

Appendix G2

Fire Response Memo

July 18, 2018

10727

Greg Waite
Integral Communities
2235 Encinitas Blvd, Suite 216
Encinitas, California 92024

Subject: Sunrise – San Marcos: Preliminary Fire/Medical Response Analysis

Dear Greg,

The following letter provides a summary of Dudek's fire service response analysis for the Sunrise Project (Project) in San Marcos, California. This letter provides a preliminary summary of the existing San Marcos Fire Department's (SMFD) nearby resources, their modeled travel time responses into the Project, and their existing call volumes. The goal is to determine the potential impact of the Project on the SMFD.

1 ASSIGNMENT

Our assignment was to:

- Conduct evaluation of existing, nearby SMFD fire station travel times to the project site;
- Acquire existing call volumes for nearby stations to determine their current work load;
- Analyze generated information to determine if any of the Project site cannot be reached within the City's response time goal; and
- Analyze call volume information to determine if the Project's projected call load would significantly impact the ability of existing stations to provide response to the Project.

2 PROJECT SUMMARY

The proposed 14.4-acre Project site is located at the southeastern limits of the City of San Marcos (City), California, bordering the City of Escondido to the east and unincorporated County of San Diego (County) lands to the south (Figure 1, Project Location). The Project proposes to construct 192 multi-family residential units on two undeveloped lots within the jurisdiction of the City and County. However, the entirety of the Project is within the City's sphere of influence. The Project site is approximately 0.25 miles southeast of Highway 78 and approximately 1.5 miles west Interstate 15. Specifically, the Project site is west of Meyers Avenue and south of Barham Drive. Primary Project

access is proposed via an east-west, 28 feet wide driveway to Meyers Avenue with secondary access via a north-south, 24 feet wide driveway to Barham Drive.

The Project is located within the jurisdiction of the SMFD. The fire department provides structural fire protection and advanced life support-level emergency medical services within the City limits; unincorporated territory adjacent to the city's northern boundary (Project Area); discontinuous, unincorporated areas between the City of San Marcos and the City of Escondido; and the community of Lake San Marcos. The fire department operates two Fire Stations (Stations 1 and 3) that would respond to an incident at the proposed Project site, although primary response would be from Station 3, with Station 1 responding as necessary. Table 1 presents a summary of the location, equipment, and staffing levels for the two SMFD stations responding to the site.

Table 1
SMFD Responding Fire Stations Summary

Fire Station	Location	Equipment	Staffing ¹
Station 1	180 W. Mission Road San Marcos, California 92069	Paramedic Engine Co. Paramedic Truck Co. Wildland Fire Engine Paramedic Ambulance Battalion Chief Vehicle	On duty: 9
Station 3	404 Woodland Pkwy San Marcos, California 92069	Paramedic Engine Co. Wildland Fire Engine Paramedic Ambulance	On-duty: 5

Notes:

¹ Both Stations are cross staffed with wildland fire (brush) engines.

3 METHODS

3.1 Time Response Modeling

Dudek conducted a GIS-based travel time coverage modeling effort in order to determine if the project meets the SMFD's response goal. The SMFD indicates "the average initial total response standard in the City of San Marcos is to arrive within seven minutes for 90% of the emergency calls received, and within 10 minutes for 90% of the non-emergency calls received¹." This is a less stringent response than suggested by the National Fire Protection Association (NFPA) which publishes a national guideline of 6 minutes and 30 seconds (4 minutes travel response time), 90% of the emergency calls received.

¹ 2017 Call volume, response standard, and fire station statistics provided by Jason Nailon, SMFD Fire Marshal, via e-mail communication. July 12, 2018.

Travel time is one part of the overall response time and is based largely on the distance from the fire station to the project. The analysis that follows evaluates travel time and assumes the dispatch and turnout times as a constant i.e., 2 minutes and 30 seconds, total.

3.2 GIS Response Travel Time Modeling

Following compilation of all necessary data layers received from project applicant and acquired via publicly available sources, Dudek verified that all data layers were in the correct State Plane Zone coordinate system with units in feet. A network data set was then created utilizing ESRI's Network Analyst extension in the Arc Catalog module. The data set was created by merging the existing centerline street layer with the proposed Sunrise Project centerline street data, provided by project applicants, and assigning parameters to the created data set. Several parameters are available during the creation of a network data set and include elevation constraints, U-turn capabilities, curb approach direction and travel impedance.

