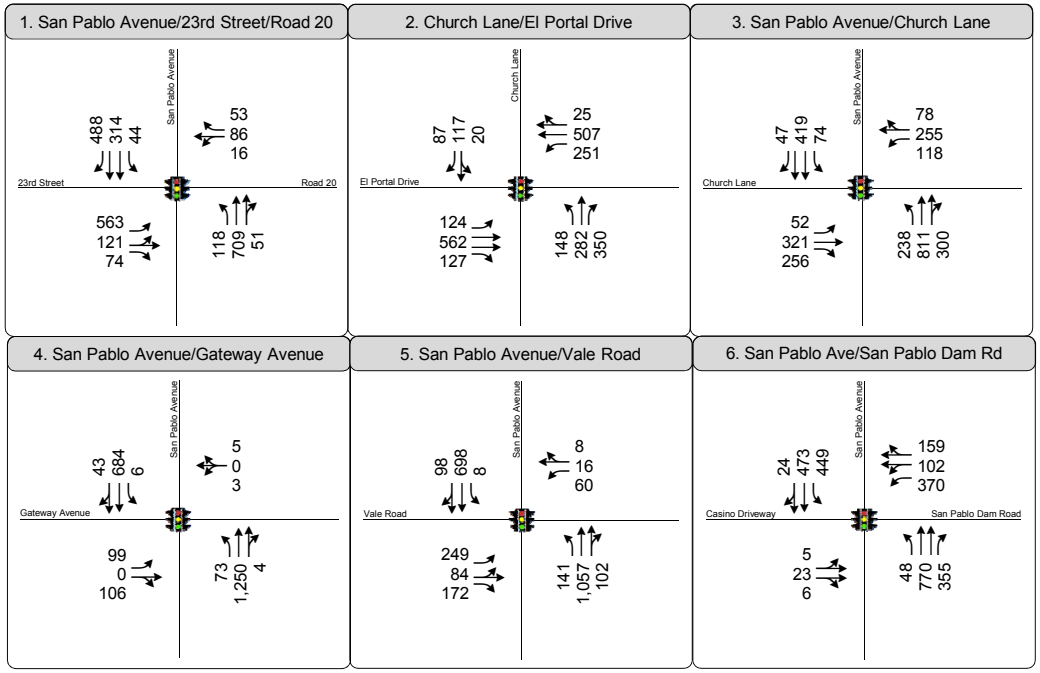
The traffic volumes, intersection lane configurations, and traffic controls presented on Figure 2-1 form the basis for the existing intersection LOS analysis. City of San Pablo staff provided the signal timing and phasing sheets for all signalized study intersections, which have been incorporated into this intersection analysis. Observed peak hour factors[2] were used at all intersections and pedestrian and bicycle activity were factored into this analysis. **Table 2-3** summarizes intersection operations under Existing Conditions at the six study intersections. All study intersections currently operate at acceptable LOS D or better conditions. Detailed intersection LOS calculation worksheets are presented in **Appendix B**.

Most 95th percentile queue lengths are currently contained within the provided storage capacities at study intersections. The 95th percentile queue length means that the queue would be less than or equal to that length 95 percent of the time; intersections are typically designed to meet the 95th percentile queue lengths. Some of the key intersection turning movements that currently experience PM peak hour 95th percentile queues that are longer than the provided storage during include the following:

- The southbound right-turn movement at the San Pablo Avenue/23rd Street intersection (#1)
- The westbound left-turn movement at the Church Lane/El Portal Drive intersection (#2)
- The southbound left-turn movement at the San Pablo Avenue/San Pablo Dam Road intersection (#6)

[2] The peak hour factor is the relationship between the peak 15-minute flow rate and the full hourly volume: PHF = Hourly volume / (4 x (volume during the peak 15 minutes of flow)). The analysis level of served is based on peak rates of flow occurring within the peak hour because substantial short term fluctuations typically occurring during an hour.





LEGEND

XX PM Peak Hour Traffic Volumes

Signalized Intersection

Project Site

City Hall Relocation

Study Intersection

Figure 2-1

Existing
Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls

TABLE 2-3
EXISTING CONDITIONS PM PEAK HOUR INTERSECTION LOS

Intersection	Control[1]	Existing PM Peak Hour	
		Delay[2]	LOS[3]
1. San Pablo Avenue/23rd Street/Road 20	Signal	34	C
2. Church Lane/El Portal Drive	Signal	32	C
3. San Pablo Avenue/Church Lane	Signal	32	C
4. San Pablo Avenue/Gateway Avenue	Signal	11	B
5. San Pablo Avenue/Vale Road	Signal	25	C
6. San Pablo Avenue/San Pablo Dam Road	Signal	36	D

Notes:
1. Signal = signalized intersection.
2. Signalized intersection level of service based on average intersection control delay.
3. LOS = Level of Service; based on 2010 *Highway Capacity Manual* methodologies.

Source: Fehr & Peers, 2017.

3.0 PROJECT CHARACTERISTICS

This chapter provides an overview of the proposed Project components and addresses the proposed Project's trip generation, distribution, and assignment characteristics, allowing for an evaluation of Project impacts on the surrounding roadway network. The amount of traffic associated with the Project was estimated using a three-step process:

1. ***Trip Generation*** is the process of estimating how much traffic the project generates, considering the trip generating characteristics of existing site uses.
2. ***Trip Distribution*** is the process of determining origins and destinations of vehicle trips.
3. ***Trip Assignment*** is the process of assigning project traffic to specific roadway segments and turning movements based on the trip distribution.

3.1 PROJECT DESCRIPTION

The City of San Pablo City Hall is planned to be relocated to the southwest corner of the Chattleton Lane/Gateway Avenue intersection, approximately 1,000 feet southeast of the existing City Hall site. With the relocation of City Hall and associated uses, the existing City Hall site can be redeveloped with a variety of uses. The proposed Project at the existing City Hall site consists of amendments to the *San Pablo Avenue Specific Plan*, and corresponding amendments to the *San Pablo General Plan 2030*. For purposes of this analysis, a reuse scenario consistent with the specific plan and general plan amendments was developed to identify the potential transportation effects associated with reuse of the site. The analysis considers redevelopment of the site with up to 105 multi-family dwelling units and approximately 32,000 square-feet of general retail.

3.2 PROJECT TRIP GENERATION

The following describes the trip generation methodology for the Project, which accounts for study area transportation and land use characteristics. The trip generation analysis also accounts for trip credits associated with the existing City Hall building as the potential environmental impacts associated with the new City Hall building were evaluated as part of the *Regulating Plan for "The Avenue" Proposed Mitigated Negative Declaration* (EMC Planning Group Inc., September 15, 2011). Therefore, trips generated by the existing City Hall building were subtracted from potential trips generated by the reuse of the site to identify the net new increase (or decrease) in daily and peak hour trips to help inform the study parameters.

3.2.1 EXISTING CITY HALL TRIP GENERATION

Fehr & Peers collected morning and evening peak hour driveway counts at the existing City Hall site on Tuesday, February 14, 2017 to estimate the existing site use peak hour trip generation. As shown in **Table 3-1**, the existing City Hall building generates 148 AM peak hour trips and 207 PM peak hour trips on a typical weekday. The observed trip generation presented in Table 3-1 does not include potential trips generated by the supermarket adjacent to the City Hall site as supermarket patrons were observed to park in the City Hall parking lot during peak hours.

TABLE 3-1
EXISTING CITY HALL BUILDING VEHICLE TRIP GENERATION

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Existing City Hall Building	64	84	148	82	125	207

Sources: Fehr & Peers based on driveway vehicle counts collected on Tuesday, February 14, 2017.

All existing City Hall employees and other activities are expected to relocate to the new City Hall building located about 1,000 feet southeast of the existing site, therefore the vehicle trips generated by the existing City Hall building are expected to shift to the nearby San Pablo Avenue/Gateway Avenue intersection after the new City Hall building is constructed and operational. These shifts were considered in the analysis.

3.2.2 TRIP GENERATION METHODOLOGY FOR THE REUSE OF EXISTING CITY HALL SITE

The Institute of Transportation Engineers' (ITE) *Trip Generation* methodology is primarily based on data collected at suburban, single-use, free-standing sites. These defining characteristics limit their applicability to mixed-use development projects, such as the proposed City Hall site reuse project. The land use mix, design features, and setting of the proposed project include characteristics that influence travel behavior differently from typical single-use suburban developments. Thus, traditional data and methodologies – such as ITE suburban rates alone – may not accurately estimate the Project's vehicle trip generation.

In response to the limitations in the ITE methodology, and to provide a straightforward and empirically validated method of estimating vehicle trip generation at mixed-use developments, the U.S. Environmental Protection Agency (EPA) sponsored a national study of the trip generation characteristics of multi-use sites. Travel survey data collected at 239 mixed-use developments (MXDs) in six major metropolitan regions was correlated with the characteristics of the sites and their surroundings. The findings indicate the mix of employment and residents, overall size and density of development, internal connectivity for walking or

driving among land uses, availability of transit service, and surrounding trip destinations within the immediate area outside the Project site affect the external traffic generated.

Statistical techniques relate the trip behavior observed at the study development sites. These statistical relationships produced equations, known as the EPA MXD model, that allow for predicting external vehicle trip reductions as a function of the MXD characteristics. The EPA MXD methodology was used to estimate daily and peak hour trip generation for the project

3.2.3 PROJECT TRIP GENERATION

Fehr & Peer's MainStreet tool, which incorporates the EPA MXD model, was used to calculate trip generation estimates for the Project. MainStreet uses both internal Project land uses and local and regional demographic data; MainStreet's data inputs and data sources are summarized in **Appendix C**. **Table 3-2** summarizes the daily and weekday peak hour trip generation estimated for the Project. For purposes of the transportation impact analysis, the ITE Land Use Code 220 (apartments) was used to estimate the trip generation for the multi-family units and ITE Land Use Code 820 (shopping center) was used to estimate the trip generation for the general retail uses.

As shown in Table 3-2, approximately four-percent of daily trips, five-percent of AM peak hour trips, and 11-percent of PM peak hour trips are expected to be internal trips, meaning apartment residents would shop at the retail potentially constructed as part of the redevelopment.

Not all trips generated by the Project are expected to be vehicle trips. Given the Project site's proximity to high frequency transit routes, surrounding transportation infrastructure and surrounding land uses within the study area, the MXD model estimates approximately 15-percent of daily trips, 20-percent of AM peak hour trips, and 19-percent of PM peak hour trips would be made by walking, biking, or transit. Fehr & Peers also reviewed journey-to-work data from the American Community Survey (ACS) for the study area census tract. According to the survey, 17.5-percent of respondents commute to work via transit, 5.5-percent commute via walking and zero-percent commute via bicycle. Therefore, the mode split reductions estimated by the MXD model are similar to ACS data. The ACS data is provided in **Appendix D.**

As shown in Table 3-2, the Project is expected to generate about 3,270 daily vehicle trips, 100 AM and 249 PM peak hour vehicle trips. However, after subtracting the existing City Hall trip generation, the proposed Project is expected to generate about 1,970 net new daily vehicle trips, 48 fewer AM peak hour vehicle trips, and 42 net new PM peak hour vehicle trips. As the redevelopment of the site would result in a decrease in morning vehicle activity, and an increase of evening vehicle activity, this study focuses on the evaluation of potential PM peak hour effects.

TABLE 3-2
PROJECT VEHICLE TRIP GENERATION

Land Use	Size	Units[1]	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Apartment[2]	105	DU	760	11	44	55	49	26	75
Shopping Center[3]	32	KSF	3,240	48	30	78	134	145	279
Total Project Trips			4,000	59	74	133	183	171	354
Reductions									
Internal Capture Reductions[4]			*-130*	*-3*	*-3*	*-6*	*-20*	*-18*	*-38*
External Walk, Bike, and Transit Reductions[4]			*-600*	*-12*	*-15*	*-27*	*-35*	*-32*	*-67*
Total Reductions			-730	-15	-18	-33	-55	-50	-105
Net Project Trips			3,270	44	56	100	128	121	249
Existing City Hall Building Reductions[5]			-1,300	-64	-84	-148	-82	-125	-207
Net New Project Trips			**1,970**	**-20**	**-28**	**-48**	**46**	**-4**	**42**

Notes:
1. DU = dwelling units; KSF = 1,000 square-feet
2. ITE Trip Generation land use category (220) – Apartment (Adj Streets, 7-9AM, 4-6PM):
   Daily: $T = 6.06X + 123.56$
   AM Peak Hour: $T = 0.49X + 3.73$ (20% in, 80% out)
   PM Peak Hour: $T = 0.55X + 17.65$ (65% in, 35% out)
3. ITE Trip Generation land use category (820) – Shopping Center (Adj Streets, 7-9AM, 4-6PM):
   Daily: $Ln(T) = 0.65\ln(X) + 5.83$
   AM Peak Hour: $Ln(T) = 0.61\ln(X) + 2.24$ (62% in, 38% out)
   PM Peak Hour: $Ln(T) = 0.67\ln(X) + 3.31$ (48% in, 52% out)
4. Reductions based on application of MXD+ Model:
   Internal Capture Reductions: Daily = 3.5%, AM Peak Hour = 4.5%, PM Peak Hour = 10.7%
   External Walk, Bike, and Transit Reductions: Daily = 15.3%, AM Peak Hour = 20.3%, PM Peak Hour = 18.9%
   Total Reductions: Daily = 18.8%, AM Peak Hour = 24.8%, PM Peak Hour = 29.7%
5. Existing peak hour City Hall trips based on field collected data. Daily estimates developed based on ratio of peak hour to daily trip generation rates for Government Office building from the *ITE Trip Generation Manual,* 9th Edition.

Sources: *ITE Trip Generation Manual,* 9th Edition; Fehr & Peers, 2017.

3.3 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Project trip distribution percentages were developed based on existing travel patterns in the area, the location of complementary land uses, and the Contra Costa Transportation Authority (CCTA) Travel Demand Model. The resulting trip distribution percentages are shown in **Table 3-3**, as well as on **Figure 3-1**. PM

peak hour project trips were then assigned to the roadway network based on the directions of approach and departure for the evening peak hour, as presented on **Figure 3-2**.

TABLE 3-3
PROJECT TRIP DISTRIBUTION SUMMARY

Roadway	Percent of Trips to/from Project Site
San Pablo Avenue North	20%
San Pablo Avenue South	20%
I-80 North	20%
I-80 South	15%
23rd Street South of Market Avenue	7%
San Pablo Dam Road East of I-80	5%
Rollingwood Drive North of El Portal Drive	5%
Market Avenue West of 23rd Street	8%
Total	***100%***

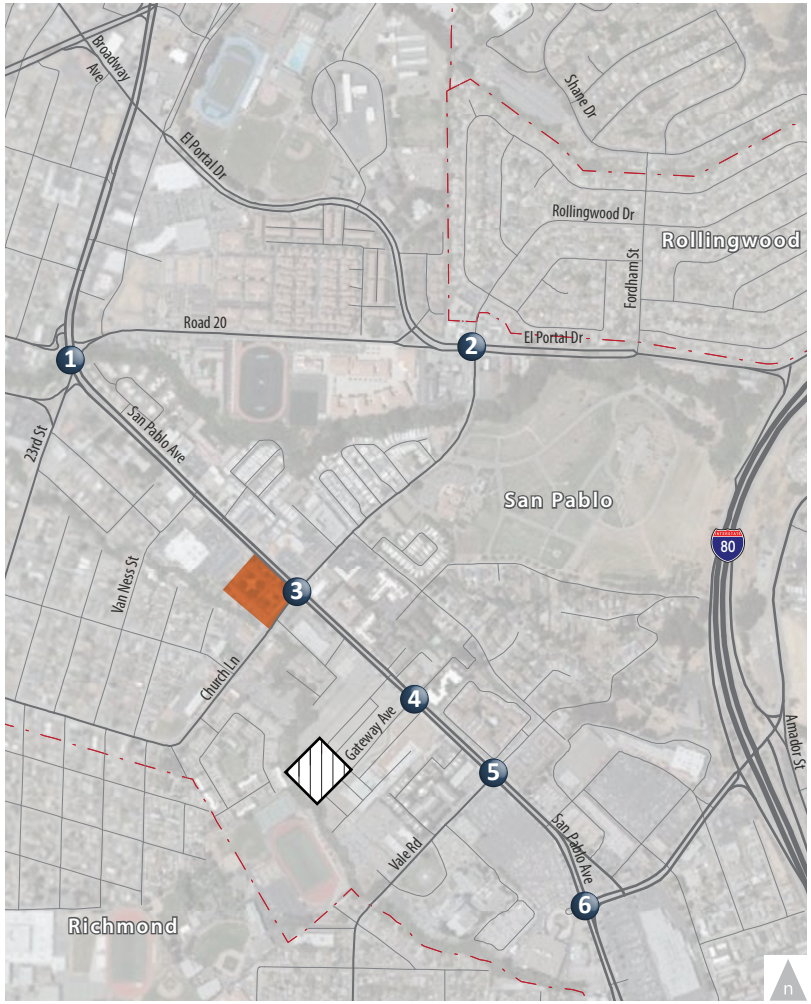
Source: Fehr & Peers, 2017.

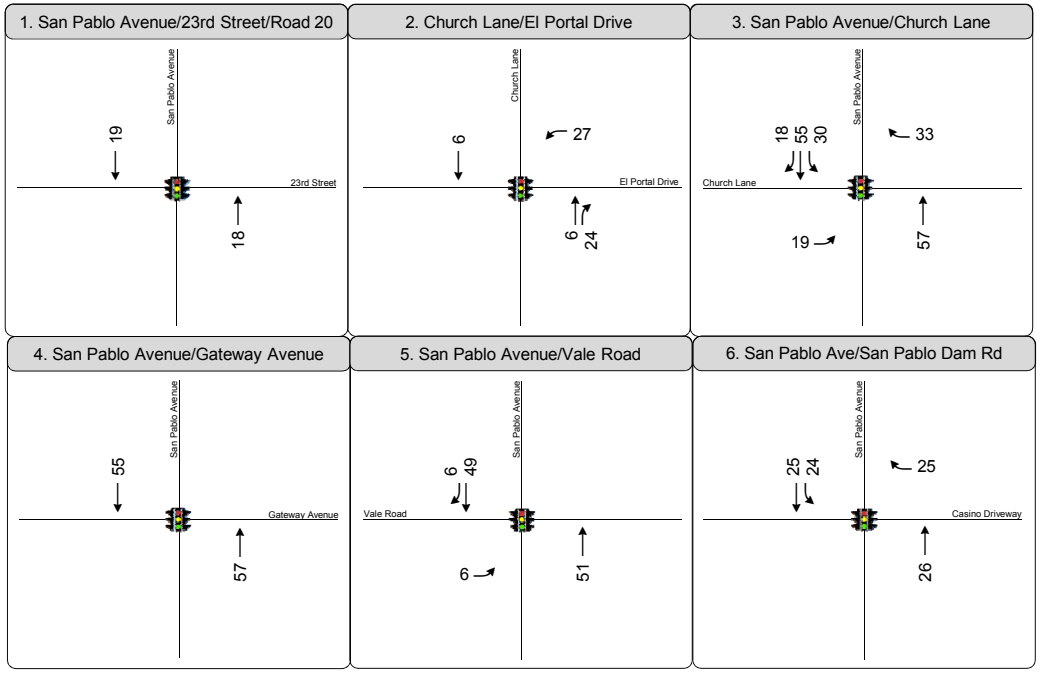
LEGEND

Project Site | City Hall Relocation | # Study Intersection | XX% Project Trip Distribution

Figure 3-1

Project Trip Distribution





LEGEND

XX PM Peak Hour Traffic Volumes

Signalized Intersection

Project Site

City Hall Relocation

Study Intersection

Figure 3-2

Project Trip Assignment

4.0 EXISTING WITH PROJECT CONDITIONS

This chapter addresses the Existing Conditions plus the Project, and discusses Project vehicular impacts.

