FEHR PEERS

# MEMORANDUM

Date: December 5, 2018

To: Brian Baker, AGI Avant, Inc.

From: Taylor McAdam, Sara Sadeghi, Jane Bierstedt

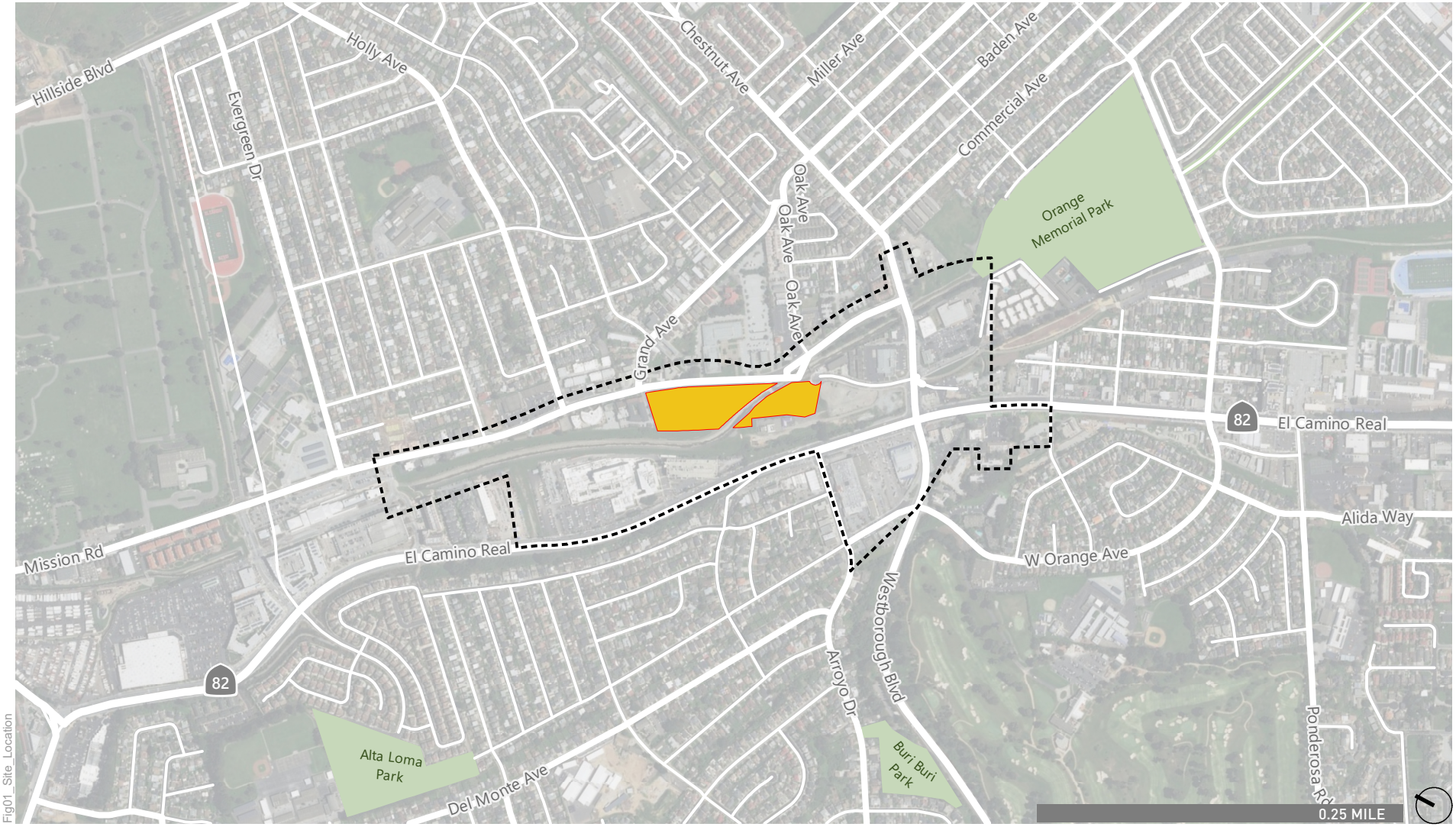
**Subject: CEQA Transportation Impact Analysis Assessment for the SFPUC Site**