Due to the emergency nature of the response scenarios modeled in this analysis, U-turns were permitted on every road. Curb approach determines on which side of the street the vehicle needs to approach and includes three options, left, right, or either. The 'either' option was selected for all roads in this analysis based on the emergency nature of the response situations. Finally, travel impedance was utilized to include the effect of speed limits on response travel time. A custom impedance value was created for each road segment and was a function of road segment distance (miles) divided by speed (mph). This value was utilized in Network Analyst calculations for both modeling types and reflected the time necessary for a vehicle to cover the distance of the road segment. Speed was set at 35 mph, consistent with National Fire Protection Association (NFPA) 1142 Table C.11(b) and the Insurance Services Office (ISO) travel time formula ($T=0.65 + 1.7D$).

Once the network data set parameters were finalized, the route analysis was run using the Network Analyst extension in ArcGIS 10.2.2. This function determines the best route between a minimum of two points based on the parameters chosen. The analysis includes response from SMFD Fire Stations 1 and 3, which are the closest stations to the Sunrise Project. A route analysis procedure was then run using Network Analyst with each respective fire station as the starting point, and a remote location within the Project as the destination. The maps depicting each Station travel time coverage area are presented in Attachments 1 and 2. Note that the model determined that the fastest route from responding fire stations to the Project was via Barham Drive, not Meyers Avenue, which is the Project's primary access point.

3.3 Modeling Results

As indicated in Table 2 and Attachments 1 and 2, response to the project site from the closest existing SMFD fire station (Station 3) would achieve a 3 to 4 minute travel time (5.5 to 6.5 minute total response time) for the entire Project. This analysis indicates that the first arriving paramedic engine and ambulance from Station 3 can respond within SMFD's seven minute total response goal (including one minute for dispatch and 1.5 minutes for turnout) to an estimated 100% of the project site. The other modeled SMFD Fire Station (Station 1) is further away from the site and would have travel times of 5.5 to 6 minutes and total response times ranging from 8 to 8.5 minutes.

Table 2
SMFD Fire Station Time Response to Project

Call Response Times	Estimated Percent of Sunrise Project Achievable			
	Fire Station 1		Fire Station 3	
	Travel Time	Total Response Time	Travel Time	Total Response Time
Less than 5 minutes	0%	0%	100%	43%
5 to 6 minutes	82%	0%	100%	100%
6 to 7 minutes	100%	0%	100%	100%
7 to 8 minutes	100%	100%	100%	100%
8 to 9 minutes	100%	100%	100%	100%

3.4 Response Time Capability Assessment

The Project includes a substantial number of new residential structures. Service level requirements could, in the absence of fire facilities and resources improvements, cause a decline in the SMFD response times and capabilities for existing residents. It is clear that from a response time perspective, the project does comply with the City's total response time standard.

4 CALL VOLUME ANALYSIS

4.1 Estimated Calls and Demand for Service from the Project

Emergency call volumes related to typical projects, such as new residential developments, can be reliably estimated based on the historical per-capita call volume from a particular fire

jurisdiction. The SMFD estimates approximately 11,490 total annual calls¹ for a City-wide total population² of 95,000. The City's per capita call volume is roughly 121 calls per 1,000 persons.

Based on the proposed development plans, the Project may include up to approximately 192 residential units. A total population of 603 residents are calculated based on an average of 3.14 occupants³ per household. The Project's estimated 603 residents would generate roughly 73 calls per year or 0.2 call per day, most of which are expected to be medical-related calls. Service level requirements for SMFD are not expected to be significantly impacted with the increase of less than one call per day, even if all of the calls are from the closest station. The department currently responds on the average to just over 32 calls per day in its entire service area, or roughly 8 calls per day per fire station. For reference, a station that responds to 5 calls per day is considered average and 10 calls per day is considered busy. Even though the stations are considered reasonably busy, the Project is not expected to cause a decline in the SMFD response times.

5 DISCUSSION AND FINDINGS

5.1 Emergency Response

As presented, Station 3 is well-within the City's time response goal for first-in fire engine and medic ambulance to the entire Project site.

5.2 Call Volume/Load

The Project would generate emergency calls, primarily medical, proportionally with its population. At build out, there may be as many as 0.2 calls per day generated by the on-site population. The addition of less than one call per day to a station that is currently running approximately 8 calls per day is not considered a significant increase. Based on the information provided by SMFD, the Project's additional call volume should not cause a significant stress on the response capabilities. However, SMFD would make the final determination, based on specific fire station call volumes (which were not provided for this analysis), whether the station would incur delayed response times or an increase in call volume that could not be absorbed.

6 RECOMMENDATIONS

The following Recommendation is provided based on the preceding analysis:

² www.san-marcos.net/about-us/demographics

³ State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2018. Sacramento, California, May 2018.