4.1 EXISTING WITH PROJECT VOLUMES AND ROADWAY ASSUMPTIONS

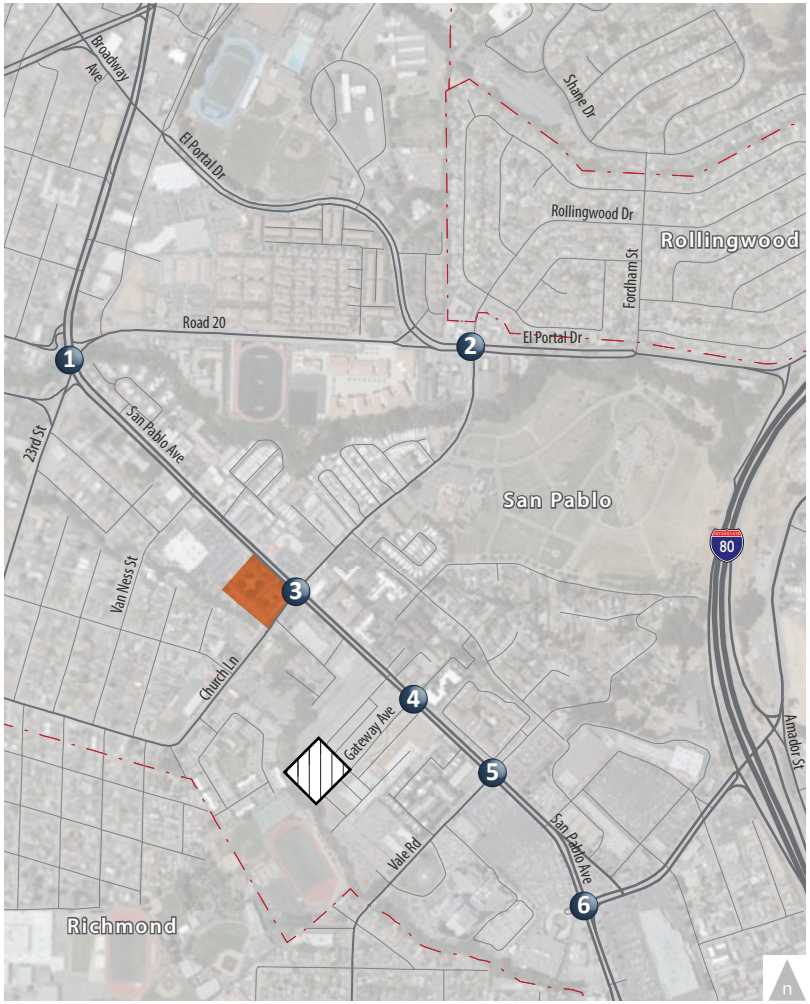
To determine vehicle volumes under the Existing with Project scenario, the Project vehicle volumes presented in Figure 3-2 were added to the Existing peak hour traffic volumes presented in Figure 2-1. Existing City Hall trips were redistributed to account for the relocation of the existing City Hall. No change in lane configurations, signal control, or signal timings at any of the six study intersections are proposed as part of the Project. Existing with Project volumes, lane configurations, and traffic controls are presented on **Figure 4-1**.

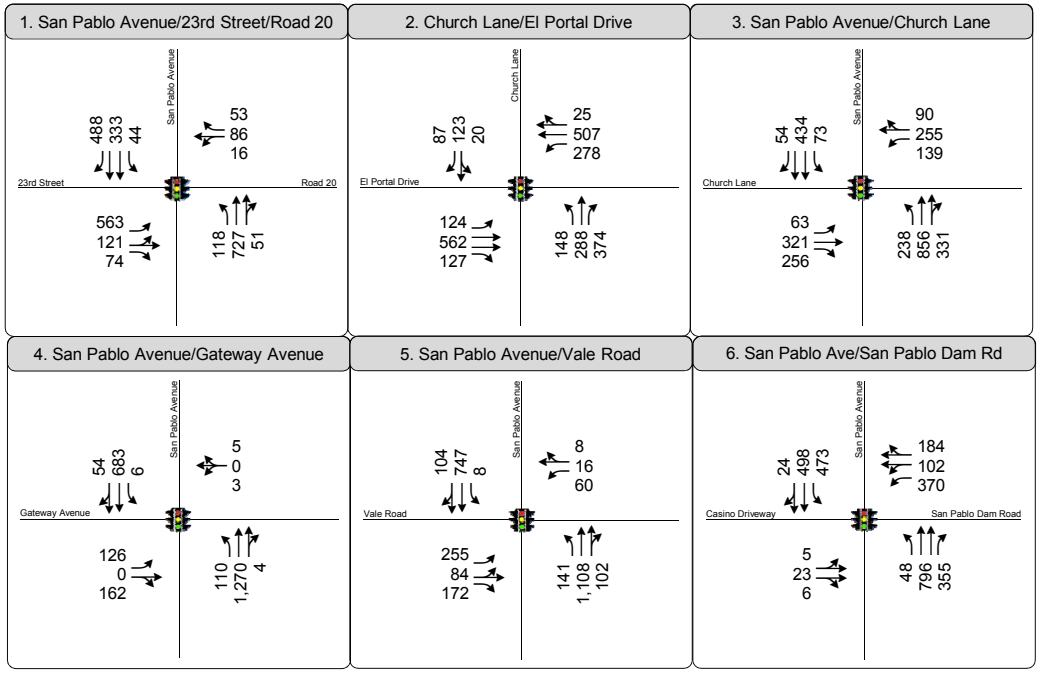
A detailed site plan for the proposed Project is not currently available; therefore, it is difficult to determine the location of driveways provided with implementation of the Project. For purposes of this evaluation, the Existing with Project analysis assumes all vehicular access to the future Project land uses would be provided via a single full access driveway on San Pablo Avenue.

4.2 EXISTING WITH PROJECT INTERSECTION OPERATIONS

Existing with Project Conditions were evaluated using the same methods described in Chapter 1. The Existing with Project intersection LOS analysis results are summarized in **Table 4-1.** Detailed intersection LOS calculation worksheets are provided in **Appendix E**.

As shown in Table 4-1, the addition of Project traffic would increase average delay at the study intersections slightly, but would not cause overall intersection operations to degrade to unacceptable levels based on the significance criteria discussed in Chapter 1. All intersections are expected to operate at LOS D or better conditions under Existing with Project PM peak hour conditions.





LEGEND

XX PM Peak Hour Traffic Volumes — Signalized Intersection

Project Site — City Hall Relocation — # Study Intersection

Note: Volumes assume redistribution of City Hall trips.

Figure 4-1

Existing with Project
Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls

TABLE 4-1
EXISTING WITH PROJECT CONDITIONS PM PEAK HOUR INTERSECTION LOS

Intersection	Control[1]	Existing Conditions		Existing with Project Conditions		Significant Impact?
		Delay[2]	LOS[3]	Delay[2]	LOS[3]	
1. San Pablo Avenue/23rd Street/Road 20	Signal	34	C	34	C	No
2. Church Lane/El Portal Drive	Signal	32	C	34	C	No
3. San Pablo Avenue/Church Lane	Signal	32	C	34	C	No
4. San Pablo Avenue/Gateway Avenue	Signal	11	B	12	B	No
5. San Pablo Avenue/Vale Road	Signal	25	C	26	C	No
6. San Pablo Avenue/San Pablo Dam Road	Signal	36	D	39	D	No

Notes:
1. Signal = signalized intersection.
2. Signalized intersection level of service based on average intersection control delay.
3. LOS = Level of Service; based on 2010 *Highway Capacity Manual* methodologies.

Source: Fehr & Peers, 2017.

Most 95th percentile queue lengths are contained within the provided storage capacities at study intersections. The following study intersection turning movements experience PM peak hour 95th percentile queues that are longer than the provided storage under Existing without Project Conditions:

- The southbound right-turn movement at the San Pablo Avenue/23rd Street intersection (#1), the Project is not expected to increase this queue length
- The westbound left-turn movement at the Church Lane/El Portal Drive intersection (#2), the Project would increase this queue length by about two to three vehicles
- The southbound left-turn movement at the San Pablo Avenue/San Pablo Dam Road intersection (#6), the project would increase this queue length by about two vehicles

4.3 EXISTING WITH PROJECT IMPACTS AND MITIGATION MEASURES

As shown in Table 4-1, the Project is expected to increase delay at study intersections, but the increases in delay would not trigger significant impacts based on the City of San Pablo significance criteria.

5.0 CUMULATIVE CONDITIONS

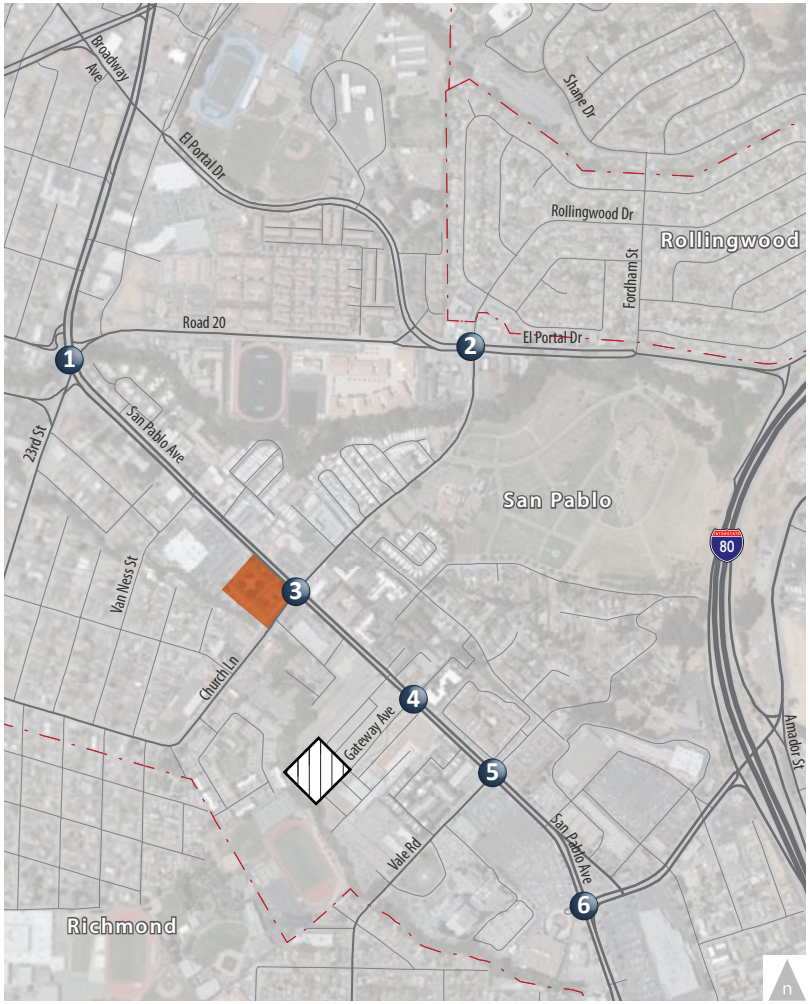
This chapter discusses Cumulative (year 2040) vehicle traffic conditions both without and with the proposed Project. The future conditions analysis considers development within the City of San Pablo, consistent with the development assumptions incorporated into the most recent Contra Costa Transit Authority (CCTA) Travel Demand Model.

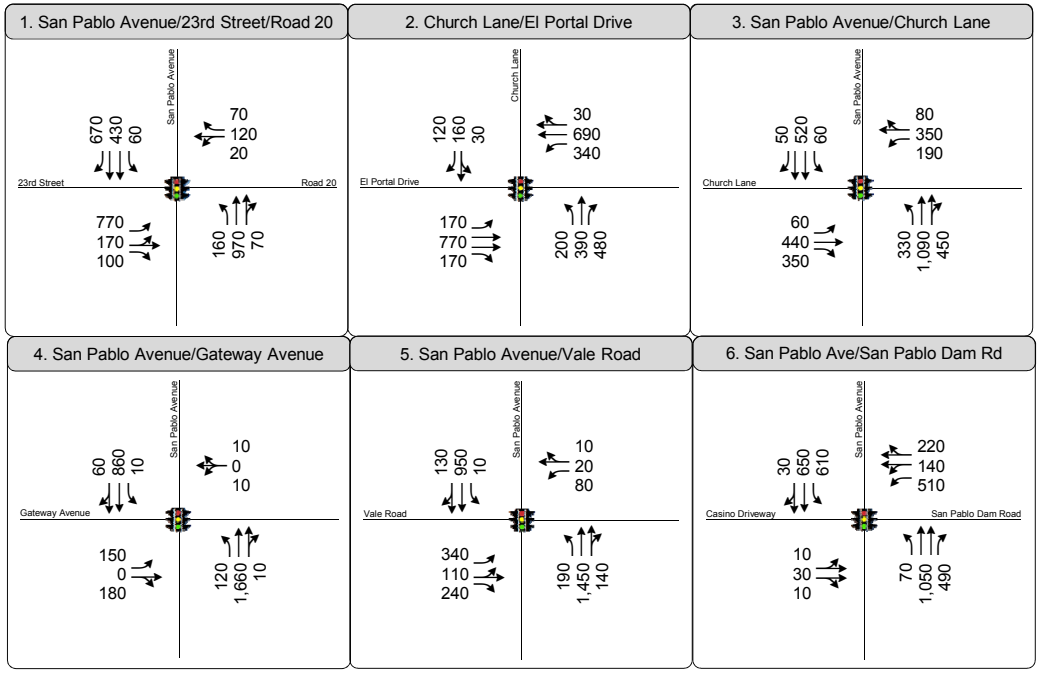
5.1 CUMULATIVE FORECASTS AND ROADWAY ASSUMPTIONS

Traffic forecasts for the year 2040 were developed based on the current CCTA Travel Demand Model (CCTA Model) version, which reflects assumptions in residential and non-residential land use growth consistent with the Association of Bay Area Governments (ABAG) *Projections 2013*. The PM peak hour traffic volumes forecasted by the CCTA Model for year 2040 were compared to the CCTA Model base year volumes to determine an annual traffic volume growth rate for the study area. Based on a comparison of the base year and future year forecasts, an annual growth rate of 1.6-percent was identified and applied to existing turning movement volumes at all study intersections. The resulting volumes consider regional traffic growth as well as traffic volume growth due to the proposed West County Health Center expansion and the proposed relocation of City Hall.

The Cumulative without and with Project analyses assumes no changes to lane configurations or traffic controls at the six study intersections. However, the analysis does assume the signal timings would be optimized under 2040 without Project Conditions. This assumption reflects current practices that incorporate basic signal timing changes into routine maintenance of the traffic signal system. It is expected that retiming of signals in areas with the greatest need (e.g., major streets, areas with rapidly shifting traffic patterns) would be prioritized as part of the regular ongoing maintenance of signal equipment, with no upgrades to the signal equipment. The Cumulative without Project traffic volumes, lane configurations, and traffic controls are shown on **Figure 5-1**.

The Project vehicle volumes in Figure 3-2 were added to the peak hour traffic volumes from Figure 5-1 to estimate the Cumulative with Project peak hour traffic volumes, as shown on **Figure 5-2**. For purposes of this evaluation, the Cumulative with Project analysis assumes that access to the future Project land uses would be provided via a single full-access driveway on San Pablo Avenue.





LEGEND

XX PM Peak Hour Traffic Volumes

Signalized Intersection

Project Site

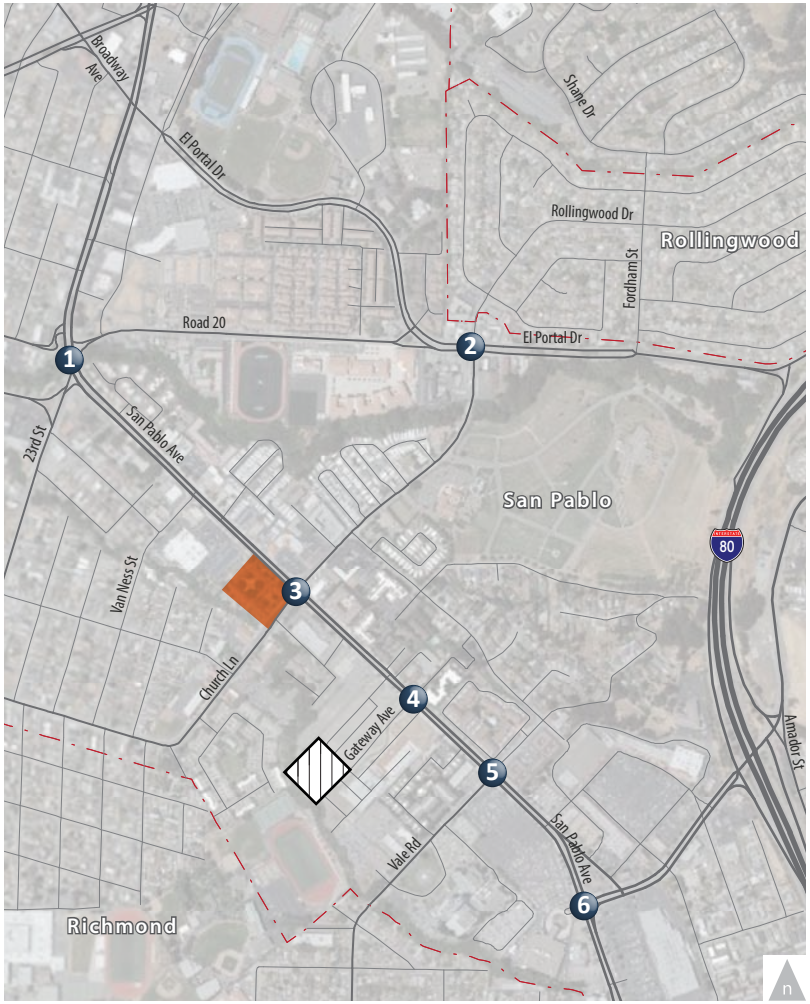
City Hall Relocation

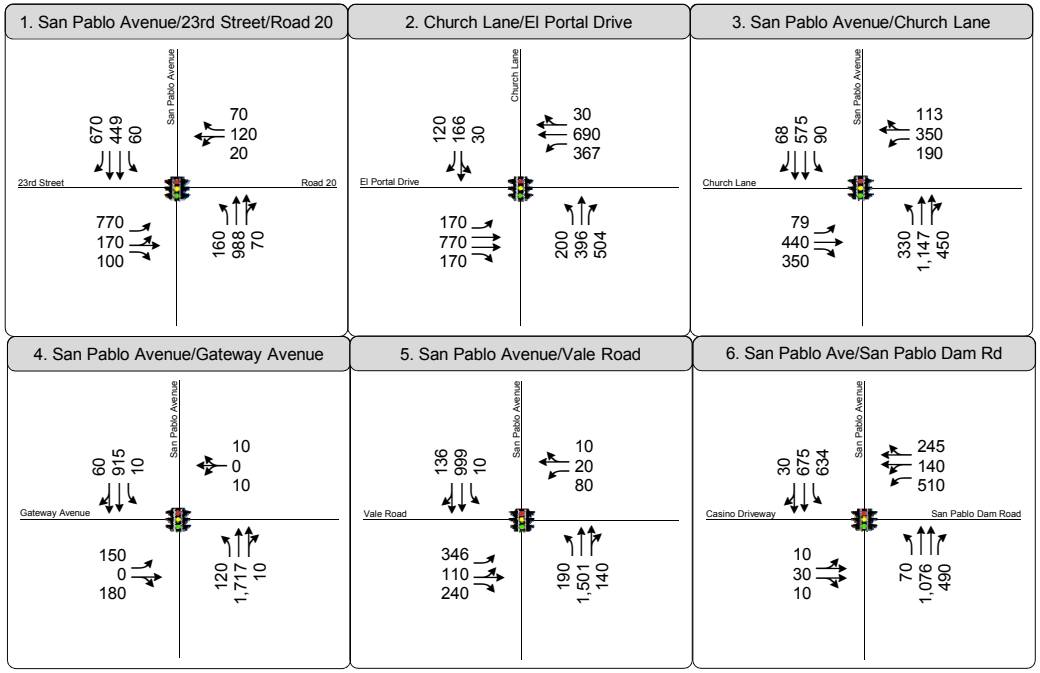
Study Intersection

Note: Volumes assume redistribution of City Hall trips.