*SF18-1004*

In 2011, the City certified the El Camino Real/Chestnut (ECR/C) Area Plan Environmental Impact Report (EIR), which assessed the potential environmental impacts resulting from implementation of the ECR/C Area Plan. In 2017, the City made amendments to the ECR/C Area Plan to permit a proposed Community Civic Center Campus Project (Civic Project), which were analyzed in a supplemental EIR (SEIR). The land use assumptions underlying the ECR/C EIR and the Civic Project SEIR are provided in **Table 1**, below.

The Civic Project SEIR included an updated Area-wide Transportation Impact Analysis (TIA). This memorandum presents the results of an assessment to ascertain whether the Civic Project SEIR TIA adequately addresses potential roadway impacts of the proposed development on the SFPUC site in South San Francisco. The SFPUC site is located within the City's ECR/C Area Plan, approximately ½ mile to ¾ mile from South San Francisco BART Station as shown on the map in **Figure 1**. It is bounded by Mission Road to the east, a proposed extension of Oak Avenue to the south, and the BART right-of-way to the west. Colma Creek runs southeast through the site.

The proposed SFPUC Project contains 809 residential dwelling units, 13,000 square feet of commercial space, and a 5,500-square foot of child care facility. A mixed-use development by SummerHill located at 988 El Camino Real and the Civic Project have also been proposed in the area. Therefore this assessment includes a comparison between what was evaluated in the Civic Project SEIR TIA and what is currently proposed regarding land use totals, vehicle trip generation, and operations of nearby intersections.




Project Site

ECR/C Area Plan Boundary

Figure 1

## Project Site

# Land Use Comparison

The amount of land use evaluated in the ECR/C EIR TIA, Civic Project SEIR TIA (Kimley-Horn April 2017), the land uses in the 988 development and Civic Project, and the land uses in the currently proposed SFPUC development are summarized in **Table 1**.

**Table 1: Land Use Comparison**

| Use Category | Land Use Assumptions | | Approved/Pending Developments | | | | Remaining Capacity under Civic Project SEIR |
|---|---|---|---|---|---|---|---|
| | ECR/C Area Plan EIR TIA[1] | Civic Project SEIR TIA[2] | Civic Project[3] | 988 ECR[4] | SFPUC Project | Total | |
| Residential (Units) | 1,455 | 1,231 | 0 | 172 | 809 | 981 | 250 |
| Retail and Service Uses (Square Feet) | 175,400 | 73,200 | 0 | 10,915 | 18,500 (Retail + Childcare) | 29,415 | 43,785 |
| Office Uses (Square Feet) | 73,000 | 44,500 | 44,500 (Police, IT, HR) | 0 | 0 | 44,500 | 0 |
| Public / Institutional Uses (Square Feet) | 50,000 | 93,500 | 100,500 | 0 | 0 | 93,500 | -7,000 (Fire Station) |

Source: Fehr & Peers.

1. Source: El Camino Real/Chestnut Area Plan EIR, Transportation Impact Analysis, Appendix B - Land Use Projections (2011)
2. Source: El Camino Real/Chestnut Area Plan Update SEIR, Transportation Impact Analysis, Appendix B – Trip Generation Counts (2017)
3. Source: El Camino Real/Chestnut Area Plan Update SEIR, Transportation Impact Analysis, Project Description, p. 25 (2017)
4. Source: 988 El Camino Real Mixed-Use Development, Initial Study and Consistency Checklist, Project Description, p. 5 (2018)

As it is shown in the land use comparison table, the total number of proposed residential units within the SFPUC and 988 ECR developments is 981 and is less than the total number of residential units evaluated in the Civic Project SEIR TIA (1,231). Likewise, the total proposed commercial land use area (23.4 ksf) is less than the 40.4 ksf evaluated in the Civic Project SEIR TIA. Although the proposed 5.5 ksf child care facility within the SFPUC development was not explicitly included in the Area Plan land uses, it can be accommodated within the net remaining commercial office space.