Mr. Greg Waite

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1. It is recommended that SMFD provide emergency response to the proposed Project from Station 3. Factors supporting this recommendation are the absorbable number of calls that would be anticipated as the Project is built, the response time that is within range of local and national standards.

Please feel free to contact me if you have any questions or need any additional information. I look forward to continuing to work with you on this project's fire safety considerations.

Sincerely,

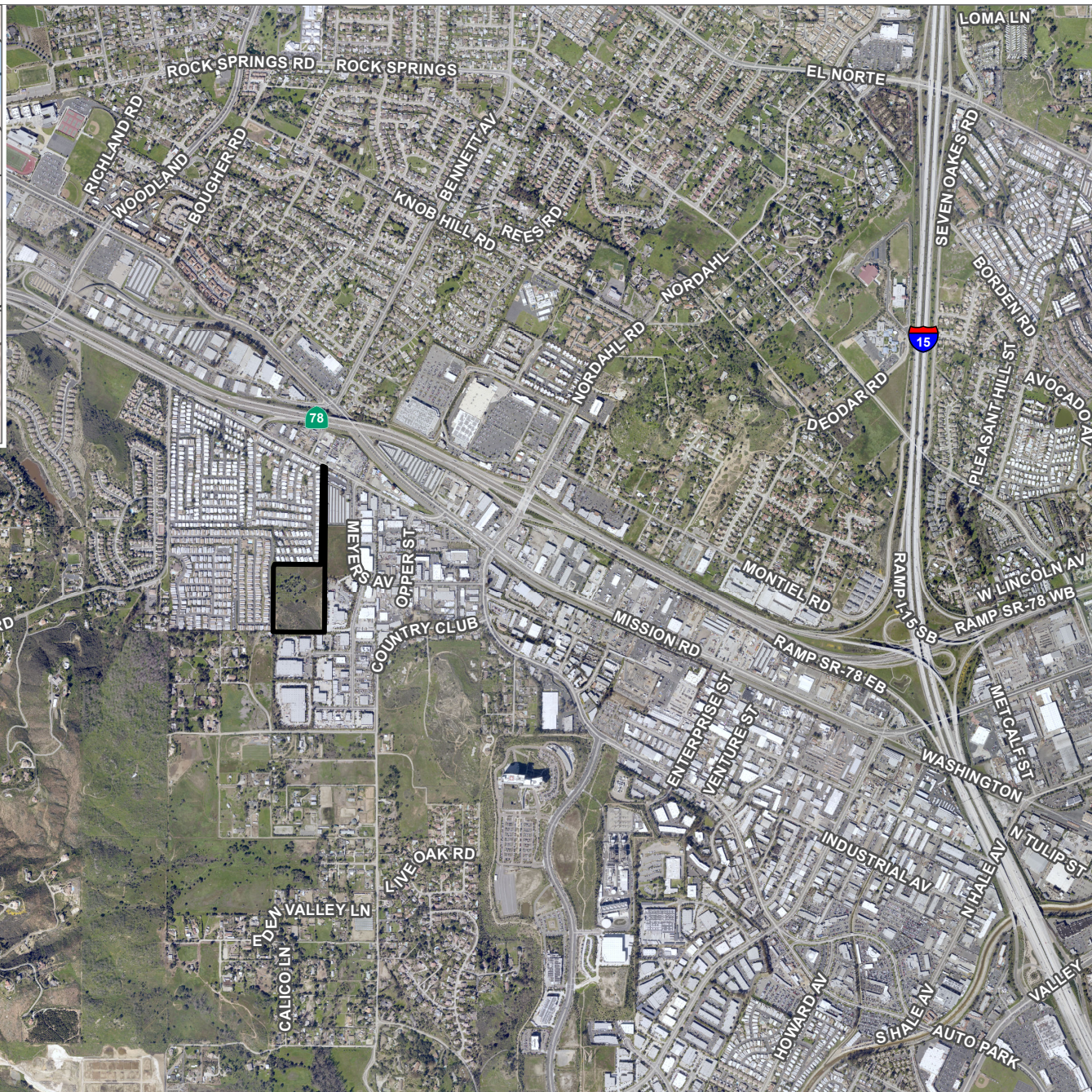
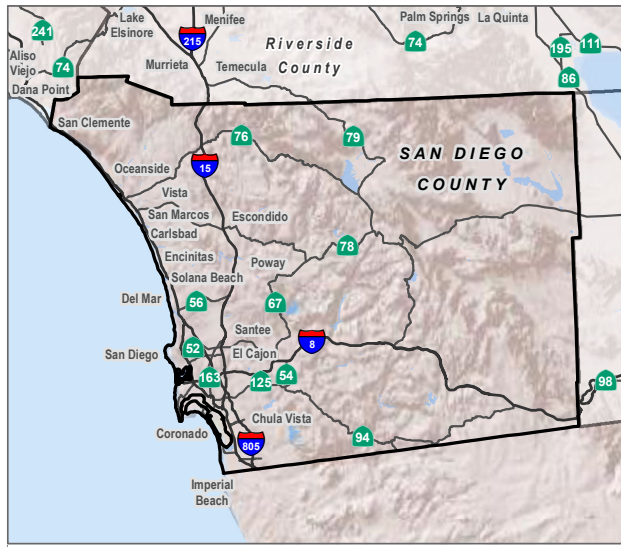