Figure 5-1

Cumulative without Project
Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls





LEGEND

XX PM Peak Hour Traffic Volumes | Signalized Intersection

Project Site | City Hall Relocation | # Study Intersection

Note: Volumes assume redistribution of City Hall trips.

Figure 5-2

Cumulative with Project
Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls

5.2 CUMULATIVE CONDITIONS INTERSECTION OPERATIONS

Cumulative without and with Project Conditions were evaluated using the same methods described in Chapter 1. The intersection analysis results are presented on **Table 5-1**, based on the vehicle volumes presented on **Figure 5-1** and **Figure 5-2**. Detailed intersection LOS calculation worksheets are presented in **Appendix F**.

As shown on Table 5-1, all study intersections are expected to operate at acceptable LOS under Cumulative without Project and with Project conditions, with the exception of the following intersection:

- Church Lane/El Portal Drive (intersection #2) is expected to operate at LOS high-D under Cumulative without and with Project Conditions

The addition of Project traffic would increase average delay at all other study intersections, but would not cause overall intersection operations to degrade to unacceptable levels based on the significance criteria.

TABLE 5-1
CUMULATIVE CONDITIONS PM PEAK HOUR INTERSECTION LOS

Intersection	Control[1]	Cumulative without Project Conditions		Cumulative with Project Conditions		Significant Impact?
		Delay[2]	LOS[3]	Delay[2]	LOS[3]	
1. San Pablo Avenue/23rd Street/Road 20	Signal	69	E	69	E	No
2. Church Lane/El Portal Drive	Signal	**49**	**D**	**52**	**D**	No
3. San Pablo Avenue/Church Lane	Signal	68	E	76	E	No
4. San Pablo Avenue/Gateway Avenue	Signal	16	B	16	B	No
5. San Pablo Avenue/Vale Road	Signal	36	D	38	D	No
6. San Pablo Avenue/San Pablo Dam Road	Signal	68	E	73	E	No

Notes: **Bold** text indicates deficient intersection operations. Deficient operations are LOS F, with the exception of the Church Lane/El Portal Drive intersection (#2) along San Pablo Avenue where LOS high-D, E or F is deficient.

1. Signal = signalized intersection .
2. Signalized intersection level of service based on average intersection control delay.
3. LOS = Level of Service; based on 2010 *Highway Capacity Manual* methodologies.

Source: Fehr & Peers, 2017.

Study intersection turning movement 95th percentile queue lengths during the PM peak hour are expected to increase substantially under Cumulative without Project Conditions compared to Existing Conditions. The

following study intersection turning movements are expected to have 95th percentile queues during the PM peak hour that are longer than the provided storage under Cumulative without Project Conditions:

- The southbound right-turn movement at the San Pablo Avenue/23rd Street intersection (#1), the Project is not expected to increase this queue length
- The westbound left-turn movement at the Church Lane/El Portal Drive intersection (#2), the Project would increase this queue length by about two to three vehicles
- The northbound left-turn movement at the San Pablo Avenue/Church Lane intersection (#3), the Project would increase this queue length by about one vehicle
- The northbound through movement at the San Pablo Avenue/Church Lane intersection (#3) is expected to extend upstream beyond the San Pablo Avenue/Gateway Avenue intersection (#4), the Project would increase this queue length by about four to five vehicles
- The southbound left-turn movement at the San Pablo Avenue/San Pablo Dam Road intersection (#6), the project would increase this queue length by about two vehicles

5.3 CUMULATIVE WITH PROJECT IMPACTS AND MITIGATION MEASURES

As shown in Table 5-1, the Project is expected to increase delay at study intersections, but the increases in delay would not trigger significant impacts based on the City of San Pablo significance criteria. Although the Church Lane/El Portal Drive intersection (#2) operates at an unacceptable LOS high-D, the Project would not increase the average intersection delay by more than five seconds; therefore, the impact is considered less-than-significant.

6.0 OTHER THRESHOLDS

This chapter presents the multimodal and VMT impact evaluation for the proposed Project. A detailed site plan for the redevelopment of the site is not currently available; therefore, the evaluation presented in this chapter focuses on the surrounding transportation system of the Project site.

> ***Recommendation 1:*** After development of a detailed Project site plan, perform a comprehensive site plan evaluation to ensure safe and efficient site access and circulation for vehicles, bicycles, pedestrians, and transit users. The site plan should be reviewed in terms of the following:
>
> - Site access and interface with roadway network including level of service, vehicle queues and sight distance
> - Emergency vehicle access and circulation
> - Vehicular circulation within and adjacent to the site
> - Vehicle queue stacking within site
> - Parking layout and circulation within the site, including parking supply assessment
> - Pedestrian access and circulation within and adjacent to the site
> - Bicycle access and circulation within and adjacent to the site
> - Transit and shuttle vehicle circulation adjacent to site
> - Pedestrian access to and from transit stops

6.1 PEDESTRIAN ACCESS AND CIRCULATION

The proposed Project is located in a Pedestrian Priority Zone, as specified in the City of San Pablo's General Plan. Pedestrians are encouraged and accommodated through ample pedestrian amenities and a minimum sidewalk width of eight-feet in these zones. The Project is expected to maintain the existing sidewalk widths along the Project frontage on San Pablo Avenue and Church Lane. All sidewalk widths are eight feet or greater along the Project frontage. The adjacent San Pablo Avenue/Church Lane intersection (#3) provides high-visibility crosswalks and pedestrian signal heads on all approaches to the intersection, which facilitate pedestrian access and circulation in the vicinity of the Project site.

6.2 BICYCLE ACCESS AND CIRCULATION

As described in Chapter 2, Class II bicycle lanes are currently provided along the Project site frontage on San Pablo Avenue and Church Lane. The Project is not expected to preclude implementation of future bicycle improvements within the study area. A detailed Project site plan is not currently available, therefore the number of bicycle parking spaces that would be proposed by the Project is not currently known.

> ***Recommendation 2:*** Provide short-term and long-term bicycle parking spaces that are consistent with Section 17.54.130 of the *City of San Pablo Municipal Code*.

6.3 TRANSIT ACCESS AND CIRCULATION

As summarized in Table 2-1 and Table 2-2, AC Transit operates several local, regional and Transbay routes within the vicinity of the Project site. The nearest transit stops are located within one block of the Project site for all routes that operate within the vicinity. Continuous sidewalks are provided between the Project site and all nearby bus stops. In addition, high-visibility crosswalks, pedestrian push-buttons with pedestrian signal heads are provided at the adjacent San Pablo Avenue/Church Lane intersection (#3), which facilitates pedestrian access and circulation between the Project site and nearby bus stops.

6.3.1 TRANSIT RIDERSHIP ANALYSIS

According to the latest American Community Survey (ACS) data, about 17.5-percent of all commute trips in the vicinity of the Project site are transit trips. Applying this rate to the Project trip generation shown in Table 3-2 results in about 62 PM peak hour Project-generated transit trips. It is assumed that all transit trips would start and end on the AC Transit routes that operate within the vicinity of the Project site.

A load factor analysis was completed to determine the Project-generated increase in transit ridership within the vicinity of the Project site and its effect on the transit network. Load factor is defined as the ratio of occupied seats to the number of seats on the bus. A load factor of one or more indicates that the bus operates at or above its seating capacity. Similar to the intersection operations, the ridership analysis focuses on the PM peak hour, as the Project is expected to add the most transit trips during the PM peak. AC Transit provided the ridership data based on automated passenger counter (APC) data collection conducted in August through December of 2016.

The PM peak hour Project transit trips were proportionally allocated to each transit route in the vicinity of the Project site based on the existing ridership for each bus route and the frequency of each route. To

provide a conservative analysis, it was assumed that all Project transit trips would be exiting from buses during the PM peak hour. **Table 6-1** summarizes the average and maximum load factors for Existing and Existing with Project Conditions. As shown on Table 6-1, all bus routes within the Project vicinity are expected to operate with an average load factor below the typical seating capacity per bus without and with the Project.

TABLE 6-1
EXISTING CONDITIONS TRANSIT LOAD FACTOR ANALYSIS

Bus Line	Direction	Stop Location	Seating[1]	Existing PM Peak Hour Conditions				Existing with Project PM Peak Hour Conditions			
				Avg Load[2]	Avg Load Factor[3]	Max Load[4]	Max Load Factor[5]	Avg Load[6]	Avg Load Factor[3]	Max Load[6]	Max Load Factor[5]
76	EB	Church Lane/San Pablo Avenue	36	19	0.54	49	1.36	23	0.65	53	1.47
76	WB	Church Lane/Dover Avenue	36	11	0.30	40	1.11	13	0.36	42	1.17
72	NB	San Pablo Avenue/Church Lane	36	20	0.54	48	1.33	24	0.65	52	1.45
72	SB	San Pablo Avenue/Van Ness Street	36	17	0.48	38	1.06	21	0.59	42	1.17
72R	NB	San Pablo Avenue/Van Ness Street	32	11	0.34	28	0.87	13	0.40	30	0.93
72R	SB	San Pablo Avenue/Van Ness Street	32	9	0.29	42	1.30	11	0.35	44	1.37
L	EB	San Pablo Avenue/Pinewood Terrace	37	6	0.16	16	0.43	8	0.22	18	0.49

Notes:

1. Average seating provided on buses assigned to each line.
2. Average number of passengers per bus when the bus leaves the stop based on APC data provided by AC Transit.
3. Average load divided by the average seating capacity.
4. Maximum number of passengers per bus when the bus leaves the stop based on APC data provided by AC Transit.
5. Maximum load divided by the average seating capacity.
6. Existing plus Project loads are existing loads plus project-generated transit trips assigned to each line.

Source: AC Transit APC data, August-December 2016, analyzed by Fehr & Peers, 2017.

6.4 OFF-STREET PARKING CONSIDERATIONS

Chapter 17.54 of the *City of San Pablo Municipal Code* provides minimum off-street parking requirements for both residential and non-residential land uses. **Table 6-2** summarizes the parking requirements that may pertain to the proposed Project. In addition, the Municipal Code allows the following parking reductions for mixed-use projects:

- Calculation of the minimum required vehicular parking for the portion of the building occupied by the primary use is based on one hundred percent of the floor area.
- Calculation of the minimum required vehicular parking for the portion of the building occupied by secondary or subsequent uses may be calculated at eighty percent of the floor area.
- The City may consider additional reductions to parking standards if a parking demand study prepared by a qualified parking or transportation expert supports the proposed reduction.

TABLE 6-2
CITY OF SAN PABLO OFF-STREET PARKING REQUIREMENTS[1]

Land Use	Minimum Off-Street Parking Requirement
Multi-Family Dwellings	2 covered spaces per unit
Office Space	1 space per 200 square feet, for less than 2,000 square feet, and for all medical and dental offices 1 space per 250 square feet, for 2,000 to 7,5000 square feet 1 space per 300 square feet, for 7,501 to 40,000 square feet 1 space per 350 square feet, for more than 40,000 square feet
Retail Sales, General	1 space per 300 square feet, except for stores that sell appliances, furniture, and other merchandise of a similar size require 1 space per 500 square feet
Restaurants, General	1 space per 50 square feet of public area

Note:
1. For parking space dimension and location specifics, please refer to Chapter 17.54 of the *City of San Pablo Municipal Code*.

Source: Chapter 17.54 of the *City of San Pablo Municipal Code*, 2017.

Recommendation 3: Provide the minimum required off-street parking supply that is consistent with Chapter 17.54 of the *City of San Pablo Municipal Code*.

6.5 VEHICLE MILES TRAVELED ANALYSIS

6.5.1 VMT ESTIMATE METHODOLOGY

Vehicle miles traveled or VMT is a measure used to describe automobile use on a daily basis. VMT is the product of the total number of vehicles traveling and the average number of miles traveled per vehicle. According to the OPR guidelines, the VMT evaluation for a mixed-use project should focus on the average VMT per capita for residential uses and average VMT per worker for office and commercial uses. Many factors affect travel behavior, including density of development, diversity of land uses, design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management. Typically, low-density development that is located at a great distance from other land uses, in areas with poor access to non-single occupancy vehicle travel modes generate more automobile travel compared to development located in urban areas, where a higher density of development, a mix of land uses, and travel options other than private vehicles are available.

Neighborhoods within San Pablo are expressed geographically in transportation analysis zones, or TAZs. The Metropolitan Transportation Commission (MTC) Travel Model includes TAZs within San Pablo that vary in size from a few city blocks to multiple blocks. TAZs are used in transportation planning models for transportation analysis and other planning purposes. The MTC Travel Model assigns all predicted trips within, across, or to or from the nine-county San Francisco Bay Area region onto the roadway network and the transit system, by mode (single-driver and carpool vehicle, biking, walking, or transit) and transit carrier (bus, rail) for a particular scenario.

The travel behavior from the MTC Travel Model is modeled based on the following inputs:

- Socioeconomic data developed by the Association of Bay Area Governments (ABAG).
- Population data created using the 2000 US Census and modified using the open source PopSyn software.
- Zonal accessibility measurements for destinations of interest.
- Travel characteristics and automobile ownership rates derived from the 2000 Bay Area Travel Survey.
- Observed vehicle counts and transit boardings.

The daily VMT output from the MTC Travel Model for residential and employment uses comes from a tour-based analysis. The tour-based analysis examines the entire chain of trips over the course of a day, not just

trips to and from the project site. In this way, all of the VMT for an individual resident or employee is included; not just trips into and out of the person's home or workplace. For example, a resident leaves her apartment in the morning, stops for coffee, and then goes to the office. In the afternoon she heads out to lunch, and then returns to the office, with a stop at the drycleaners on the way. After work, she goes to the gym to work out, and then joins some friends at a restaurant for dinner before returning home. The tour-based approach would add up the total amount driven and assign the daily VMT to this resident for the total number of miles driven on the entire "tour."

Based on the MTC Travel Model, the Bay Area regional average daily VMT per capita is 15.0 under 2020 conditions and 13.8 under 2040 conditions, and the regional average daily VMT per worker is 21.8 under 2020 conditions and 20.3 under 2040 conditions.

6.5.2 VMT IMPACT ANALYSIS

VMT for the residential and retail components of the Project are evaluated separately as discussed below.

6.5.2.1 Residential VMT Impact Analysis

The residential component of the proposed Project satisfies criterion #2 as described below; as a result, the residential component of the Project is expected to result in a less-than-significant VMT impact.

6.5.2.1.1Criterion #1: Small Project

The Project would generate more than 100 trips per day and therefore does not meet criterion #1.

6.5.2.1.2Criterion #2: Low-VMT Area

Table 6-3 describes the 2020 and 2040 VMT for TAZ 1454, the TAZ in which the Project is located as well as applicable VMT thresholds of 15 percent below the Bay Area regional average. As shown in Table 6-3, the 2020 and 2040 average daily VMT per capita in the Project TAZ is below the regional average.

6.5.2.1.3Criterion #3: Near Transit Stations

The Project site is in a transit priority area (as identified by MTC). However, since a detailed Project site plan is not currently available, it cannot be confirmed if the Project proposes Floor Area Ratio (FAR) greater than 0.75 and if it provides adequate parking without oversupplying. The Project is however, expected to be consistent with the Sustainable Communities' Strategy.

> ***Recommendation 4:*** The proposed Project should be designed with a FAR greater than 0.75 and with off-street parking supply consistent with Chapter 17.54 of the *City of San Pablo Municipal Code* (see Recommendation 3).

TABLE 6-3
DAILY VMT PER CAPITA BASED ON MTC TRAVEL MODEL

Land Use	Bay Area Region				TAZ 1454	
	2020		2040			
	Regional Average	Regional Average Minus 15%	Regional Average	Regional Average Minus 15%	2020	2040
Residential (VMP per Capita)[1]	15.0	12.8	13.8	11.7	11.3	9.9
Office and Commercial (VMT per Worker)[2]	21.8	18.5	20.3	17.3	24.4	23.3

Note:

1. MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerCapita and accessed in June 2017.
2. MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerWorker and accessed in June 2017

Source: MTC, June 2017.

6.5.2.1.4Residential VMT Screening Conclusion

The residential component of the Project satisfies criterion #2 as described above. Therefore, the residential component of the Project would have the presumption of a less-than-significant impact based on VMT.

6.5.2.2 Retail VMT Impact Analysis

According to the significance criteria, the retail component of the Project would not have the presumption of a less-than-significant impact based on VMT if the Project results in a net increase in total VMT. The current project proposes approximately 32,000 square-feet of local serving retail. By definition, the local serving retail is expected to be patronized by the surrounding community. As a result, small (less than 50,000 square feet) local serving retail uses are expected to reduce total VMT in the City of San Pablo and the Bay Area region, as people would have to drive shorter distances on average to the proposed local serving retail compared to driving to other similar retail uses further away. Therefore, the retail component of the Project would have the presumption of a less-than-significant impact based on VMT.

6.5.2.2.1Other Considerations

If the Project land uses change from residential or retail to office use, the Project may potentially trigger a significant impact based on VMT. As shown in Table 6-3, the 2020 and 2040 average daily VMT per capita in the Project TAZ is above the regional average, therefore office uses on the Project site may potentially

trigger significant impact based on VMT. The Project could mitigate potential impacts to VMT by implementing the following:

- Providing a FAR greater than 0.75 and with off-street parking supply consistent with City of San Pablo Municipal Code.
- Implementing a Transportation Demand Management (TDM) Plan to reduce vehicle traffic and parking demand generated by the Project to the maximum extent practicable.

6.6 EMERGENCY VEHICLE ACCESS

Several factors determine whether a project has sufficient access for emergency vehicles, including:

1. Number of access points (both public and emergency access only)
2. Width of access points
3. Width of internal roadways

The detailed Project site plan is not currently available to perform a detailed emergency vehicle access evaluation.

> ***Recommendation 5:*** The fire department should review the detailed Project site plan, when available, for fire hydrant placement and emergency vehicle access.

6.7 CHANGE IN AIR TRAFFIC PATTERNS

The discussion of changes in air traffic patterns is based on an application of applicable significance standards. The Buchanan Field Airport in Concord, CA and the Oakland International Airport are the closest to the Project site and are located about 20 miles from the site. The building heights are not expected to interfere with current flight patterns of either airport. Therefore, the Project would not result in a change in air traffic patterns. The project would result in a less-than-significant impact on air traffic patterns.

6.8 TRANSPORTATION HAZARDS

The discussion of transportation hazards is based on an application the applicable significance standards. The Project site plan is not currently available; the final project design should be reviewed to ensure consistency with applicable design standards, such as adequate sight distance for pedestrians and vehicles

at project driveways. The final design for the project is expected to minimize potential conflicts between various modes and provide safe and efficient pedestrian, bicycle, and vehicle circulation within the site and between the Project and the surrounding circulation systems. This is a less-than-significant impact, and no mitigation measures are required.

6.9 CONSISTENCY WITH ADOPTED POLICIES AND PLANS OR PROGRAMS SUPPORTING ALTERNATIVE TRANSPORTATION

The discussion of consistency with adopted policies, plans or programs supporting alternative transportation is based on an application of the applicable significance standards. The Project would be consistent with these policies, plans and programs; this is a less-than-significant impact.

6.10 CONCLUSION

As summarized above, the Project is not expected to cause significant impacts to the transportation system surrounding the Project site. The transportation impact assessment summarized in this report was based on general land use assumptions for potential development that could occur at the existing City of San Pablo City Hall site. Once a detailed Project site plan is available, the City should conduct a comprehensive site plan evaluation to ensure safe and efficient circulation of vehicles, bicycles, pedestrians and transit users.