# Trip Generation Comparison

The AM and PM peak hour vehicle trip generation estimates for the entire Area Plan and for the Civic Project are presented in **Table 2** as they were estimated in the Civic Project SEIR TIA. Vehicle trips for the 988 ECR development were obtained from its traffic study. Trip generation for the SFPUC development was estimated using rates from the most recent Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition and reductions to account for the site's proximity to the South San Francisco BART station, nearby complementary land uses, and TDM measures. These reductions were estimated using MainStreet. Reductions for passby trips were also applied. The results are also summarized in Table 2. (A description of MainStreet and the detailed trip generation estimates are attached.)

**Table 2: Trip Generation Comparison**

| | AM Peak Hour Trips | | | PM Peak Hour Trips | | |
|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total |
| ***Area Plan[1]*** | | | | | | |
| | 75 | 412 | 487 | 473 | 467 | 940 |
| ***Approved/Pending Developments*** | | | | | | |
| Civic Project[2] | 62 | 71 | 133 | 120 | 342 | 462 |
| 988 El Camino Real[3] | 4 | 55 | 59 | 68 | 33 | 101 |
| SFPUC[4] | 65 | 150 | 215 | 188 | 140 | 328 |
| *Total* | *131* | *276* | *407* | *376* | *515* | *891* |
| ***Net Available (Area Plan Trips – Proposed/Pending Developments)*** | | | | | | |
| | -56 | 136 | 80 | 97 | -48 | 13 |

Source: Fehr & Peers.

1. Source: El Camino Real/Chestnut Area Plan Update SEIR, Transportation Impact Analysis, Appendix B – Trip Generation Counts (2017)
2. Source: El Camino Real/Chestnut Area Plan Update SEIR, Transportation Impact Analysis, Appendix B – Trip Generation Counts (2017)
3. Source: 988 El Camino Real Mixed-Use Development, Initial Study and Consistency Checklist, Project Description, p. 5 (2018)
4. Trip generation data from ITE 10th Edition and MainStreet MXD+

As presented in Table 2, the AM and PM peak hour trips generated by the SFPUC development are 215 and 328, respectively, which would be less than the AM and PM peak hour trips generated by

the entire ECR/C Area Plan. In addition, the total number of trips generated by the Civic Project, 988 ECR, and SFPUC developments for AM and PM peak hours would not exceed the estimated trip generation approved in the Area Plan. Therefore, the estimated SFPUC development trip generation can be accommodated within the existing Civic Project SEIR TIA. To Fehr & Peer's knowledge, no other projects have been approved in the area since the 988 ECR Project and conditions are not expected to have changed since the Civic Project SEIR TIA analysis was conducted in 2017.

# Nearby Intersection Operations

While the amount of total development and total traffic evaluated in the Civic Project SEIR TIA is greater than the total amount of currently proposed development and the amount of traffic it is projected to generate, the geographic distribution of the land uses (and associated traffic) is somewhat different. More development is currently being proposed on the SFPUC site than what was assumed in the Civic Project SEIR TIA. The closest study intersections to the SFPUC site are El Camino Real and Arroyo Drive/Oak Avenue extension and Mission Road and Oak Avenue. The operations of these intersections (delays and levels of service) for the various analysis scenarios from the Civic Project SEIR TIA are summarized in **Table 3**. The level of service (LOS) standard for both intersections is LOS D.