Michael Huff
Principal Fire Protection Planner

Att: Figure 1

Attachment 1: Travel Time Response to Project from Existing San Marcos Fire Station 1

Attachment 2: Travel Time Response to Project from Existing San Marcos Fire Station 3



 Project Boundary

SOURCE: SANDAG 2017



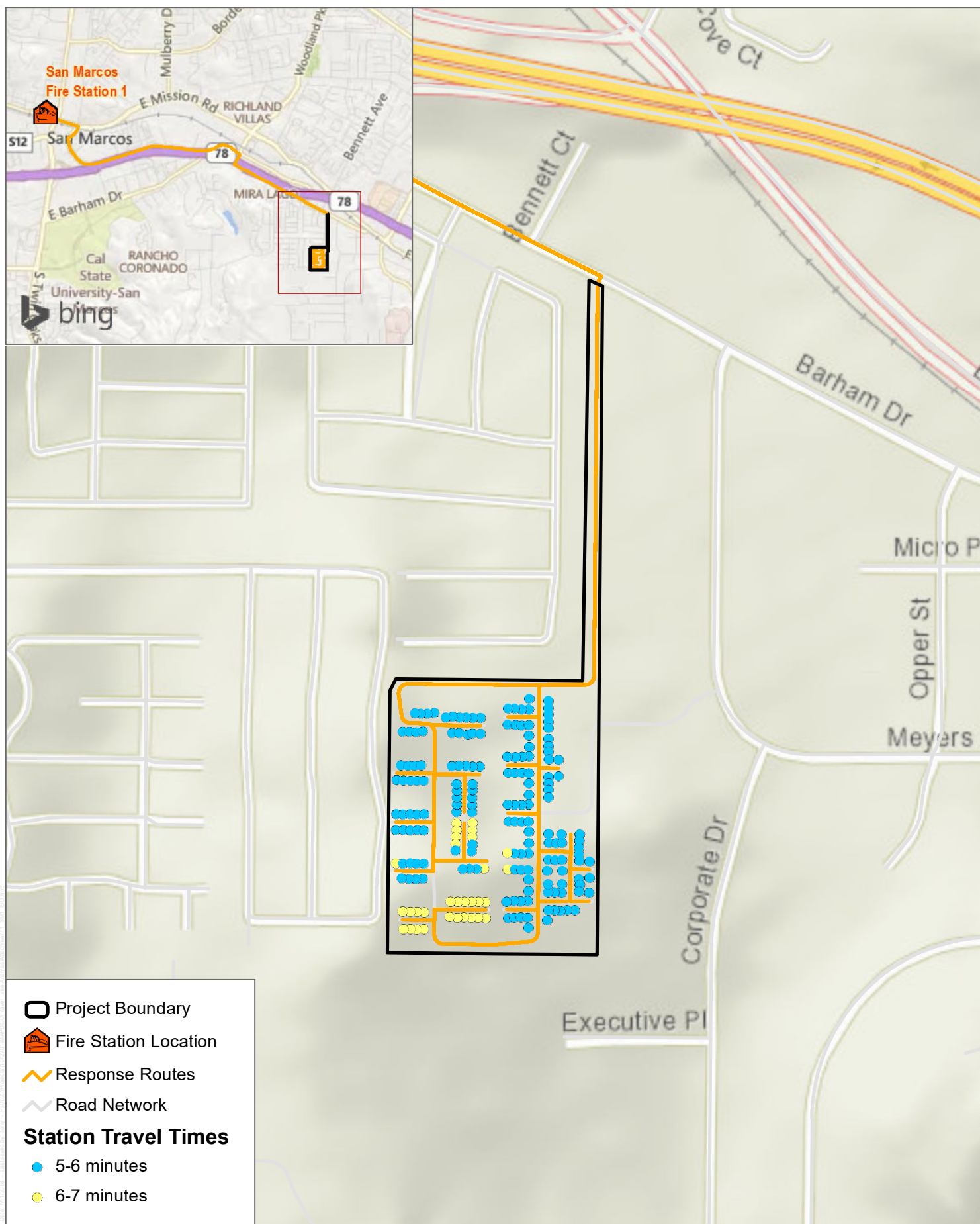
FIGURE 1

Project Location