APPENDIX A: TRAFFIC COUNTS

National Data and Surveying Services

City of San Pablo
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7416-001 San Pablo Ave & Rd 20/23rd St
Date : 5/10/2017

Unshifted Count = All Vehicles & Uturns

	San Pablo Ave Southbound					Rd 20/23rd St Westbound					San Pablo Ave Northbound					Rd 20/23rd St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	1	122	103	0	226	7	9	3	0	19	9	26	2	0	37	45	8	11	0	64	346	0
7:15	3	168	106	0	277	9	12	6	0	27	10	47	6	0	63	52	10	11	0	73	440	0
7:30	7	181	125	0	313	7	26	9	0	42	13	40	5	0	58	77	28	15	0	120	533	0
7:45	8	144	118	2	272	20	42	11	0	73	15	43	4	0	62	87	47	8	0	142	549	2
Total	19	615	452	2	1088	43	89	29	0	161	47	156	17	0	220	261	93	45	0	399	1868	2
8:00	10	123	110	1	244	14	60	23	0	97	18	67	27	0	112	87	68	18	0	173	626	1
8:15	18	140	120	1	279	6	68	16	0	90	15	72	32	0	119	91	77	20	0	188	676	1
8:30	14	150	97	0	261	12	56	23	0	91	24	78	13	0	115	98	27	21	0	146	613	0
8:45	11	102	98	2	213	3	24	6	0	33	19	76	6	0	101	76	17	21	0	114	461	2
Total	53	515	425	4	997	35	208	68	0	311	76	293	78	0	447	352	189	80	0	621	2376	4
16:00	6	77	126	0	209	4	24	16	0	44	34	161	9	0	204	139	19	23	0	181	638	0
16:15	9	78	98	1	186	3	22	16	0	41	27	146	13	0	186	128	23	23	0	174	587	1
16:30	10	79	124	1	214	3	17	18	0	38	25	146	12	0	183	113	28	23	0	164	599	1
16:45	9	77	93	1	180	6	34	12	0	52	25	166	13	0	204	161	22	26	0	209	645	1
Total	34	311	441	3	789	16	97	62	0	175	111	619	47	0	777	541	92	95	0	728	2469	3
17:00	8	95	121	1	225	3	22	14	0	39	25	178	12	0	215	148	31	12	0	191	670	1
17:15	9	81	121	0	211	8	20	8	0	36	38	193	8	0	239	145	25	21	0	191	677	0
17:30	7	66	117	1	191	3	15	19	0	37	22	173	8	0	203	139	30	18	0	187	618	1
17:45	13	72	129	5	219	2	29	12	0	43	33	165	23	0	221	131	35	23	0	189	672	5
Total	37	314	488	7	846	16	86	53	0	155	118	709	51	0	878	563	121	74	0	758	2637	7
Grand Total	143	1755	1806	16	3720	110	480	212	0	802	352	1777	193	0	2322	1717	495	294	0	2506	9350	16
Apprch %	3.8%	47.2%	48.5%	0.4%		13.7%	59.9%	26.4%	0.0%		15.2%	76.5%	8.3%	0.0%		68.5%	19.8%	11.7%	0.0%			
Total %	1.5%	18.8%	19.3%	0.2%	39.8%	1.2%	5.1%	2.3%	0.0%	8.6%	3.8%	19.0%	2.1%	0.0%	24.8%	18.4%	5.3%	3.1%	0.0%	26.8%	100.0%	

AM PEAK HOUR	San Pablo Ave Southbound					Rd 20/23rd St Westbound					San Pablo Ave Northbound					Rd 20/23rd St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	8	144	118	2	272	20	42	11	0	73	15	43	4	0	62	87	47	8	0	142	549
8:00	10	123	110	1	244	14	60	23	0	97	18	67	27	0	112	87	68	18	0	173	626
8:15	18	140	120	1	279	6	68	16	0	90	15	72	32	0	119	91	77	20	0	188	676
8:30	14	150	97	0	261	12	56	23	0	91	24	78	13	0	115	98	27	21	0	146	613
Total Volume	50	557	445	4	1056	52	226	73	0	351	72	260	76	0	408	363	219	67	0	649	2464
% App Total	4.7%	52.7%	42.1%	0.4%		14.8%	64.4%	20.8%	0.0%		17.6%	63.7%	18.6%	0.0%		55.9%	33.7%	10.3%	0.0%		
PHF	.694	.928	.927	.500	.946	.650	.831	.793	.000	.905	.750	.833	.594	.000	.857	.926	.711	.798	.000	.863	.911

PM PEAK HOUR	San Pablo Ave Southbound					Rd 20/23rd St Westbound					San Pablo Ave Northbound					Rd 20/23rd St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	8	95	121	1	225	3	22	14	0	39	25	178	12	0	215	148	31	12	0	191	670
17:15	9	81	121	0	211	8	20	8	0	36	38	193	8	0	239	145	25	21	0	191	677
17:30	7	66	117	1	191	3	15	19	0	37	22	173	8	0	203	139	30	18	0	187	618
17:45	13	72	129	5	219	2	29	12	0	43	33	165	23	0	221	131	35	23	0	189	672
Total Volume	37	314	488	7	846	16	86	53	0	155	118	709	51	0	878	563	121	74	0	758	2637
% App Total	4.4%	37.1%	57.7%	0.8%		10.3%	55.5%	34.2%	0.0%		13.4%	80.8%	5.8%	0.0%		74.3%	16.0%	9.8%	0.0%		
PHF	.712	.826	.946	.350	.940	.500	.741	.697	.000	.901	.776	.918	.554	.000	.918	.951	.864	.804	.000	.992	.974

National Data and Surveying Services

City of San Pablo
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7416-002 Church Ln & El Portal Dr
Date : 5/10/2017

Unshifted Count = All Vehicles & Uturns

	Church Ln Southbound					El Portal Dr Westbound					Church Ln Northbound					El Portal Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	5	33	17	0	55	42	39	2	0	83	10	8	49	0	67	7	93	12	0	112	317	0
7:15	9	34	15	0	58	49	45	3	0	97	6	10	44	0	60	14	118	28	0	160	375	0
7:30	5	50	23	0	78	74	65	5	0	144	11	22	52	0	85	8	103	30	1	142	449	1
7:45	5	54	24	0	83	78	132	2	0	212	38	33	69	0	140	15	118	50	1	184	619	1
Total	24	171	79	0	274	243	281	12	0	536	65	73	214	0	352	44	432	120	2	598	1760	2
8:00	5	54	29	0	88	68	129	0	0	197	30	26	71	0	127	17	122	39	1	179	591	1
8:15	2	51	23	0	76	89	131	2	0	222	33	32	65	0	130	26	105	83	2	216	644	2
8:30	4	38	35	0	77	80	135	4	0	219	20	37	62	0	119	24	118	51	1	194	609	1
8:45	0	29	22	0	51	82	170	5	1	258	19	21	55	0	95	16	94	21	3	134	538	4
Total	11	172	109	0	292	319	565	11	1	896	102	116	253	0	471	83	439	194	7	723	2382	8
16:00	5	17	21	0	43	56	118	5	1	180	24	61	85	0	170	25	142	27	1	195	588	2
16:15	13	15	20	0	48	54	104	5	0	163	31	64	89	0	184	23	162	34	3	222	617	3
16:30	2	17	20	0	39	78	117	7	0	202	38	56	78	0	172	30	126	26	2	184	597	2
16:45	4	21	18	0	43	71	138	5	1	215	34	60	84	0	178	28	136	31	1	196	632	2
Total	24	70	79	0	173	259	477	22	2	760	127	241	336	0	704	106	566	118	7	797	2434	9
17:00	5	27	26	0	58	56	127	8	0	191	37	76	97	0	210	33	134	31	0	198	657	0
17:15	4	27	24	0	55	65	139	4	0	208	29	64	78	0	171	37	155	32	1	225	659	1
17:30	3	33	16	0	52	65	106	2	0	173	41	83	98	0	222	26	131	29	0	186	633	0
17:45	8	30	21	0	59	65	135	11	0	211	41	59	77	0	177	25	142	35	2	204	651	2
Total	20	117	87	0	224	251	507	25	0	783	148	282	350	0	780	121	562	127	3	813	2600	3
Grand Total	79	530	354	0	963	1072	1830	70	3	2975	442	712	1153	0	2307	354	1999	559	19	2931	9176	22
Apprch %	8.2%	55.0%	36.8%	0.0%		36.0%	61.5%	2.4%	0.1%		19.2%	30.9%	50.0%	0.0%		12.1%	68.2%	19.1%	0.6%			
Total %	0.9%	5.8%	3.9%	0.0%	10.5%	11.7%	19.9%	0.8%	0.0%	32.4%	4.8%	7.8%	12.6%	0.0%	25.1%	3.9%	21.8%	6.1%	0.2%	31.9%	100.0%	

AM PEAK HOUR	Church Ln Southbound					El Portal Dr Westbound					Church Ln Northbound					El Portal Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	5	54	24	0	83	78	132	2	0	212	38	33	69	0	140	15	118	50	1	184	619
8:00	5	54	29	0	88	68	129	0	0	197	30	26	71	0	127	17	122	39	1	179	591
8:15	2	51	23	0	76	89	131	2	0	222	33	32	65	0	130	26	105	83	2	216	644
8:30	4	38	35	0	77	80	135	4	0	219	20	37	62	0	119	24	118	51	1	194	609
Total Volume	16	197	111	0	324	315	527	8	0	850	121	128	267	0	516	82	463	223	5	773	2463
% App Total	4.9%	60.8%	34.3%	0.0%		37.1%	62.0%	0.9%	0.0%		23.4%	24.8%	51.7%	0.0%		10.6%	59.9%	28.8%	0.6%		
PHF	.800	.912	.793	.000	.920	.885	.976	.500	.000	.957	.796	.865	.940	.000	.921	.788	.949	.672	.625	.895	.956

PM PEAK HOUR	Church Ln Southbound					El Portal Dr Westbound					Church Ln Northbound					El Portal Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	5	27	26	0	58	56	127	8	0	191	37	76	97	0	210	33	134	31	0	198	657
17:15	4	27	24	0	55	65	139	4	0	208	29	64	78	0	171	37	155	32	1	225	659
17:30	3	33	16	0	52	65	106	2	0	173	41	83	98	0	222	26	131	29	0	186	633
17:45	8	30	21	0	59	65	135	11	0	211	41	59	77	0	177	25	142	35	2	204	651
Total Volume	20	117	87	0	224	251	507	25	0	783	148	282	350	0	780	121	562	127	3	813	2600
% App Total	8.9%	52.2%	38.8%	0.0%		32.1%	64.8%	3.2%	0.0%		19.0%	36.2%	44.9%	0.0%		14.9%	69.1%	15.6%	0.4%		
PHF	.625	.886	.837	.000	.949	.965	.912	.568	.000	.928	.902	.849	.893	.000	.878	.818	.906	.907	.375	.903	.986

National Data and Surveying Services

City of San Pablo
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7416-003 San Pablo Ave & Church Ln
Date : 5/10/2017

Unshifted Count = All Vehicles & Uturns

	San Pablo Ave Southbound					Church Ln Westbound					San Pablo Ave Northbound					Church Ln Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	7	149	11	0	167	29	43	10	0	82	23	31	11	0	65	1	34	54	0	89	403	0
7:15	5	185	8	0	198	43	38	9	0	90	25	58	8	0	91	3	37	56	0	96	475	0
7:30	10	170	13	0	193	51	55	11	0	117	20	62	28	1	111	2	52	61	0	115	536	1
7:45	6	171	23	0	200	53	83	10	0	146	44	71	31	1	147	3	75	77	0	155	648	1
Total	28	675	55	0	758	176	219	40	0	435	112	222	78	2	414	9	198	248	0	455	2062	2
8:00	14	146	6	0	166	55	84	10	0	149	43	94	43	0	180	12	77	77	0	166	661	0
8:15	14	177	9	1	201	68	115	12	0	195	42	107	53	0	202	6	93	69	0	168	766	1
8:30	14	142	10	0	166	48	61	20	0	129	33	105	37	2	177	8	46	64	0	118	590	2
8:45	8	118	10	0	136	41	60	15	0	116	35	97	30	0	162	11	50	58	0	119	533	0
Total	50	583	35	1	669	212	320	57	0	589	153	403	163	2	721	37	266	268	0	571	2550	3
16:00	27	95	9	0	131	28	49	21	0	98	64	220	64	0	348	14	59	50	0	123	700	0
16:15	24	108	10	0	142	27	51	19	0	97	59	184	64	1	308	14	54	63	0	131	678	1
16:30	18	108	15	0	141	21	66	11	0	98	52	199	71	0	322	8	68	60	0	136	697	0
16:45	19	101	17	0	137	35	60	19	0	114	58	218	79	1	356	9	64	70	0	143	750	1
Total	88	412	51	0	551	111	226	70	0	407	233	821	278	2	1334	45	245	243	0	533	2825	2
17:00	18	95	7	0	120	30	61	23	0	114	63	189	66	0	318	14	88	49	0	151	703	0
17:15	13	118	21	0	152	23	67	18	0	108	56	202	63	1	322	10	80	55	0	145	727	1
17:30	21	113	8	0	142	33	63	17	0	113	46	213	85	0	344	13	80	56	0	149	748	0
17:45	22	93	11	0	126	32	64	20	0	116	71	207	86	1	365	15	73	96	0	184	791	1
Total	74	419	47	0	540	118	255	78	0	451	236	811	300	2	1349	52	321	256	0	629	2969	2
Grand Total	240	2089	188	1	2518	617	1020	245	0	1882	734	2257	819	8	3818	143	1030	1015	0	2188	10406	9
Apprch %	9.5%	83.0%	7.5%	0.0%		32.8%	54.2%	13.0%	0.0%		19.2%	59.1%	21.5%	0.2%		6.5%	47.1%	46.4%	0.0%			
Total %	2.3%	20.1%	1.8%	0.0%	24.2%	5.9%	9.8%	2.4%	0.0%	18.1%	7.1%	21.7%	7.9%	0.1%	36.7%	1.4%	9.9%	9.8%	0.0%	21.0%	100.0%	

AM PEAK HOUR	San Pablo Ave Southbound					Church Ln Westbound					San Pablo Ave Northbound					Church Ln Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	6	171	23	0	200	53	83	10	0	146	44	71	31	1	147	3	75	77	0	155	648
8:00	14	146	6	0	166	55	84	10	0	149	43	94	43	0	180	12	77	77	0	166	661
8:15	14	177	9	1	201	68	115	12	0	195	42	107	53	0	202	6	93	69	0	168	766
8:30	14	142	10	0	166	48	61	20	0	129	33	105	37	2	177	8	46	64	0	118	590
Total Volume	48	636	48	1	733	224	343	52	0	619	162	377	164	3	706	29	291	287	0	607	2665
% App Total	6.5%	86.8%	6.5%	0.1%		36.2%	55.4%	8.4%	0.0%		22.9%	53.4%	23.2%	0.4%		4.8%	47.9%	47.3%	0.0%		
PHF	.857	.898	.522	.250	.912	.824	.746	.650	.000	.794	.920	.881	.774	.375	.874	.604	.782	.932	.000	.903	.870

PM PEAK HOUR	San Pablo Ave Southbound					Church Ln Westbound					San Pablo Ave Northbound					Church Ln Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	18	95	7	0	120	30	61	23	0	114	63	189	66	0	318	14	88	49	0	151	703
17:15	13	118	21	0	152	23	67	18	0	108	56	202	63	1	322	10	80	55	0	145	727
17:30	21	113	8	0	142	33	63	17	0	113	46	213	85	0	344	13	80	56	0	149	748
17:45	22	93	11	0	126	32	64	20	0	116	71	207	86	1	365	15	73	96	0	184	791
Total Volume	74	419	47	0	540	118	255	78	0	451	236	811	300	2	1349	52	321	256	0	629	2969
% App Total	13.7%	77.6%	8.7%	0.0%		26.2%	56.5%	17.3%	0.0%		17.5%	60.1%	22.2%	0.1%		8.3%	51.0%	40.7%	0.0%		
PHF	.841	.888	.560	.000	.888	.894	.951	.848	.000	.972	.831	.952	.872	.500	.924	.867	.912	.667	.000	.855	.938

National Data and Surveying Services

City of San Pablo
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7087-001 Evergreen Terrace & San Pablo Ave
Date : 2/14/2017

Unshifted Count = All Vehicles & Uturns

	Evergreen Terrace Southbound					San Pablo Ave Westbound					Evergreen Terrace Northbound					San Pablo Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	2	0	1	0	3	5	74	1	0	80	0	0	2	0	2	0	216	8	0	224	309	0
7:15	4	0	0	0	4	4	82	1	0	87	3	0	5	0	8	1	241	5	0	247	346	0
7:30	1	0	3	0	4	15	108	0	0	123	6	0	5	0	11	0	273	11	0	284	422	0
7:45	3	0	0	0	3	26	146	1	0	173	5	0	2	0	7	1	239	5	1	246	429	1
Total	10	0	4	0	14	50	410	3	0	463	14	0	14	0	28	2	969	29	1	1001	1506	1
8:00	6	0	3	0	9	37	194	1	0	232	7	0	4	0	11	0	217	6	1	224	476	1
8:15	3	0	2	0	5	37	189	1	0	227	10	0	12	0	22	1	243	6	1	251	505	1
8:30	1	0	0	0	1	20	138	0	0	158	10	1	16	0	27	0	245	16	1	262	448	1
8:45	0	0	0	0	0	21	152	0	0	173	7	0	24	0	31	0	184	10	0	194	398	0
Total	10	0	5	0	15	115	673	2	0	790	34	1	56	0	91	1	889	38	3	931	1827	3
16:00	0	0	1	0	1	22	332	3	2	359	26	0	27	0	53	0	158	10	1	169	582	3
16:15	0	0	2	0	2	18	297	1	1	317	29	0	27	0	56	1	175	15	1	192	567	2
16:30	1	0	0	0	1	12	341	0	0	353	21	0	27	0	48	1	173	8	0	182	584	0
16:45	2	0	2	0	4	18	280	0	0	298	23	0	25	0	48	1	178	10	1	190	540	1
Total	3	0	5	0	8	70	1250	4	3	1327	99	0	106	0	205	3	684	43	3	733	2273	6
17:00	1	0	1	0	2	15	314	1	2	332	42	0	22	0	64	1	141	12	0	154	552	2
17:15	2	0	0	0	2	24	347	1	3	375	19	0	26	0	45	0	150	5	1	156	578	4
17:30	1	0	0	0	1	16	344	2	2	364	24	0	18	0	42	0	175	10	1	186	593	3
17:45	2	0	0	0	2	18	321	2	1	342	13	0	13	0	26	0	153	10	0	163	533	1
Total	6	0	1	0	7	73	1326	6	8	1413	98	0	79	0	177	1	619	37	2	659	2256	10
Grand Total	29	0	15	0	44	308	3659	15	11	3993	245	1	255	0	501	7	3161	147	9	3324	7862	20
Apprch %	65.9%	0.0%	34.1%	0.0%		7.7%	91.6%	0.4%	0.3%		48.9%	0.2%	50.9%	0.0%		0.2%	95.1%	4.4%	0.3%			
Total %	0.4%	0.0%	0.2%	0.0%	0.6%	3.9%	46.5%	0.2%	0.1%	50.8%	3.1%	0.0%	3.2%	0.0%	6.4%	0.1%	40.2%	1.9%	0.1%	42.3%	100.0%	

AM PEAK HOUR	Evergreen Terrace Southbound					San Pablo Ave Westbound					Evergreen Terrace Northbound					San Pablo Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	3	0	0	0	3	26	146	1	0	173	5	0	2	0	7	1	239	5	1	246	429
8:00	6	0	3	0	9	37	194	1	0	232	7	0	4	0	11	0	217	6	1	224	476
8:15	3	0	2	0	5	37	189	1	0	227	10	0	12	0	22	1	243	6	1	251	505
8:30	1	0	0	0	1	20	138	0	0	158	10	1	16	0	27	0	245	16	1	262	448
Total Volume	13	0	5	0	18	120	667	3	0	790	32	1	34	0	67	2	944	33	4	983	1858
% App Total	72.2%	0.0%	27.8%	0.0%		15.2%	84.4%	0.4%	0.0%		47.8%	1.5%	50.7%	0.0%		0.2%	96.0%	3.4%	0.4%		
PHF	.542	.000	.417	.000	.500	.811	.860	.750	.000	.851	.800	.250	.531	.000	.620	.500	.963	.516	1.000	.938	.920