**Table 3: Intersection Levels of Service[1]**

| Scenario | El Camino Real/Arroyo Drive/Oak Extension (Signalized) | | | | Mission Road/Oak Avenue (Unsignalized - Worst Approach) | | | |
|---|---|---|---|---|---|---|---|---|
| | AM | | PM | | AM | | PM | |
| | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| Existing | 25.5 | C | 20.5 | C | 14.9 | B | 11.8 | B |
| Existing Plus Project | 26.8 | C | 24 | C | 16.5 | C | 12.7 | B |
| Cumulative | 37.7 | D | 30.8 | C | 30.8 | D | 14.1 | B |
| Cumulative Plus Project | 42.0 | D | 33.8 | C | 39.6 | E | 14.8 | B |
| Cumulative Plus Project with Mitigation | n/a | n/a | n/a | n/a | 30.0 | D | n/a | n/a |

Source: Fehr & Peers.

1. Intersection LOS data from El Camino Real/ Chestnut Avenue Area Plan Update, 2017

As shown in Table 3, the intersection of El Camino Real and Arroyo Drive/Oak Avenue extension operates at an acceptable LOS under all scenarios including Existing Plus Project and Cumulative

Plus Project. Therefore it is estimated that it has adequate capacity to accommodate the net new traffic generated by the SFPUC proposed project. The intersection of Mission Road and Oak Avenue operates at an acceptable LOS under the Existing Plus Project scenario; however under Cumulative Plus Project conditions, this intersection operates at LOS E during the AM peak hour which exceeds the LOS standard (LOS D). To mitigate the cumulative impact, Civic Project SEIR Mitigation Measure 3.10.6e requires the restriping of both the eastbound and westbound approaches on Oak Avenue to one left-turn lane and one shared through/right-turn lane. In addition, the City will construct a two-way left-turn lane along Mission Road[1].

With this mitigation measure, this intersection would operate at an acceptable LOS D during the AM peak hour under the Cumulative Plus Project scenario. With this mitigation measure, this intersection will likely accommodate the added net new vehicular traffic generated by the SFPUC development and no additional new or more severe significant impacts are anticipated. Plus, this intersection is planned to be signalized as part of the Oak Avenue extension project. Signalization will further increase its vehicle carrying capacity and its ability to accommodate traffic generated by the SFPUC project.

# Conclusions

The land uses proposed for the SFPUC project, plus the Civic Project, and 988 ECR's proposed mixed-use development, fit within the land use envelope evaluated in the Civic Project SEIR TIA. The trip generation estimates for the combined approved and pending developments are also less than the number of peak hour vehicle trips evaluated in the Civic Project SEIR TIA. However, the geographic distribution of the land uses (and their associated traffic) is somewhat different as more development is currently being proposed on the SFPUC site than what was assumed in the Civic Project SEIR TIA. The nearby intersection of El Camino Real and Arroyo Drive/Oak Avenue extension appears to have adequate capacity to accommodate the net new traffic generated by the SFPUC proposed project. The intersection of Mission Road and Oak Avenue is projected to operate at an acceptable LOS under all analysis scenarios with the identified mitigation measure and also appears to have adequate capacity. Therefore the Civic Project SEIR adequately addresses the impacts of the proposed SFPUC project on the surrounding roadway system and no new or more severe significant impacts are anticipated.

[1] MM3.10.6e identified in the Civic Project SEIR (pg. 3.10-42), 2017.

# Attachment

## MainStreet and Mixed-Use Trip Generation Reductions

Methods commonly used by traffic engineers overestimate the impacts of infill and mixed-use developments (MXDs) because they do not accurately reflect the amount of internal trip linking or the level of trips made by transit, biking, and/or walking. The ITE *Trip Generation Handbook* provides a methodology to account for mixed uses, but this resource does not adequately account for all of the key variables that influence travel such as development density, location efficiency, land use mix, urban design elements, and transit orientation. As part of a recent validation effort[2], 27 mixed-use sites were surveyed and the results showed the ITE Handbook methodology overestimated daily traffic generation by approximately 24 percent and peak hour traffic by up to 37 percent.