Sunrise – San Marcos: Preliminary Fire/Medical Response Analysis

ATTACHMENT 1

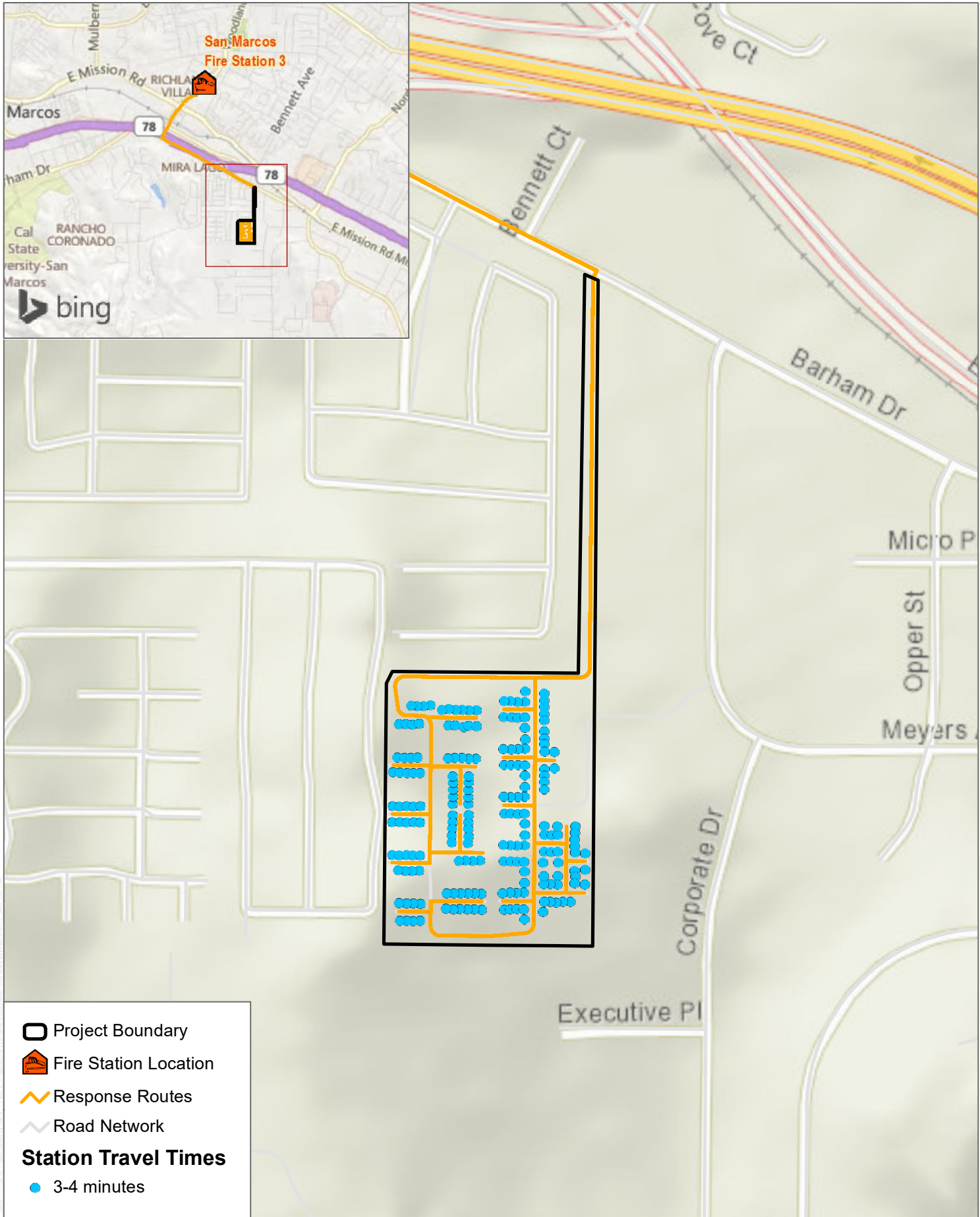
*Travel Time Response to Project from
Existing San Marcos Fire Station 1*



SOURCE: Bing Maps 2018, SanGIS 2018

ATTACHMENT 2

*Travel Time Response to Project from
Existing San Marcos Fire Station 3*



SOURCE: Bing Maps 2018, SanGIS 2018