PM PEAK HOUR	Evergreen Terrace Southbound					San Pablo Ave Westbound					Evergreen Terrace Northbound					San Pablo Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	1	0	1	22	332	3	2	359	26	0	27	0	53	0	158	10	1	169	582
16:15	0	0	2	0	2	18	297	1	1	317	29	0	27	0	56	1	175	15	1	192	567
16:30	1	0	0	0	1	12	341	0	0	353	21	0	27	0	48	1	173	8	0	182	584
16:45	2	0	2	0	4	18	280	0	0	298	23	0	25	0	48	1	178	10	1	190	540
Total Volume	3	0	5	0	8	70	1250	4	3	1327	99	0	106	0	205	3	684	43	3	733	2273
% App Total	37.5%	0.0%	62.5%	0.0%		5.3%	94.2%	0.3%	0.2%		48.3%	0.0%	51.7%	0.0%		0.4%	93.3%	5.9%	0.4%		
PHF	.375	.000	.625	.000	.500	.795	.916	.333	.375	.924	.853	.000	.981	.000	.915	.750	.961	.717	.750	.954	.973

National Data and Surveying Services

City of San Pablo
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7416-004 San Pablo Ave & Vale Rd
Date : 5/10/2017

Unshifted Count = All Vehicles & Uturns

	San Pablo Ave Southbound					Vale Rd Westbound					San Pablo Ave Northbound					Vale Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	3	219	14	0	236	20	6	1	0	27	14	54	7	1	76	14	2	18	0	34	373	1
7:15	0	231	25	0	256	25	9	4	0	38	17	71	4	0	92	21	3	21	0	45	431	0
7:30	0	228	29	0	257	28	28	1	0	57	29	87	5	2	123	29	4	28	0	61	498	2
7:45	1	238	36	0	275	35	33	1	0	69	42	139	9	3	193	44	8	34	0	86	623	3
Total	4	916	104	0	1024	108	76	7	0	191	102	351	25	6	484	108	17	101	0	226	1925	6
8:00	1	191	63	1	256	42	42	1	0	85	41	131	5	1	178	66	13	31	0	110	629	2
8:15	0	187	50	1	238	29	44	1	0	74	76	128	14	2	220	78	19	38	0	135	667	3
8:30	0	165	48	0	213	25	55	2	0	82	64	123	8	0	195	62	17	44	0	123	613	0
8:45	0	205	41	0	246	18	8	0	0	26	45	131	11	3	190	34	7	33	0	74	536	3
Total	1	748	202	2	953	114	149	4	0	267	226	513	38	6	783	240	56	146	0	442	2445	8
16:00	2	160	30	1	193	12	4	1	0	17	34	259	23	5	321	61	13	26	0	100	631	6
16:15	3	177	23	1	204	9	0	0	0	9	45	238	25	4	312	49	10	43	0	102	627	5
16:30	3	156	21	2	182	23	4	3	0	30	45	246	21	5	317	60	20	48	0	128	657	7
16:45	1	187	29	1	218	12	5	2	0	19	26	274	27	2	329	58	20	43	0	121	687	3
Total	9	680	103	5	797	56	13	6	0	75	150	1017	96	16	1279	228	63	160	0	451	2602	21
17:00	1	192	16	0	209	10	2	2	0	14	29	251	31	0	311	75	27	45	0	147	681	0
17:15	0	163	32	0	195	15	5	1	0	21	33	286	23	1	343	56	17	36	0	109	668	1
17:30	2	170	19	1	192	10	6	3	0	19	26	258	24	6	314	51	23	37	0	111	636	7
17:45	3	183	22	2	210	18	2	3	0	23	33	291	28	1	353	56	19	37	0	112	698	3
Total	6	708	89	3	806	53	15	9	0	77	121	1086	106	8	1321	238	86	155	0	479	2683	11
Grand Total	20	3052	498	10	3580	331	253	26	0	610	599	2967	265	36	3867	814	222	562	0	1598	9655	46
Apprch %	0.6%	85.3%	13.9%	0.3%		54.3%	41.5%	4.3%	0.0%		15.5%	76.7%	6.9%	0.9%		50.9%	13.9%	35.2%	0.0%			
Total %	0.2%	31.6%	5.2%	0.1%	37.1%	3.4%	2.6%	0.3%	0.0%	6.3%	6.2%	30.7%	2.7%	0.4%	40.1%	8.4%	2.3%	5.8%	0.0%	16.6%	100.0%	

AM PEAK HOUR	San Pablo Ave Southbound					Vale Rd Westbound					San Pablo Ave Northbound					Vale Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	1	238	36	0	275	35	33	1	0	69	42	139	9	3	193	44	8	34	0	86	623
8:00	1	191	63	1	256	42	42	1	0	85	41	131	5	1	178	66	13	31	0	110	629
8:15	0	187	50	1	238	29	44	1	0	74	76	128	14	2	220	78	19	38	0	135	667
8:30	0	165	48	0	213	25	55	2	0	82	64	123	8	0	195	62	17	44	0	123	613
Total Volume	2	781	197	2	982	131	174	5	0	310	223	521	36	6	786	250	57	147	0	454	2532
% App Total	0.2%	79.5%	20.1%	0.2%		42.3%	56.1%	1.6%	0.0%		28.4%	66.3%	4.6%	0.8%		55.1%	12.6%	32.4%	0.0%		
PHF	.500	.820	.782	.500	.893	.780	.791	.625	.000	.912	.734	.937	.643	.500	.893	.801	.750	.835	.000	.841	.949

PM PEAK HOUR	San Pablo Ave Southbound					Vale Rd Westbound					San Pablo Ave Northbound					Vale Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	3	156	21	2	182	23	4	3	0	30	45	246	21	5	317	60	20	48	0	128	657
16:45	1	187	29	1	218	12	5	2	0	19	26	274	27	2	329	58	20	43	0	121	687
17:00	1	192	16	0	209	10	2	2	0	14	29	251	31	0	311	75	27	45	0	147	681
17:15	0	163	32	0	195	15	5	1	0	21	33	286	23	1	343	56	17	36	0	109	668
Total Volume	5	698	98	3	804	60	16	8	0	84	133	1057	102	8	1300	249	84	172	0	505	2693
% App Total	0.6%	86.8%	12.2%	0.4%		71.4%	19.0%	9.5%	0.0%		10.2%	81.3%	7.8%	0.6%		49.3%	16.6%	34.1%	0.0%		
PHF	.417	.909	.766	.375	.922	.652	.800	.667	.000	.700	.739	.924	.823	.400	.948	.830	.778	.896	.000	.859	.980

National Data and Surveying Services

City of San Pablo
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7416-005 San Pablo Ave & San Pablo Dam Rd
Date : 5/16/2017

Unshifted Count = All Vehicles & Uturns

	San Pablo Ave Southbound					San Pablo Dam Rd Westbound					San Pablo Ave Northbound					San Pablo Dam Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	89	182	0	0	271	82	7	34	0	123	4	23	54	0	81	0	1	4	0	5	480	0
7:15	74	215	3	0	292	110	16	34	0	160	6	43	53	0	102	0	3	2	0	5	559	0
7:30	118	188	1	0	307	99	19	53	0	171	2	38	57	0	97	0	5	1	0	6	581	0
7:45	67	184	2	0	253	145	17	74	0	236	3	67	65	0	135	0	0	3	0	3	627	0
Total	348	769	6	0	1123	436	59	195	0	690	15	171	229	0	415	0	9	10	0	19	2247	0
8:00	92	218	1	0	311	146	14	58	0	218	5	91	73	0	169	1	0	0	0	1	699	0
8:15	80	183	4	0	267	157	11	55	0	223	4	88	82	0	174	0	2	0	0	2	666	0
8:30	78	210	1	0	289	135	19	60	0	214	7	87	55	0	149	0	4	1	0	5	657	0
8:45	66	130	3	0	199	120	27	47	0	194	9	85	65	0	159	0	3	1	0	4	556	0
Total	316	741	9	0	1066	558	71	220	0	849	25	351	275	0	651	1	9	2	0	12	2578	0
16:00	130	115	9	0	254	116	30	35	0	181	17	163	87	0	267	1	5	4	0	10	712	0
16:15	128	141	5	0	274	97	31	46	0	174	13	181	88	0	282	1	3	0	0	4	734	0
16:30	86	102	3	0	191	106	26	38	0	170	11	197	76	0	284	3	8	2	0	13	658	0
16:45	123	101	8	0	232	70	22	32	0	124	8	197	93	0	298	0	7	2	0	9	663	0
Total	467	459	25	0	951	389	109	151	0	649	49	738	344	0	1131	5	23	8	0	36	2767	0
17:00	112	129	8	0	249	97	23	43	0	163	16	195	98	0	309	1	5	2	0	8	729	0
17:15	106	116	6	0	228	80	24	43	0	147	16	213	84	0	313	0	2	1	0	3	691	0
17:30	100	118	2	0	220	88	34	36	0	158	14	201	87	0	302	1	5	2	0	8	688	0
17:45	82	91	2	0	175	90	21	55	0	166	9	205	97	3	314	0	2	2	0	4	659	3
Total	400	454	18	0	872	355	102	177	0	634	55	814	366	3	1238	2	14	7	0	23	2767	3
Grand Total	1531	2423	58	0	4012	1738	341	743	0	2822	144	2074	1214	3	3435	8	55	27	0	90	10359	3
Apprch %	38.2%	60.4%	1.4%	0.0%		61.6%	12.1%	26.3%	0.0%		4.2%	60.4%	35.3%	0.1%		8.9%	61.1%	30.0%	0.0%			
Total %	14.8%	23.4%	0.6%	0.0%	38.7%	16.8%	3.3%	7.2%	0.0%	27.2%	1.4%	20.0%	11.7%	0.0%	33.2%	0.1%	0.5%	0.3%	0.0%	0.9%	100.0%	

AM PEAK HOUR	San Pablo Ave Southbound					San Pablo Dam Rd Westbound					San Pablo Ave Northbound					San Pablo Dam Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	67	184	2	0	253	145	17	74	0	236	3	67	65	0	135	0	0	3	0	3	627
8:00	92	218	1	0	311	146	14	58	0	218	5	91	73	0	169	1	0	0	0	1	699
8:15	80	183	4	0	267	157	11	55	0	223	4	88	82	0	174	0	2	0	0	2	666
8:30	78	210	1	0	289	135	19	60	0	214	7	87	55	0	149	0	4	1	0	5	657
Total Volume	317	795	8	0	1120	583	61	247	0	891	19	333	275	0	627	1	6	4	0	11	2649
% App Total	28.3%	71.0%	0.7%	0.0%		65.4%	6.8%	27.7%	0.0%		3.0%	53.1%	43.9%	0.0%		9.1%	54.5%	36.4%	0.0%		
PHF	.861	.912	.500	.000	.900	.928	.803	.834	.000	.944	.679	.915	.838	.000	.901	.250	.375	.333	.000	.550	.947

PM PEAK HOUR	San Pablo Ave Southbound					San Pablo Dam Rd Westbound					San Pablo Ave Northbound					San Pablo Dam Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	128	141	5	0	274	97	31	46	0	174	13	181	88	0	282	1	3	0	0	4	734
16:30	86	102	3	0	191	106	26	38	0	170	11	197	76	0	284	3	8	2	0	13	658
16:45	123	101	8	0	232	70	22	32	0	124	8	197	93	0	298	0	7	2	0	9	663
17:00	112	129	8	0	249	97	23	43	0	163	16	195	98	0	309	1	5	2	0	8	729
Total Volume	449	473	24	0	946	370	102	159	0	631	48	770	355	0	1173	5	23	6	0	34	2784
% App Total	47.5%	50.0%	2.5%	0.0%		58.6%	16.2%	25.2%	0.0%		4.1%	65.6%	30.3%	0.0%		14.7%	67.6%	17.6%	0.0%		
PHF	.877	.839	.750	.000	.863	.873	.823	.864	.000	.907	.750	.977	.906	.000	.949	.417	.719	.750	.000	.654	.948

APPENDIX B: EXISTING CONDITIONS
INTERSECTION ANALYSIS WORKSHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	563	121	74	16	86	53	118	709	51	44	314	488
Future Volume (veh/h)	563	121	74	16	86	53	118	709	51	44	314	488
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	669	0	0	16	89	0	122	731	53	45	324	503
Adj No. of Lanes	2	0	1	0	1	1	1	2	0	1	2	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	753	0	336	21	118	119	149	1651	120	58	1566	691
Arrive On Green	0.21	0.00	0.00	0.07	0.07	0.00	0.08	0.48	0.48	0.03	0.43	0.43
Sat Flow, veh/h	3619	0	1615	287	1598	1615	1810	3410	247	1810	3610	1593
Grp Volume(v), veh/h	669	0	0	105	0	0	122	387	397	45	324	503
Grp Sat Flow(s),veh/h/ln	1810	0	1615	1886	0	1615	1810	1805	1852	1810	1805	1593
Q Serve(g_s), s	21.4	0.0	0.0	6.5	0.0	0.0	7.9	16.7	16.8	2.9	6.6	31.1
Cycle Q Clear(g_c), s	21.4	0.0	0.0	6.5	0.0	0.0	7.9	16.7	16.8	2.9	6.6	31.1
Prop In Lane	1.00		1.00	0.15		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	753	0	336	139	0	119	149	874	897	58	1566	691
V/C Ratio(X)	0.89	0.00	0.00	0.75	0.00	0.00	0.82	0.44	0.44	0.77	0.21	0.73
Avail Cap(c_a), veh/h	1520	0	679	634	0	543	304	910	934	152	1820	803
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	0.0	0.0	54.0	0.0	0.0	53.7	20.2	20.2	57.2	21.0	27.9
Incr Delay (d2), s/veh	1.5	0.0	0.0	7.9	0.0	0.0	4.1	0.8	0.7	7.8	0.1	4.0
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	10.8	0.0	0.0	3.7	0.0	0.0	4.1	8.5	8.7	1.6	3.3	14.5
LnGrp Delay(d),s/veh	47.3	0.0	0.0	62.0	0.0	0.0	57.8	20.9	20.9	65.0	21.1	31.9
LnGrp LOS	D			E			E	C	C	E	C	C
Approach Vol, veh/h		669			105			906			872	
Approach Delay, s/veh		47.3			62.0			25.9			29.6	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.8	63.6		30.8	15.8	57.6		14.8
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	10.0	60.0		50.0	20.0	60.0		40.0
Max Q Clear Time (g_c+I1), s	4.9	18.8		23.4	9.9	33.1		8.5
Green Ext Time (p_c), s	0.0	24.6		1.4	0.1	18.5		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	562	127	251	507	25	148	282	350	20	117	87
Future Volume (veh/h)	124	562	127	251	507	25	148	282	350	20	117	87
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	125	568	33	254	512	22	149	285	75	20	118	12
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	0	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	158	1081	470	295	1322	57	357	375	312	32	191	183
Arrive On Green	0.09	0.30	0.30	0.16	0.38	0.38	0.20	0.20	0.20	0.12	0.12	0.12
Sat Flow, veh/h	1810	3610	1570	1810	3525	151	1810	1900	1582	273	1613	1541
Grp Volume(v), veh/h	125	568	33	254	262	272	149	285	75	138	0	12
Grp Sat Flow(s),veh/h/ln	1810	1805	1570	1810	1805	1872	1810	1900	1582	1886	0	1541
Q Serve(g_s), s	6.1	11.8	1.4	12.3	9.6	9.6	6.5	12.8	3.6	6.3	0.0	0.6
Cycle Q Clear(g_c), s	6.1	11.8	1.4	12.3	9.6	9.6	6.5	12.8	3.6	6.3	0.0	0.6
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	0.14		1.00
Lane Grp Cap(c), veh/h	158	1081	470	295	677	702	357	375	312	224	0	183
V/C Ratio(X)	0.79	0.53	0.07	0.86	0.39	0.39	0.42	0.76	0.24	0.62	0.00	0.07
Avail Cap(c_a), veh/h	401	1441	627	481	720	747	562	590	491	439	0	359
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.4	26.3	22.6	36.8	20.6	20.6	31.7	34.2	30.5	37.8	0.0	35.3
Incr Delay (d2), s/veh	3.4	0.8	0.1	7.1	0.8	0.7	1.1	4.5	0.6	3.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	6.0	0.6	6.7	4.9	5.1	3.3	7.2	1.6	3.5	0.0	0.3
LnGrp Delay(d),s/veh	43.7	27.1	22.7	43.8	21.4	21.4	32.8	38.7	31.1	41.7	0.0	35.5
LnGrp LOS	D	C	C	D	C	C	C	D	C	D		D
Approach Vol, veh/h		726			788			509			150	
Approach Delay, s/veh		29.8			28.6			35.9			41.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.7	32.0		15.7	12.9	38.8		22.8
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	36.0		21.0	20.0	36.0		28.0
Max Q Clear Time (g_c+I1), s	14.3	13.8		8.3	8.1	11.6		14.8
Green Ext Time (p_c), s	0.4	13.2		0.8	0.1	14.1		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	321	256	118	255	78	238	811	300	74	419	47
Future Volume (veh/h)	52	321	256	118	255	78	238	811	300	74	419	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	55	341	0	126	271	0	253	863	298	79	446	0
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	73	428	364	159	519	0	289	1226	422	103	1323	533
Arrive On Green	0.04	0.23	0.00	0.09	0.27	0.00	0.16	0.47	0.47	0.06	0.37	0.00
Sat Flow, veh/h	1810	1900	1615	1810	1900	0	1810	2613	900	1810	3610	1454
Grp Volume(v), veh/h	55	341	0	126	271	0	253	596	565	79	446	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	0	1810	1805	1707	1810	1805	1454
Q Serve(g_s), s	3.0	17.0	0.0	6.8	12.1	0.0	13.7	26.2	26.4	4.3	9.0	0.0
Cycle Q Clear(g_c), s	3.0	17.0	0.0	6.8	12.1	0.0	13.7	26.2	26.4	4.3	9.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.53	1.00		1.00
Lane Grp Cap(c), veh/h	73	428	364	159	519	0	289	847	801	103	1323	533
V/C Ratio(X)	0.76	0.80	0.00	0.79	0.52	0.00	0.88	0.70	0.71	0.77	0.34	0.00
Avail Cap(c_a), veh/h	577	758	644	433	758	0	577	864	817	433	1728	696
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.6	36.7	0.0	44.8	30.9	0.0	41.2	21.1	21.1	46.7	23.0	0.0
Incr Delay (d2), s/veh	14.7	3.4	0.0	8.4	0.3	0.0	3.4	3.3	3.5	4.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	9.3	0.0	3.8	6.4	0.0	7.1	13.8	13.2	2.3	4.5	0.0
LnGrp Delay(d),s/veh	62.4	40.1	0.0	53.3	31.2	0.0	44.5	24.3	24.6	51.2	23.3	0.0
LnGrp LOS	E	D		D	C		D	C	C	D	C	
Approach Vol, veh/h		396			397			1414			525	
Approach Delay, s/veh		43.2			38.2			28.1			27.5	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	51.2	12.8	26.6	20.0	40.9	8.0	31.4
Change Period (Y+Rc), s	4.0	4.1	4.0	4.0	4.0	4.1	4.0	4.0
Max Green Setting (Gmax), s	24.0	48.0	24.0	40.0	32.0	48.0	32.0	40.0
Max Q Clear Time (g_c+I1), s	6.3	28.4	8.8	19.0	15.7	11.0	5.0	14.1
Green Ext Time (p_c), s	0.1	15.7	0.3	3.3	0.3	25.8	0.1	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	31.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	0	106	3	0	5	73	1250	4	6	684	43
Future Volume (veh/h)	99	0	106	3	0	5	73	1250	4	6	684	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		1.00	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	102	0	15	3	0	0	75	1289	4	6	705	41
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	276	0	216	259	0	0	98	2552	8	11	2225	129
Arrive On Green	0.14	0.00	0.14	0.14	0.00	0.00	0.05	0.69	0.69	0.01	0.64	0.64
Sat Flow, veh/h	1407	0	1576	1304	0	0	1810	3691	11	1810	3457	201
Grp Volume(v), veh/h	102	0	15	3	0	0	75	630	663	6	368	378
Grp Sat Flow(s),veh/h/ln	1407	0	1576	1304	0	0	1810	1805	1897	1810	1805	1853
Q Serve(g_s), s	4.9	0.0	0.7	0.2	0.0	0.0	3.7	14.9	14.9	0.3	8.2	8.2
Cycle Q Clear(g_c), s	5.8	0.0	0.7	0.9	0.0	0.0	3.7	14.9	14.9	0.3	8.2	8.2
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.01	1.00		0.11
Lane Grp Cap(c), veh/h	276	0	216	259	0	0	98	1248	1312	11	1162	1193
V/C Ratio(X)	0.37	0.00	0.07	0.01	0.00	0.00	0.77	0.50	0.51	0.54	0.32	0.32
Avail Cap(c_a), veh/h	505	0	472	376	0	0	482	1561	1641	401	1201	1233
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	0.0	33.9	34.3	0.0	0.0	42.1	6.6	6.6	44.7	7.2	7.2
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.0	0.0	4.6	0.7	0.6	13.9	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.3	0.1	0.0	0.0	2.0	7.6	8.0	0.2	4.2	4.3
LnGrp Delay(d),s/veh	36.3	0.0	33.9	34.3	0.0	0.0	46.7	7.3	7.2	58.6	7.5	7.5
LnGrp LOS	D		C	C			D	A	A	E	A	A
Approach Vol, veh/h		117			3			1368			752	
Approach Delay, s/veh		36.0			34.3			9.4			7.9	
Approach LOS		D			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	67.5		17.1	10.0	63.1		17.1
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		* 4.7
Max Green Setting (Gmax), s	20.0	78.0		* 27	24.0	60.0		* 20
Max Q Clear Time (g_c+I1), s	2.3	16.9		7.8	5.7	10.2		2.9
Green Ext Time (p_c), s	0.0	45.4		0.2	0.1	38.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	84	172	60	16	8	141	1057	102	8	698	98
Future Volume (veh/h)	249	84	172	60	16	8	141	1057	102	8	698	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	170	204	79	61	16	2	144	1079	100	8	712	93
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	312	328	265	147	134	17	176	1817	168	14	1387	181
Arrive On Green	0.17	0.17	0.17	0.08	0.08	0.08	0.10	0.55	0.55	0.01	0.46	0.46
Sat Flow, veh/h	1810	1900	1536	1810	1645	206	1810	3327	308	1810	3037	396
Grp Volume(v), veh/h	170	204	79	61	0	18	144	585	594	8	423	382
Grp Sat Flow(s),veh/h/ln	1810	1900	1536	1810	0	1851	1810	1805	1830	1810	1805	1628
Q Serve(g_s), s	8.9	10.4	4.7	3.3	0.0	0.9	8.1	22.7	22.7	0.5	17.3	17.4
Cycle Q Clear(g_c), s	8.9	10.4	4.7	3.3	0.0	0.9	8.1	22.7	22.7	0.5	17.3	17.4
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.17	1.00		0.24
Lane Grp Cap(c), veh/h	312	328	265	147	0	151	176	986	1000	14	824	743
V/C Ratio(X)	0.54	0.62	0.30	0.41	0.00	0.12	0.82	0.59	0.59	0.56	0.51	0.51
Avail Cap(c_a), veh/h	694	729	590	694	0	710	833	986	1000	417	970	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	40.0	37.6	45.5	0.0	44.4	46.1	15.9	15.9	51.5	20.1	20.1
Incr Delay (d2), s/veh	2.1	2.7	0.9	0.7	0.0	0.1	3.5	1.5	1.5	11.9	1.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	5.7	2.0	1.7	0.0	0.5	4.3	11.6	11.8	0.3	8.8	8.0
LnGrp Delay(d),s/veh	41.5	42.7	38.5	46.2	0.0	44.5	49.6	17.4	17.4	63.5	21.2	21.3
LnGrp LOS	D	D	D	D		D	D	B	B	E	C	C
Approach Vol, veh/h		453			79			1323			813	
Approach Delay, s/veh		41.5			45.8			20.9			21.6	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.8	61.9		23.0	15.2	52.6		13.5
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	56.0		40.0	48.0	56.0		40.0
Max Q Clear Time (g_c+I1), s	2.5	24.7		12.4	10.1	19.4		5.3
Green Ext Time (p_c), s	0.0	26.0		3.1	0.2	28.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	23	6	370	102	159	48	770	355	449	473	24
Future Volume (veh/h)	5	23	6	370	102	159	48	770	355	449	473	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	24	1	389	107	0	51	811	0	473	498	22
Adj No. of Lanes	0	2	0	2	1	0	1	2	1	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	17	85	4	469	246	0	66	1398	625	489	2167	96
Arrive On Green	0.03	0.03	0.03	0.13	0.13	0.00	0.04	0.39	0.00	0.27	0.62	0.62
Sat Flow, veh/h	595	3020	131	3619	1900	0	1810	3610	1615	1810	3519	155
Grp Volume(v), veh/h	16	0	14	389	107	0	51	811	0	473	255	265
Grp Sat Flow(s),veh/h/ln	1870	0	1877	1810	1900	0	1810	1805	1615	1810	1805	1869
Q Serve(g_s), s	0.8	0.0	0.7	10.5	5.2	0.0	2.8	17.8	0.0	25.8	6.3	6.3
Cycle Q Clear(g_c), s	0.8	0.0	0.7	10.5	5.2	0.0	2.8	17.8	0.0	25.8	6.3	6.3
Prop In Lane	0.32		0.07	1.00		0.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	53	0	53	469	246	0	66	1398	625	489	1111	1151
V/C Ratio(X)	0.30	0.00	0.27	0.83	0.43	0.00	0.77	0.58	0.00	0.97	0.23	0.23
Avail Cap(c_a), veh/h	355	0	357	579	304	0	181	1398	625	489	1111	1151
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	47.6	42.4	40.1	0.0	47.8	24.2	0.0	36.1	8.6	8.6
Incr Delay (d2), s/veh	1.2	0.0	1.0	6.8	0.5	0.0	7.0	1.8	0.0	32.4	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4	5.7	2.8	0.0	1.5	9.1	0.0	17.3	3.3	3.4
LnGrp Delay(d),s/veh	48.8	0.0	48.6	49.2	40.6	0.0	54.8	26.0	0.0	68.4	9.1	9.1
LnGrp LOS	D		D	D	D		D	C		E	A	A
Approach Vol, veh/h		30			496			862			993	
Approach Delay, s/veh		48.7			47.4			27.7			37.3	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	31.5	43.7		6.8	8.6	66.6		18.0
Change Period (Y+Rc), s	4.5	5.0		4.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	27.0	19.5		19.0	10.0	36.0		16.0
Max Q Clear Time (g_c+I1), s	27.8	19.8		2.8	4.8	8.3		12.5
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	17.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	36.1
HCM 2010 LOS	D