Two significant new research studies provide an opportunity to improve the state of practice. One study sponsored by the United States Environmental Protection Agency (EPA)[3] and another by the Transportation Research Board (TRB) [4] have developed analysis methods to improve trip generation estimation for MXDs. The two studies examined over 260 MXD sites throughout the U.S. and, using different approaches, developed new quantification methods. Fehr & Peers has reviewed the two methods, including the basis, capabilities, and appropriate uses of each, to produce a new method (MainStreet/MXD+) that combines their strengths to develop a best practice. MainStreet/MXD+ recognizes that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, destination accessibility, transit proximity, and scale of development.

The MainStreet/MXD+ method explains 97 percent of the variation in trip generation among MXDs, compared to 65 percent for the methods previously recommended by ITE. While remaining slightly conservative (two to four percent) to avoid systematically understating impacts, it substantially reduces the overestimation of traffic generation produced by conventional ITE methods.

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[2] Walters, Jerry et al. "Getting Trip Generation Right – Eliminating the Bias Against Mixed Use Development". American Planning Association. May 2013

[3] Traffic Generated by Mixed-Use Developments—A Six-Region Study Using Consistent Built Environmental Measures (Ewing et al, ASCE UP0146, Sept 2011)

[4] National Cooperative Highway Research Program (NCHRP) Report 684 *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* (Bochner et al, March 2011)

MainStreet/MXD+ has been approved for use by the EPA [5], peer-reviewed in the ASCE Journal of Urban Planning and Development [6], peer-reviewed in a 2012 Transportation Research Board (TRB) paper evaluating various smart growth trip generation methodologies[7], recommended by SANDAG for use on mixed-use smart growth developments [8], and has been used successfully in multiple certified Environmental Impact Reports (EIR) in California. It is also listed as an alternative methodology to ITE rates in Santa Clara Valley Transportation Authority (VTA) *Transportation Impact Analysis Guidelines* (October 2014).

[5] Trip Generation Tool for Mixed-Use Developments (2012). www.epa.gov/dced/mxd_tripgeneration.html

[6] "Traffic Generated by Mixed-Use Developments—Six-Region Study Using Consistent Built Environmental Measures." Journal of Urban Planning and Development, 137(3), 248–261.

[7] Shafizadeh, Kevan et al. "Evaluation of the Operation and Accuracy of Available Smart Growth Trip Generation Methodologies for Use in California". Presented at 91st Annual Meeting of the Transportation Research Board, Washington, D.C., 2012

[8] SANDAG Smart Growth Trip Generation and Parking Study. http://www.sandag.org/index.asp?projectid=378&fuseaction=projects.detail

## Appendix A: Trip Generation Table

| | | Land Use Code | Land Use Description | Independent Variable | No. of Units | Avg Rate or Eq | Daily Trips | AM Trips | PM Trips | AM Trips In | AM Trips Out | PM Trips In | PM Trips Out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SFPUC Proposal** | **Total A B C** | 221 | Multi Family Residential | DU | 809 | Fitted Curve | 4,407 | 266 | 330 | 69 | 197 | 201 | 129 |
| | | 820 | Shopping Center | 1,000 Sq Ft GLA | 13 | Avg | 1,501 | 12 | 120 | 7 | 5 | 58 | 62 |
| | | | **Shopping Center Passby Trips Reduction** | | | | -300 | -2 | -24 | -1 | -1 | -12 | -12 |
| | | 565 | Day Care Center | 1,000 Sq Ft GLA | 5.5 | Avg | 262 | 61 | 61 | 32 | 29 | 29 | 32 |
| | | | **Day Care Center Passby Trips Reduction** | | | | -52 | -12 | -12 | -6 | -6 | -6 | -6 |
| | | | **MainStreet Reductions** | | | | -1,576 | -109 | -147 | -35 | -74 | -83 | -64 |
| | | | **Total** | | | | **4,241** | **215** | **328** | **65** | **150** | **188** | **140** |