Notes

APPENDIX C: MAINSTREET (TRIP GENERATION) INPUTS AND DATA SOURCES

MAINSTREET MXD MODEL INPUTS

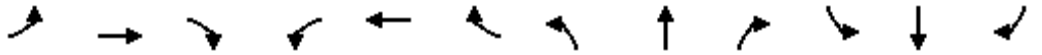
Input Variable	Input Value	Source
Project Area (Acres)	3.8	GIS
Intersections per Square Mile	113.0	EPA Smart Location Database (2013) - 2010 Scenario
Employment within 1 mile of Project Site	679.0	EPA Smart Location Database (2013) - 2010 Scenario
Share of regional employment within a 30 minute trip by transit	4%	EPA Smart Location Database (2013) - 2010 Scenario
Surrounding Household Size	2.5	ACS 2012 (5-year) - All Housing Types
Surrounding Vehicle Ownership	1.2	ACS 2012 (5-year) - All Housing Types
Site Household Size	2.5	ACS 2012 (5-year) - All Housing Types
Site Vehicle Ownership	1.2	ACS 2012 (5-year) - All Housing Types
Average Vehicle Occupancy (HBW Trips)	1.0	NCHRP 758
Average Vehicle Occupancy (HBO Trips)	1.0	NCHRP 758
Average Vehicle Occupancy (NHB Trips)	1.0	NCHRP 758

APPENDIX D: AMERICAN COMMUNITY SURVEY DATA FOR PROJECT CENSUS TRACT

Subject	Census Tract 3690.01, Contra Costa County, California					
	Total		Male		Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Workers 16 years and over	2,976	+/-393	1,793	+/-301	1,183	+/-282
MEANS OF TRANSPORTATION						
Car, truck, or van	75.8%	+/-7.5	80.3%	+/-8.5	69.1%	+/-12.7
Drove alone	51.4%	+/-9.5	56.6%	+/-11.1	43.7%	+/-13.7
Carpooled	24.4%	+/-8.1	23.7%	+/-9.7	25.4%	+/-11.9
In 2-person carpool	15.4%	+/-6.7	15.6%	+/-7.6	15.0%	+/-11.0
In 3-person carpool	7.6%	+/-5.9	8.1%	+/-6.1	6.8%	+/-6.9
In 4-or-more person carpool	1.4%	+/-1.5	0.0%	+/-1.8	3.5%	+/-3.8
Workers per car, truck, or van	1.22	+/-0.09	1.20	+/-0.10	1.27	+/-0.14
Public transportation (excluding	17.50%	+/-7.3	11.7%	+/-6.5	26.3%	+/-11.9
Walked	5.50%	+/-4.3	7.1%	+/-6.4	3.1%	+/-3.8
Bicycle	0.00%	+/-1.1	0.0%	+/-1.8	0.0%	+/-2.7
Taxicab, motorcycle, or other	1.2%	+/-2.0	0.9%	+/-1.6	1.5%	+/-2.7
Worked at home	0.0%	+/-1.1	0.0%	+/-1.8	0.0%	+/-2.7
PLACE OF WORK						
Worked in state of residence	100.0%	+/-1.1	100.0%	+/-1.8	100.0%	+/-2.7
Worked in county of residence	42.0%	+/-9.5	40.3%	+/-11.9	44.5%	+/-13.0
Worked outside county of	58.0%	+/-9.5	59.7%	+/-11.9	55.5%	+/-13.0
Worked outside state of	0.0%	+/-1.1	0.0%	+/-1.8	0.0%	+/-2.7
Living in a place	100.0%	+/-1.1	100.0%	+/-1.8	100.0%	+/-2.7
Worked in place of residence	16.0%	+/-8.8	22.7%	+/-11.9	5.8%	+/-6.3
Worked outside place of	84.0%	+/-8.8	77.3%	+/-11.9	94.2%	+/-6.3
Not living in a place	0.0%	+/-1.1	0.0%	+/-1.8	0.0%	+/-2.7
Living in 12 selected states	0.0%	+/-1.1	0.0%	+/-1.8	0.0%	+/-2.7
Worked in minor civil division of	0.0%	+/-1.1	0.0%	+/-1.8	0.0%	+/-2.7
Worked outside minor civil	0.0%	+/-1.1	0.0%	+/-1.8	0.0%	+/-2.7
Not living in 12 selected states	100.0%	+/-1.1	100.0%	+/-1.8	100.0%	+/-2.7
Workers 16 years and over who did not work at home	2,976	+/-393	1,793	+/-301	1,183	+/-282
TIME LEAVING HOME TO GO						
12:00 a.m. to 4:59 a.m.	7.8%	+/-4.3	11.8%	+/-6.7	1.8%	+/-3.9
5:00 a.m. to 5:29 a.m.	5.3%	+/-4.2	4.1%	+/-3.3	7.2%	+/-8.3
5:30 a.m. to 5:59 a.m.	3.6%	+/-2.9	1.8%	+/-3.1	6.3%	+/-5.6
6:00 a.m. to 6:29 a.m.	9.9%	+/-6.0	10.9%	+/-7.6	8.5%	+/-9.6
6:30 a.m. to 6:59 a.m.	2.4%	+/-2.1	1.3%	+/-1.5	4.1%	+/-4.8
7:00 a.m. to 7:29 a.m.	8.2%	+/-3.8	9.3%	+/-5.2	6.4%	+/-6.0
7:30 a.m. to 7:59 a.m.	6.5%	+/-4.2	4.6%	+/-4.6	9.2%	+/-6.9
8:00 a.m. to 8:29 a.m.	9.2%	+/-5.2	6.7%	+/-6.6	12.9%	+/-9.3

8:30 a.m. to 8:59 a.m.	1.5%	+/-1.4	0.6%	+/-0.9	3.0%	+/-3.1
9:00 a.m. to 11:59 p.m.	45.6%	+/-9.4	48.9%	+/-9.2	40.7%	+/-14.2
TRAVEL TIME TO WORK						
Less than 10 minutes	9.9%	+/-5.3	6.9%	+/-6.3	14.5%	+/-8.3
10 to 14 minutes	16.1%	+/-6.8	20.3%	+/-8.9	9.6%	+/-6.8
15 to 19 minutes	4.4%	+/-3.2	3.8%	+/-4.2	5.3%	+/-5.4
20 to 24 minutes	17.9%	+/-7.3	21.4%	+/-9.7	12.8%	+/-10.8
25 to 29 minutes	3.7%	+/-2.7	4.3%	+/-3.8	2.9%	+/-3.5
30 to 34 minutes	10.3%	+/-5.2	12.8%	+/-7.3	6.5%	+/-7.3
35 to 44 minutes	5.9%	+/-3.5	5.6%	+/-4.3	6.3%	+/-4.9
45 to 59 minutes	11.0%	+/-5.8	12.0%	+/-7.4	9.3%	+/-8.9
60 or more minutes	20.8%	+/-8.3	12.9%	+/-6.5	32.8%	+/-13.8
Mean travel time to work	33.6	+/-5.6	28.5	+/-4.4	41.3	+/-8.7
VEHICLES AVAILABLE						
Workers 16 years and over in households	2,936	+/-382	1,753	+/-285	1,183	+/-282
No vehicle available	8.8%	+/-5.4	5.5%	+/-4.7	13.7%	+/-10.0
1 vehicle available	35.9%	+/-9.5	28.9%	+/-8.9	46.4%	+/-12.6
2 vehicles available	46.2%	+/-10.7	53.9%	+/-12.3	34.8%	+/-12.0
3 or more vehicles available	9.1%	+/-7.8	11.8%	+/-10.0	5.1%	+/-5.4
PERCENT IMPUTED						
Means of transportation to work	9.7%	(X)	(X)	(X)	(X)	(X)
Private vehicle occupancy	12.7%	(X)	(X)	(X)	(X)	(X)
Place of work	16.6%	(X)	(X)	(X)	(X)	(X)
Time leaving home to go to work	27.1%	(X)	(X)	(X)	(X)	(X)
Travel time to work	15.2%	(X)	(X)	(X)	(X)	(X)
Vehicles available	3.6%	(X)	(X)	(X)	(X)	(X)

APPENDIX E: EXISTING WITH PROJECT INTERSECTION ANALYSIS WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	563	121	74	16	86	53	118	727	51	44	333	488
Future Volume (veh/h)	563	121	74	16	86	53	118	727	51	44	333	488
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	669	0	0	16	89	0	122	749	53	45	343	503
Adj No. of Lanes	2	0	1	0	1	1	1	2	0	1	2	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	753	0	336	21	118	119	149	1658	117	58	1571	693
Arrive On Green	0.21	0.00	0.00	0.07	0.07	0.00	0.08	0.49	0.49	0.03	0.44	0.44
Sat Flow, veh/h	3619	0	1615	287	1598	1615	1810	3417	242	1810	3610	1593
Grp Volume(v), veh/h	669	0	0	105	0	0	122	396	406	45	343	503
Grp Sat Flow(s),veh/h/ln	1810	0	1615	1886	0	1615	1810	1805	1853	1810	1805	1593
Q Serve(g_s), s	21.5	0.0	0.0	6.5	0.0	0.0	7.9	17.3	17.3	3.0	7.1	31.2
Cycle Q Clear(g_c), s	21.5	0.0	0.0	6.5	0.0	0.0	7.9	17.3	17.3	3.0	7.1	31.2
Prop In Lane	1.00		1.00	0.15		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	753	0	336	139	0	119	149	876	900	58	1571	693
V/C Ratio(X)	0.89	0.00	0.00	0.75	0.00	0.00	0.82	0.45	0.45	0.77	0.22	0.73
Avail Cap(c_a), veh/h	1512	0	675	630	0	540	302	905	929	151	1810	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	0.0	0.0	54.3	0.0	0.0	54.0	20.3	20.3	57.5	21.1	27.9
Incr Delay (d2), s/veh	1.5	0.0	0.0	8.0	0.0	0.0	4.1	0.8	0.8	7.8	0.1	4.0
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	10.9	0.0	0.0	3.7	0.0	0.0	4.1	8.8	9.0	1.6	3.6	14.5
LnGrp Delay(d),s/veh	47.5	0.0	0.0	62.3	0.0	0.0	58.2	21.1	21.1	65.3	21.2	31.9
LnGrp LOS	D			E			E	C	C	E	C	C
Approach Vol, veh/h		669			105			924			891	
Approach Delay, s/veh		47.5			62.3			26.0			29.5	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	64.1		30.9	15.9	58.1		14.8
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	10.0	60.0		50.0	20.0	60.0		40.0
Max Q Clear Time (g_c+I1), s	5.0	19.3		23.5	9.9	33.2		8.5
Green Ext Time (p_c), s	0.0	25.1		1.4	0.1	18.9		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	562	127	278	507	25	148	288	374	20	123	87
Future Volume (veh/h)	124	562	127	278	507	25	148	288	374	20	123	87
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	125	568	32	281	512	22	149	291	80	20	124	12
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	0	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	157	1053	458	320	1346	58	358	376	313	32	196	186
Arrive On Green	0.09	0.29	0.29	0.18	0.38	0.38	0.20	0.20	0.20	0.12	0.12	0.12
Sat Flow, veh/h	1810	3610	1570	1810	3525	151	1810	1900	1582	262	1625	1542
Grp Volume(v), veh/h	125	568	32	281	262	272	149	291	80	144	0	12
Grp Sat Flow(s),veh/h/ln	1810	1805	1570	1810	1805	1872	1810	1900	1582	1887	0	1542
Q Serve(g_s), s	6.4	12.4	1.4	14.2	9.8	9.9	6.8	13.6	4.0	6.8	0.0	0.6
Cycle Q Clear(g_c), s	6.4	12.4	1.4	14.2	9.8	9.9	6.8	13.6	4.0	6.8	0.0	0.6
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	0.14		1.00
Lane Grp Cap(c), veh/h	157	1053	458	320	689	714	358	376	313	227	0	186
V/C Ratio(X)	0.80	0.54	0.07	0.88	0.38	0.38	0.42	0.77	0.26	0.63	0.00	0.06
Avail Cap(c_a), veh/h	386	1386	603	463	693	718	540	567	472	422	0	345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.0	27.9	24.0	37.6	21.0	21.0	32.9	35.6	31.8	39.3	0.0	36.6
Incr Delay (d2), s/veh	3.4	0.9	0.1	11.4	0.7	0.7	1.1	5.1	0.6	4.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	6.3	0.6	8.1	5.0	5.2	3.5	7.6	1.8	3.8	0.0	0.3
LnGrp Delay(d),s/veh	45.5	28.8	24.1	49.0	21.7	21.7	34.0	40.7	32.4	43.4	0.0	36.8
LnGrp LOS	D	C	C	D	C	C	C	D	C	D		D
Approach Vol, veh/h		725			815			520			156	
Approach Delay, s/veh		31.5			31.1			37.5			42.9	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.6	32.4		16.3	13.1	40.8		23.6
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	36.0		21.0	20.0	36.0		28.0
Max Q Clear Time (g_c+I1), s	16.2	14.4		8.8	8.4	11.9		15.6
Green Ext Time (p_c), s	0.4	13.0		0.8	0.1	13.9		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	321	256	139	255	90	238	856	331	73	434	54
Future Volume (veh/h)	63	321	256	139	255	90	238	856	331	73	434	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	67	341	0	148	271	0	253	911	330	78	462	0
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	89	424	361	183	523	0	287	1199	432	101	1307	526
Arrive On Green	0.05	0.22	0.00	0.10	0.28	0.00	0.16	0.47	0.47	0.06	0.36	0.00
Sat Flow, veh/h	1810	1900	1615	1810	1900	0	1810	2578	929	1810	3610	1454
Grp Volume(v), veh/h	67	341	0	148	271	0	253	636	605	78	462	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	0	1810	1805	1701	1810	1805	1454
Q Serve(g_s), s	3.8	17.7	0.0	8.3	12.5	0.0	14.2	30.3	30.7	4.4	9.7	0.0
Cycle Q Clear(g_c), s	3.8	17.7	0.0	8.3	12.5	0.0	14.2	30.3	30.7	4.4	9.7	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	89	424	361	183	523	0	287	839	791	101	1307	526
V/C Ratio(X)	0.76	0.80	0.00	0.81	0.52	0.00	0.88	0.76	0.76	0.77	0.35	0.00
Avail Cap(c_a), veh/h	557	731	622	418	731	0	557	839	791	418	1667	671
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.8	38.2	0.0	45.8	31.8	0.0	42.7	23.0	23.1	48.4	24.3	0.0
Incr Delay (d2), s/veh	12.2	3.6	0.0	8.3	0.3	0.0	3.5	4.8	5.2	4.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	9.7	0.0	4.6	6.6	0.0	7.4	16.1	15.4	2.3	4.9	0.0
LnGrp Delay(d),s/veh	61.0	41.8	0.0	54.1	32.1	0.0	46.2	27.7	28.3	53.0	24.6	0.0
LnGrp LOS	E	D		D	C		D	C	C	D	C	
Approach Vol, veh/h		408			419			1494			540	
Approach Delay, s/veh		45.0			39.9			31.1			28.7	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	52.4	14.5	27.2	20.5	41.7	9.1	32.6
Change Period (Y+Rc), s	4.0	4.1	4.0	4.0	4.0	4.1	4.0	4.0
Max Green Setting (Gmax), s	24.0	48.0	24.0	40.0	32.0	48.0	32.0	40.0
Max Q Clear Time (g_c+I1), s	6.4	32.7	10.3	19.7	16.2	11.7	5.8	14.5
Green Ext Time (p_c), s	0.1	13.1	0.3	3.3	0.3	25.9	0.1	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	0	162	3	0	5	110	1270	4	6	683	54
Future Volume (veh/h)	126	0	162	3	0	5	110	1270	4	6	683	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		1.00	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	130	0	26	3	0	0	113	1309	4	6	704	51
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	296	0	238	266	0	0	144	2521	8	11	2074	150
Arrive On Green	0.15	0.00	0.15	0.15	0.00	0.00	0.08	0.68	0.68	0.01	0.61	0.61
Sat Flow, veh/h	1410	0	1580	1248	0	0	1810	3691	11	1810	3401	246
Grp Volume(v), veh/h	130	0	26	3	0	0	113	640	673	6	373	382
Grp Sat Flow(s),veh/h/ln	1410	0	1580	1248	0	0	1810	1805	1897	1810	1805	1842
Q Serve(g_s), s	6.1	0.0	1.3	0.2	0.0	0.0	5.7	16.2	16.2	0.3	9.5	9.5
Cycle Q Clear(g_c), s	7.6	0.0	1.3	1.5	0.0	0.0	5.7	16.2	16.2	0.3	9.5	9.5
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.01	1.00		0.13
Lane Grp Cap(c), veh/h	296	0	238	266	0	0	144	1233	1296	11	1101	1123
V/C Ratio(X)	0.44	0.00	0.11	0.01	0.00	0.00	0.79	0.52	0.52	0.54	0.34	0.34
Avail Cap(c_a), veh/h	492	0	458	354	0	0	466	1511	1589	389	1163	1186
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	0.0	34.1	34.8	0.0	0.0	42.1	7.3	7.3	46.2	8.9	8.9
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.0	0.0	0.0	3.6	0.7	0.7	14.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.6	0.1	0.0	0.0	3.0	8.2	8.7	0.2	4.8	4.9
LnGrp Delay(d),s/veh	37.1	0.0	34.2	34.8	0.0	0.0	45.6	8.0	7.9	60.2	9.3	9.3
LnGrp LOS	D		C	C			D	A	A	E	A	A
Approach Vol, veh/h		156			3			1426			761	
Approach Delay, s/veh		36.6			34.8			10.9			9.7	
Approach LOS		D			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	68.7		18.8	12.5	61.9		18.8
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		* 4.7
Max Green Setting (Gmax), s	20.0	78.0		* 27	24.0	60.0		* 20
Max Q Clear Time (g_c+I1), s	2.3	18.2		9.6	7.7	11.5		3.5
Green Ext Time (p_c), s	0.0	45.4		0.2	0.1	38.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	84	172	60	16	8	141	1108	102	8	747	104
Future Volume (veh/h)	255	84	172	60	16	8	141	1108	102	8	747	104
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	173	208	79	61	16	1	144	1131	100	8	762	100
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	314	330	267	147	143	9	176	1830	162	14	1390	182
Arrive On Green	0.17	0.17	0.17	0.08	0.08	0.08	0.10	0.55	0.55	0.01	0.46	0.46
Sat Flow, veh/h	1810	1900	1537	1810	1763	110	1810	3343	295	1810	3035	398
Grp Volume(v), veh/h	173	208	79	61	0	17	144	610	621	8	453	409
Grp Sat Flow(s),veh/h/ln	1810	1900	1537	1810	0	1873	1810	1805	1833	1810	1805	1628
Q Serve(g_s), s	9.2	10.7	4.7	3.4	0.0	0.9	8.2	24.3	24.4	0.5	19.1	19.1
Cycle Q Clear(g_c), s	9.2	10.7	4.7	3.4	0.0	0.9	8.2	24.3	24.4	0.5	19.1	19.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.16	1.00		0.24
Lane Grp Cap(c), veh/h	314	330	267	147	0	152	176	988	1004	14	827	746
V/C Ratio(X)	0.55	0.63	0.30	0.42	0.00	0.11	0.82	0.62	0.62	0.56	0.55	0.55
Avail Cap(c_a), veh/h	688	722	584	688	0	712	825	988	1004	413	960	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	40.4	37.9	46.0	0.0	44.8	46.6	16.3	16.3	52.0	20.6	20.6
Incr Delay (d2), s/veh	2.1	2.8	0.9	0.7	0.0	0.1	3.5	1.7	1.7	12.0	1.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	5.9	2.1	1.7	0.0	0.5	4.3	12.5	12.7	0.3	9.7	8.8
LnGrp Delay(d),s/veh	41.9	43.2	38.8	46.7	0.0	45.0	50.1	18.0	18.0	64.0	21.8	22.0
LnGrp LOS	D	D	D	D		D	D	B	B	E	C	C
Approach Vol, veh/h		460			78			1375			870	
Approach Delay, s/veh		41.9			46.3			21.4			22.3	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.8	62.6		23.3	15.2	53.2		13.5
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	56.0		40.0	48.0	56.0		40.0
Max Q Clear Time (g_c+I1), s	2.5	26.4		12.7	10.2	21.1		5.4
Green Ext Time (p_c), s	0.0	25.6		3.1	0.2	27.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.8
HCM 2010 LOS	C

Notes

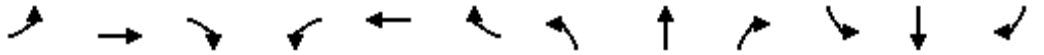
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	23	6	370	102	184	48	796	355	473	498	24
Future Volume (veh/h)	5	23	6	370	102	184	48	796	355	473	498	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	24	1	389	107	0	51	838	0	498	524	22
Adj No. of Lanes	0	2	0	2	1	0	1	2	1	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	17	85	4	469	246	0	66	1398	625	489	2172	91
Arrive On Green	0.03	0.03	0.03	0.13	0.13	0.00	0.04	0.39	0.00	0.27	0.62	0.62
Sat Flow, veh/h	595	3020	131	3619	1900	0	1810	3610	1615	1810	3528	148
Grp Volume(v), veh/h	16	0	14	389	107	0	51	838	0	498	268	278
Grp Sat Flow(s),veh/h/ln	1870	0	1877	1810	1900	0	1810	1805	1615	1810	1805	1871
Q Serve(g_s), s	0.8	0.0	0.7	10.5	5.2	0.0	2.8	18.5	0.0	27.0	6.7	6.7
Cycle Q Clear(g_c), s	0.8	0.0	0.7	10.5	5.2	0.0	2.8	18.5	0.0	27.0	6.7	6.7
Prop In Lane	0.32		0.07	1.00		0.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	53	0	53	469	246	0	66	1398	625	489	1111	1152
V/C Ratio(X)	0.30	0.00	0.27	0.83	0.43	0.00	0.77	0.60	0.00	1.02	0.24	0.24
Avail Cap(c_a), veh/h	355	0	357	579	304	0	181	1398	625	489	1111	1152
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	47.6	42.4	40.1	0.0	47.8	24.5	0.0	36.5	8.7	8.7
Incr Delay (d2), s/veh	1.2	0.0	1.0	6.8	0.5	0.0	7.0	1.9	0.0	45.7	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4	5.7	2.8	0.0	1.5	9.6	0.0	19.6	3.5	3.6
LnGrp Delay(d),s/veh	48.8	0.0	48.6	49.2	40.6	0.0	54.8	26.4	0.0	82.2	9.2	9.2
LnGrp LOS	D		D	D	D		D	C		F	A	A
Approach Vol, veh/h		30			496			889			1044	
Approach Delay, s/veh		48.7			47.4			28.0			44.0	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	31.5	43.7		6.8	8.6	66.6		18.0
Change Period (Y+Rc), s	4.5	5.0		4.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	27.0	19.5		19.0	10.0	36.0		16.0
Max Q Clear Time (g_c+I1), s	29.0	20.5		2.8	4.8	8.7		12.5
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	17.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	39.0
HCM 2010 LOS	D

Notes

APPENDIX F: CUMULATIVE WITHOUT AND WITH PROJECT INTERSECTION ANALYSIS WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	770	170	100	20	120	70	160	970	70	60	430	670
Future Volume (veh/h)	770	170	100	20	120	70	160	970	70	60	430	670
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	919	0	0	21	124	0	165	1000	72	62	443	691
Adj No. of Lanes	2	0	1	0	1	1	1	2	0	1	2	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	981	0	438	25	150	150	187	1501	108	79	1374	605
Arrive On Green	0.27	0.00	0.00	0.09	0.09	0.00	0.10	0.44	0.44	0.04	0.38	0.38
Sat Flow, veh/h	3619	0	1615	273	1613	1615	1810	3411	246	1810	3610	1590
Grp Volume(v), veh/h	919	0	0	145	0	0	165	529	543	62	443	691
Grp Sat Flow(s),veh/h/ln	1810	0	1615	1886	0	1615	1810	1805	1852	1810	1805	1590
Q Serve(g_s), s	39.1	0.0	0.0	11.9	0.0	0.0	14.2	36.6	36.6	5.3	13.7	60.0
Cycle Q Clear(g_c), s	39.1	0.0	0.0	11.9	0.0	0.0	14.2	36.6	36.6	5.3	13.7	60.0
Prop In Lane	1.00		1.00	0.14		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	981	0	438	176	0	150	187	794	815	79	1374	605
V/C Ratio(X)	0.94	0.00	0.00	0.83	0.00	0.00	0.88	0.67	0.67	0.79	0.32	1.14
Avail Cap(c_a), veh/h	1148	0	512	479	0	410	230	794	815	115	1374	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	0.0	0.0	70.2	0.0	0.0	69.8	35.0	35.0	74.7	34.5	48.8
Incr Delay (d2), s/veh	12.1	0.0	0.0	9.3	0.0	0.0	24.3	2.8	2.8	11.5	0.3	82.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.2	0.0	0.0	6.7	0.0	0.0	8.4	18.8	19.3	2.9	6.9	40.1
LnGrp Delay(d),s/veh	68.3	0.0	0.0	79.6	0.0	0.0	94.1	37.8	37.7	86.2	34.8	131.4
LnGrp LOS	E			E			F	D	D	F	C	F
Approach Vol, veh/h		919			145			1237			1196	
Approach Delay, s/veh		68.3			79.6			45.3			93.3	
Approach LOS		E			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.9	75.4		48.7	22.3	66.0		20.7
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	10.0	60.0		50.0	20.0	60.0		40.0
Max Q Clear Time (g_c+I1), s	7.3	38.6		41.1	16.2	62.0		13.9
Green Ext Time (p_c), s	0.0	19.0		1.6	0.1	0.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	69.2
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	770	170	340	690	30	200	390	480	30	160	120
Future Volume (veh/h)	170	770	170	340	690	30	200	390	480	30	160	120
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	172	778	77	343	697	27	202	394	206	30	162	45
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	0	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	201	942	409	369	1252	48	416	436	364	40	214	208
Arrive On Green	0.11	0.26	0.26	0.20	0.35	0.35	0.23	0.23	0.23	0.13	0.13	0.13
Sat Flow, veh/h	1810	3610	1568	1810	3542	137	1810	1900	1584	295	1591	1547
Grp Volume(v), veh/h	172	778	77	343	355	369	202	394	206	192	0	45
Grp Sat Flow(s),veh/h/ln	1810	1805	1568	1810	1805	1874	1810	1900	1584	1885	0	1547
Q Serve(g_s), s	10.9	23.7	4.5	21.7	18.5	18.5	11.3	23.5	13.4	11.5	0.0	3.0
Cycle Q Clear(g_c), s	10.9	23.7	4.5	21.7	18.5	18.5	11.3	23.5	13.4	11.5	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	0.16		1.00
Lane Grp Cap(c), veh/h	201	942	409	369	638	662	416	436	364	253	0	208
V/C Ratio(X)	0.85	0.83	0.19	0.93	0.56	0.56	0.49	0.90	0.57	0.76	0.00	0.22
Avail Cap(c_a), veh/h	310	1114	484	372	638	662	434	456	380	339	0	279
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.9	40.6	33.5	45.6	30.4	30.4	39.0	43.7	39.8	48.7	0.0	45.0
Incr Delay (d2), s/veh	8.4	5.7	0.5	29.4	1.8	1.8	1.3	21.0	2.3	8.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	12.5	2.0	13.9	9.5	9.9	5.8	14.9	6.1	6.6	0.0	1.3
LnGrp Delay(d),s/veh	59.3	46.3	34.0	75.0	32.2	32.1	40.2	64.7	42.1	56.9	0.0	45.8
LnGrp LOS	E	D	C	E	C	C	D	E	D	E		D
Approach Vol, veh/h		1027			1067			802			237	
Approach Delay, s/veh		47.6			45.9			52.7			54.8	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	28.8	35.4		20.7	18.0	46.2		31.8
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	36.0		21.0	20.0	36.0		28.0
Max Q Clear Time (g_c+I1), s	23.7	25.7		13.5	12.9	20.5		25.5
Green Ext Time (p_c), s	0.0	4.8		1.0	0.1	12.7		1.3

Intersection Summary		
HCM 2010 Ctrl Delay		48.9
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	440	350	190	350	80	330	1090	450	60	520	50
Future Volume (veh/h)	60	440	350	190	350	80	330	1090	450	60	520	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	64	468	0	202	372	0	351	1160	458	64	553	0
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	81	462	393	209	597	0	372	1263	482	81	1219	491
Arrive On Green	0.04	0.24	0.00	0.12	0.31	0.00	0.21	0.50	0.50	0.04	0.34	0.00
Sat Flow, veh/h	1810	1900	1615	1810	1900	0	1810	2533	966	1810	3610	1454
Grp Volume(v), veh/h	64	468	0	202	372	0	351	815	803	64	553	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	0	1810	1805	1694	1810	1805	1454
Q Serve(g_s), s	5.8	40.0	0.0	18.3	27.5	0.0	31.4	67.9	74.3	5.8	19.7	0.0
Cycle Q Clear(g_c), s	5.8	40.0	0.0	18.3	27.5	0.0	31.4	67.9	74.3	5.8	19.7	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.57	1.00		1.00
Lane Grp Cap(c), veh/h	81	462	393	209	597	0	372	900	845	81	1219	491
V/C Ratio(X)	0.79	1.01	0.00	0.97	0.62	0.00	0.94	0.91	0.95	0.79	0.45	0.00
Avail Cap(c_a), veh/h	88	462	393	209	597	0	495	922	865	99	1219	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	77.8	62.3	0.0	72.4	48.1	0.0	64.4	37.7	39.3	77.8	42.6	0.0
Incr Delay (d2), s/veh	35.2	45.2	0.0	52.5	1.5	0.0	20.5	12.8	19.9	23.6	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	26.7	0.0	12.2	14.7	0.0	17.8	36.9	39.3	3.4	9.9	0.0
LnGrp Delay(d),s/veh	113.1	107.5	0.0	125.0	49.7	0.0	84.9	50.5	59.2	101.4	43.2	0.0
LnGrp LOS	F	F		F	D		F	D	E	F	D	
Approach Vol, veh/h		532			574			1969			617	
Approach Delay, s/veh		108.2			76.2			60.2			49.2	
Approach LOS		F			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	86.2	23.0	44.0	37.9	59.7	11.3	55.7
Change Period (Y+Rc), s	4.0	4.1	4.0	4.0	4.0	4.1	4.0	4.0
Max Green Setting (Gmax), s	9.0	84.0	19.0	40.0	45.0	48.0	8.0	51.0
Max Q Clear Time (g_c+I1), s	7.8	76.3	20.3	42.0	33.4	21.7	7.8	29.5
Green Ext Time (p_c), s	0.0	5.7	0.0	0.0	0.4	24.1	0.0	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	67.7
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	0	180	10	0	10	120	1660	10	10	860	60
Future Volume (veh/h)	150	0	180	10	0	10	120	1660	10	10	860	60
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	155	0	92	10	0	5	124	1711	10	10	887	59
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	300	0	253	157	11	56	154	2535	15	17	2101	140
Arrive On Green	0.16	0.00	0.16	0.16	0.00	0.16	0.09	0.69	0.69	0.01	0.61	0.61
Sat Flow, veh/h	1409	0	1582	625	70	347	1810	3679	21	1810	3424	228
Grp Volume(v), veh/h	155	0	92	15	0	0	124	839	882	10	468	478
Grp Sat Flow(s),veh/h/ln	1409	0	1582	1042	0	0	1810	1805	1895	1810	1805	1846
Q Serve(g_s), s	4.9	0.0	5.5	0.0	0.0	0.0	7.1	28.5	28.6	0.6	14.3	14.3
Cycle Q Clear(g_c), s	10.4	0.0	5.5	5.5	0.0	0.0	7.1	28.5	28.6	0.6	14.3	14.3
Prop In Lane	1.00		1.00	0.67		0.33	1.00		0.01	1.00		0.12
Lane Grp Cap(c), veh/h	300	0	253	224	0	0	154	1244	1306	17	1107	1133
V/C Ratio(X)	0.52	0.00	0.36	0.07	0.00	0.00	0.81	0.67	0.68	0.57	0.42	0.42
Avail Cap(c_a), veh/h	435	0	405	264	0	0	411	1334	1400	343	1107	1133
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	0.0	39.5	37.6	0.0	0.0	47.4	9.5	9.5	52.1	10.6	10.6
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.0	0.0	0.0	3.7	1.8	1.7	10.6	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	2.4	0.4	0.0	0.0	3.7	14.6	15.3	0.3	7.2	7.3
LnGrp Delay(d),s/veh	42.0	0.0	39.8	37.7	0.0	0.0	51.1	11.3	11.3	62.6	11.2	11.2
LnGrp LOS	D		D	D			D	B	B	E	B	B
Approach Vol, veh/h		247			15			1845			956	
Approach Delay, s/veh		41.2			37.7			14.0			11.7	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	77.8		21.6	14.1	69.9		21.6
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		* 4.7
Max Green Setting (Gmax), s	20.0	78.0		* 27	24.0	60.0		* 20
Max Q Clear Time (g_c+I1), s	2.6	30.6		12.4	9.1	16.3		7.5
Green Ext Time (p_c), s	0.0	42.1		0.6	0.1	41.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	110	240	80	20	10	190	1450	140	10	950	130
Future Volume (veh/h)	340	110	240	80	20	10	190	1450	140	10	950	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	230	276	148	82	20	4	194	1480	139	10	969	126
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	353	371	302	164	138	28	225	1763	164	17	1261	164
Arrive On Green	0.20	0.20	0.20	0.09	0.09	0.09	0.12	0.53	0.53	0.01	0.42	0.42
Sat Flow, veh/h	1810	1900	1546	1810	1524	305	1810	3325	310	1810	3037	395
Grp Volume(v), veh/h	230	276	148	82	0	24	194	797	822	10	576	519
Grp Sat Flow(s),veh/h/ln	1810	1900	1546	1810	0	1829	1810	1805	1830	1810	1805	1627
Q Serve(g_s), s	13.4	15.7	9.8	4.9	0.0	1.4	12.0	42.6	43.9	0.6	31.4	31.4
Cycle Q Clear(g_c), s	13.4	15.7	9.8	4.9	0.0	1.4	12.0	42.6	43.9	0.6	31.4	31.4
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.17	1.00		0.24
Lane Grp Cap(c), veh/h	353	371	302	164	0	165	225	957	970	17	749	676
V/C Ratio(X)	0.65	0.74	0.49	0.50	0.00	0.15	0.86	0.83	0.85	0.58	0.77	0.77
Avail Cap(c_a), veh/h	631	663	539	631	0	638	758	957	970	379	882	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	43.4	41.0	49.7	0.0	48.0	49.2	22.7	23.0	56.5	28.8	28.8
Incr Delay (d2), s/veh	2.9	4.2	1.8	0.9	0.0	0.1	3.7	7.0	7.7	11.0	4.8	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	8.6	4.3	2.5	0.0	0.7	6.3	22.9	24.2	0.4	16.7	15.1
LnGrp Delay(d),s/veh	45.4	47.6	42.8	50.5	0.0	48.2	52.9	29.7	30.7	67.5	33.5	34.1
LnGrp LOS	D	D	D	D		D	D	C	C	E	C	C
Approach Vol, veh/h		654			106			1813			1105	
Approach Delay, s/veh		45.7			50.0			32.6			34.1	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	65.8		27.4	19.3	52.6		15.4
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	56.0		40.0	48.0	56.0		40.0
Max Q Clear Time (g_c+I1), s	2.6	45.9		17.7	14.0	33.4		6.9
Green Ext Time (p_c), s	0.0	9.9		4.4	0.3	14.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.9
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	30	10	510	140	220	70	1050	490	610	650	30
Future Volume (veh/h)	10	30	10	510	140	220	70	1050	490	610	650	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	11	32	6	537	147	0	74	1105	0	642	684	29
Adj No. of Lanes	0	2	0	2	1	0	1	2	1	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	30	90	17	579	304	0	96	1256	562	489	1975	84
Arrive On Green	0.04	0.04	0.04	0.16	0.16	0.00	0.05	0.35	0.00	0.27	0.56	0.56
Sat Flow, veh/h	797	2413	468	3619	1900	0	1810	3610	1615	1810	3526	149
Grp Volume(v), veh/h	26	0	23	537	147	0	74	1105	0	642	350	363
Grp Sat Flow(s),veh/h/ln	1860	0	1817	1810	1900	0	1810	1805	1615	1810	1805	1871
Q Serve(g_s), s	1.3	0.0	1.3	14.6	7.0	0.0	4.0	28.8	0.0	27.0	10.6	10.6
Cycle Q Clear(g_c), s	1.3	0.0	1.3	14.6	7.0	0.0	4.0	28.8	0.0	27.0	10.6	10.6
Prop In Lane	0.43		0.26	1.00		0.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	69	0	68	579	304	0	96	1256	562	489	1011	1047
V/C Ratio(X)	0.37	0.00	0.35	0.93	0.48	0.00	0.77	0.88	0.00	1.31	0.35	0.35
Avail Cap(c_a), veh/h	353	0	345	579	304	0	181	1256	562	489	1011	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	47.0	41.4	38.2	0.0	46.8	30.6	0.0	36.5	12.0	12.0
Incr Delay (d2), s/veh	1.2	0.0	1.1	21.0	0.4	0.0	4.9	9.0	0.0	155.3	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.6	9.0	3.7	0.0	2.1	15.8	0.0	34.5	5.5	5.7
LnGrp Delay(d),s/veh	48.2	0.0	48.1	62.4	38.7	0.0	51.7	39.7	0.0	191.8	12.9	12.9
LnGrp LOS	D		D	E	D		D	D		F	B	B
Approach Vol, veh/h		49			684			1179			1355	
Approach Delay, s/veh		48.2			57.3			40.4			97.7	
Approach LOS		D			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	31.5	39.8		7.7	10.3	61.0		21.0
Change Period (Y+Rc), s	4.5	5.0		4.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	27.0	19.5		19.0	10.0	36.0		16.0
Max Q Clear Time (g_c+I1), s	29.0	30.8		3.3	6.0	12.6		16.6
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	19.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	67.8
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	770	170	100	20	120	70	160	988	70	60	449	670
Future Volume (veh/h)	770	170	100	20	120	70	160	988	70	60	449	670
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	919	0	0	21	124	0	165	1019	72	62	463	691
Adj No. of Lanes	2	0	1	0	1	1	1	2	0	1	2	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	981	0	438	25	150	150	187	1503	106	79	1374	605
Arrive On Green	0.27	0.00	0.00	0.09	0.09	0.00	0.10	0.44	0.44	0.04	0.38	0.38
Sat Flow, veh/h	3619	0	1615	273	1613	1615	1810	3416	241	1810	3610	1590
Grp Volume(v), veh/h	919	0	0	145	0	0	165	538	553	62	463	691
Grp Sat Flow(s),veh/h/ln	1810	0	1615	1886	0	1615	1810	1805	1853	1810	1805	1590
Q Serve(g_s), s	39.1	0.0	0.0	11.9	0.0	0.0	14.2	37.5	37.5	5.3	14.4	60.0
Cycle Q Clear(g_c), s	39.1	0.0	0.0	11.9	0.0	0.0	14.2	37.5	37.5	5.3	14.4	60.0
Prop In Lane	1.00		1.00	0.14		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	981	0	438	176	0	150	187	794	815	79	1374	605
V/C Ratio(X)	0.94	0.00	0.00	0.83	0.00	0.00	0.88	0.68	0.68	0.79	0.34	1.14
Avail Cap(c_a), veh/h	1148	0	512	479	0	410	230	794	815	115	1374	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	0.0	0.0	70.2	0.0	0.0	69.8	35.2	35.2	74.7	34.7	48.8
Incr Delay (d2), s/veh	12.1	0.0	0.0	9.3	0.0	0.0	24.3	3.1	3.0	11.5	0.3	82.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.2	0.0	0.0	6.7	0.0	0.0	8.4	19.4	19.9	2.9	7.2	40.1
LnGrp Delay(d),s/veh	68.3	0.0	0.0	79.6	0.0	0.0	94.1	38.3	38.2	86.2	35.0	131.4
LnGrp LOS	E			E			F	D	D	F	D	F
Approach Vol, veh/h		919			145			1256			1216	
Approach Delay, s/veh		68.3			79.6			45.6			92.4	
Approach LOS		E			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.9	75.4		48.7	22.3	66.0		20.7
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	10.0	60.0		50.0	20.0	60.0		40.0
Max Q Clear Time (g_c+I1), s	7.3	39.5		41.1	16.2	62.0		13.9
Green Ext Time (p_c), s	0.0	18.4		1.6	0.1	0.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	69.0
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	770	170	367	690	30	200	396	504	30	166	120
Future Volume (veh/h)	170	770	170	367	690	30	200	396	504	30	166	120
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	172	778	77	371	697	27	202	400	230	30	168	45
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	0	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	201	937	407	369	1248	48	417	438	365	39	218	211
Arrive On Green	0.11	0.26	0.26	0.20	0.35	0.35	0.23	0.23	0.23	0.14	0.14	0.14
Sat Flow, veh/h	1810	3610	1568	1810	3542	137	1810	1900	1584	286	1600	1548
Grp Volume(v), veh/h	172	778	77	371	355	369	202	400	230	198	0	45
Grp Sat Flow(s),veh/h/ln	1810	1805	1568	1810	1805	1874	1810	1900	1584	1886	0	1548
Q Serve(g_s), s	11.0	24.0	4.5	24.0	18.7	18.7	11.4	24.2	15.4	11.9	0.0	3.0
Cycle Q Clear(g_c), s	11.0	24.0	4.5	24.0	18.7	18.7	11.4	24.2	15.4	11.9	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	0.15		1.00
Lane Grp Cap(c), veh/h	201	937	407	369	636	660	417	438	365	257	0	211
V/C Ratio(X)	0.86	0.83	0.19	1.01	0.56	0.56	0.48	0.91	0.63	0.77	0.00	0.21
Avail Cap(c_a), veh/h	307	1103	479	369	636	660	430	451	376	336	0	276
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.4	41.2	34.0	46.9	30.8	30.8	39.3	44.2	40.8	49.1	0.0	45.3
Incr Delay (d2), s/veh	8.9	5.9	0.5	48.5	1.9	1.8	1.2	22.9	3.8	9.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	12.8	2.0	16.8	9.6	10.0	5.8	15.5	7.1	6.9	0.0	1.4
LnGrp Delay(d),s/veh	60.4	47.1	34.4	95.5	32.6	32.6	40.5	67.1	44.6	58.4	0.0	46.0
LnGrp LOS	E	D	C	F	C	C	D	E	D	E		D
Approach Vol, veh/h		1027			1095			832			243	
Approach Delay, s/veh		48.4			53.9			54.4			56.1	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	29.0	35.6		21.1	18.1	46.5		32.2
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	36.0		21.0	20.0	36.0		28.0
Max Q Clear Time (g_c+I1), s	26.0	26.0		13.9	13.0	20.7		26.2
Green Ext Time (p_c), s	0.0	4.6		0.9	0.1	12.6		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.4
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	440	350	190	350	113	330	1147	450	90	575	68
Future Volume (veh/h)	79	440	350	190	350	113	330	1147	450	90	575	68
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	84	468	0	202	372	0	351	1220	458	96	612	0
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	86	452	385	205	577	0	372	1287	465	97	1254	505
Arrive On Green	0.05	0.24	0.00	0.11	0.30	0.00	0.21	0.50	0.50	0.05	0.35	0.00
Sat Flow, veh/h	1810	1900	1615	1810	1900	0	1810	2577	930	1810	3610	1454
Grp Volume(v), veh/h	84	468	0	202	372	0	351	840	838	96	612	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	0	1810	1805	1702	1810	1805	1454
Q Serve(g_s), s	7.8	40.0	0.0	18.7	28.5	0.0	32.1	73.2	81.6	8.9	22.4	0.0
Cycle Q Clear(g_c), s	7.8	40.0	0.0	18.7	28.5	0.0	32.1	73.2	81.6	8.9	22.4	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	86	452	385	205	577	0	372	901	850	97	1254	505
V/C Ratio(X)	0.97	1.03	0.00	0.99	0.64	0.00	0.94	0.93	0.99	0.99	0.49	0.00
Avail Cap(c_a), veh/h	86	452	385	205	577	0	485	903	851	97	1254	505
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	79.9	64.0	0.0	74.4	50.7	0.0	65.8	39.4	41.5	79.5	43.1	0.0
Incr Delay (d2), s/veh	88.3	51.5	0.0	59.0	1.9	0.0	21.6	16.5	27.4	88.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	27.5	0.0	12.7	15.3	0.0	18.3	40.5	44.6	6.8	11.2	0.0
LnGrp Delay(d),s/veh	168.2	115.5	0.0	133.4	52.6	0.0	87.4	55.8	68.9	167.5	43.7	0.0
LnGrp LOS	F	F		F	D		F	E	E	F	D	
Approach Vol, veh/h		552			574			2029			708	
Approach Delay, s/veh		123.5			81.0			66.7			60.5	
Approach LOS		F			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	88.0	23.0	44.0	38.5	62.5	12.0	55.0
Change Period (Y+Rc), s	4.0	4.1	4.0	4.0	4.0	4.1	4.0	4.0
Max Green Setting (Gmax), s	9.0	84.0	19.0	40.0	45.0	48.0	8.0	51.0
Max Q Clear Time (g_c+I1), s	10.9	83.6	20.7	42.0	34.1	24.4	9.8	30.5
Green Ext Time (p_c), s	0.0	0.3	0.0	0.0	0.4	22.2	0.0	4.8

Intersection Summary	
HCM 2010 Ctrl Delay	75.8
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	0	180	10	0	10	120	1717	10	10	915	60
Future Volume (veh/h)	150	0	180	10	0	10	120	1717	10	10	915	60
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	155	0	92	10	0	5	124	1770	10	10	943	59
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	299	0	253	156	11	56	154	2539	14	17	2114	132
Arrive On Green	0.16	0.00	0.16	0.16	0.00	0.16	0.09	0.69	0.69	0.01	0.61	0.61
Sat Flow, veh/h	1409	0	1582	624	70	347	1810	3680	21	1810	3439	215
Grp Volume(v), veh/h	155	0	92	15	0	0	124	868	912	10	495	507
Grp Sat Flow(s),veh/h/ln	1409	0	1582	1041	0	0	1810	1805	1895	1810	1805	1849
Q Serve(g_s), s	5.0	0.0	5.5	0.0	0.0	0.0	7.1	30.5	30.6	0.6	15.5	15.5
Cycle Q Clear(g_c), s	10.5	0.0	5.5	5.6	0.0	0.0	7.1	30.5	30.6	0.6	15.5	15.5
Prop In Lane	1.00		1.00	0.67		0.33	1.00		0.01	1.00		0.12
Lane Grp Cap(c), veh/h	299	0	253	223	0	0	154	1246	1308	17	1109	1137
V/C Ratio(X)	0.52	0.00	0.36	0.07	0.00	0.00	0.81	0.70	0.70	0.57	0.45	0.45
Avail Cap(c_a), veh/h	432	0	402	262	0	0	409	1326	1392	341	1109	1137
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	39.8	37.9	0.0	0.0	47.7	9.8	9.8	52.4	10.9	10.9
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.0	0.0	0.0	3.7	2.1	2.0	10.6	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	2.4	0.4	0.0	0.0	3.7	15.7	16.4	0.3	7.9	8.1
LnGrp Delay(d),s/veh	42.3	0.0	40.1	37.9	0.0	0.0	51.4	11.9	11.8	63.0	11.5	11.5
LnGrp LOS	D		D	D			D	B	B	E	B	B
Approach Vol, veh/h		247			15			1904			1012	
Approach Delay, s/veh		41.5			37.9			14.4			12.0	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	78.4		21.7	14.1	70.4		21.7
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		* 4.7
Max Green Setting (Gmax), s	20.0	78.0		* 27	24.0	60.0		* 20
Max Q Clear Time (g_c+I1), s	2.6	32.6		12.5	9.1	17.5		7.6
Green Ext Time (p_c), s	0.0	40.7		0.6	0.1	40.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	346	110	240	80	20	10	190	1501	140	10	999	136
Future Volume (veh/h)	346	110	240	80	20	10	190	1501	140	10	999	136
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	232	281	148	82	20	4	194	1532	139	10	1019	132
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	356	374	304	163	138	28	225	1767	159	17	1260	163
Arrive On Green	0.20	0.20	0.20	0.09	0.09	0.09	0.12	0.53	0.53	0.01	0.41	0.41
Sat Flow, veh/h	1810	1900	1546	1810	1524	305	1810	3337	300	1810	3039	393
Grp Volume(v), veh/h	232	281	148	82	0	24	194	822	849	10	605	546
Grp Sat Flow(s),veh/h/ln	1810	1900	1546	1810	0	1829	1810	1805	1832	1810	1805	1627
Q Serve(g_s), s	13.6	16.0	9.8	5.0	0.0	1.4	12.1	45.2	46.8	0.6	34.0	34.0
Cycle Q Clear(g_c), s	13.6	16.0	9.8	5.0	0.0	1.4	12.1	45.2	46.8	0.6	34.0	34.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.16	1.00		0.24
Lane Grp Cap(c), veh/h	356	374	304	163	0	165	225	956	970	17	748	675
V/C Ratio(X)	0.65	0.75	0.49	0.50	0.00	0.15	0.86	0.86	0.88	0.58	0.81	0.81
Avail Cap(c_a), veh/h	629	660	537	629	0	636	755	956	970	377	878	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.6	43.6	41.1	49.9	0.0	48.2	49.4	23.4	23.7	56.8	29.7	29.7
Incr Delay (d2), s/veh	2.9	4.3	1.7	0.9	0.0	0.1	3.7	8.6	9.6	11.0	6.3	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	8.9	4.3	2.5	0.0	0.7	6.3	24.6	26.2	0.4	18.1	16.5
LnGrp Delay(d),s/veh	45.4	47.9	42.8	50.8	0.0	48.4	53.2	32.0	33.4	67.8	35.9	36.7
LnGrp LOS	D	D	D	D		D	D	C	C	E	D	D
Approach Vol, veh/h		661			106			1865			1161	
Approach Delay, s/veh		45.9			50.2			34.8			36.6	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	65.9		27.6	19.3	52.7		15.4
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	24.0	56.0		40.0	48.0	56.0		40.0
Max Q Clear Time (g_c+I1), s	2.6	48.8		18.0	14.1	36.0		7.0
Green Ext Time (p_c), s	0.0	7.1		4.4	0.3	11.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	37.7
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	30	10	510	140	245	70	1076	490	634	675	30
Future Volume (veh/h)	10	30	10	510	140	245	70	1076	490	634	675	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	11	32	6	537	147	0	74	1133	0	667	711	29
Adj No. of Lanes	0	2	0	2	1	0	1	2	1	1	2	0
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	30	90	17	579	304	0	96	1256	562	489	1978	81
Arrive On Green	0.04	0.04	0.04	0.16	0.16	0.00	0.05	0.35	0.00	0.27	0.56	0.56
Sat Flow, veh/h	797	2413	468	3619	1900	0	1810	3610	1615	1810	3533	144
Grp Volume(v), veh/h	26	0	23	537	147	0	74	1133	0	667	363	377
Grp Sat Flow(s),veh/h/ln	1860	0	1817	1810	1900	0	1810	1805	1615	1810	1805	1872
Q Serve(g_s), s	1.3	0.0	1.3	14.6	7.0	0.0	4.0	29.8	0.0	27.0	11.1	11.1
Cycle Q Clear(g_c), s	1.3	0.0	1.3	14.6	7.0	0.0	4.0	29.8	0.0	27.0	11.1	11.1
Prop In Lane	0.43		0.26	1.00		0.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	69	0	68	579	304	0	96	1256	562	489	1011	1048
V/C Ratio(X)	0.37	0.00	0.35	0.93	0.48	0.00	0.77	0.90	0.00	1.37	0.36	0.36
Avail Cap(c_a), veh/h	353	0	345	579	304	0	181	1256	562	489	1011	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	47.0	41.4	38.2	0.0	46.8	31.0	0.0	36.5	12.1	12.1
Incr Delay (d2), s/veh	1.2	0.0	1.1	21.0	0.4	0.0	4.9	10.7	0.0	177.1	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.6	9.0	3.7	0.0	2.1	16.7	0.0	37.5	5.7	5.9
LnGrp Delay(d),s/veh	48.2	0.0	48.1	62.4	38.7	0.0	51.7	41.7	0.0	213.6	13.1	13.1
LnGrp LOS	D		D	E	D		D	D		F	B	B
Approach Vol, veh/h		49			684			1207			1407	
Approach Delay, s/veh		48.2			57.3			42.3			108.2	
Approach LOS		D			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	31.5	39.8		7.7	10.3	61.0		21.0
Change Period (Y+Rc), s	4.5	5.0		4.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	27.0	19.5		19.0	10.0	36.0		16.0
Max Q Clear Time (g_c+I1), s	29.0	31.8		3.3	6.0	13.1		16.6
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	19.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	73.1
HCM 2010 LOS	E

Notes