

CITY OF SAN RAFAEL, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS

**MEMORANDUM**

**TO:** Steve Stafford  
Senior Planner

**DATE:** September 12, 2018

**FROM:** Lauren Davini  
Traffic Engineer

**FILE NO.:**

**SUBJECT:** Traffic Analysis for the Proposed Project at 1007, 1010, 1020, and 1030 Northgate Drive

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**Introduction**

The proposed project consists of demolishing the existing gas station/UPS store at 1005 Northgate Drive and building 106 condominiums and 30 senior attached housing units at 1007, 1010, 1020, and 1030 Northgate Drive.

**Setting**

This section describes the existing transportation infrastructure within the vicinity of the proposed project site, including roadway, transit, bicycle, and pedestrian facilities.

Regional Facilities

US 101 is a major north-south regional route serving the West Coast. US 101 extends North from San Francisco through Marin and Sonoma Counties and continues into Oregon and Washington State. South of San Francisco, US 101 Extends through San Jose and the central California Coast into Southern California. In the vicinity of the project site, US 101 is generally a six-lane facility with a High Occupancy Vehicle (HOV) lane in each direction. Average daily traffic on US 101 at Manuel T Freitas Parkway is approximately 183,000 vehicles.

Local Facilities

Manuel T Freitas Parkway is a four-lane minor arterial divided by a raised center median.

Northgate Drive, which provides direct access to the project site, is a two- to four-lane divided collector south of Freitas Parkway with turn pockets at various locations.

Los Ranchitos Road, which provides access to and from the Mall, is a minor arterial and striped for two lanes.

Las Gallinas Avenue, is a minor arterial and striped for two lanes. North of Freitas Parkway, Las Gallinas largely serves residential land uses. South of Freitas Parkway, Las Gallinas Avenue provides access to commercial, retail, and office.

Civic Center Drive is a two-lane minor arterial that provides access between the Northgate area and the Civic Center.

Redwood Highway is a two-lane minor arterial that serves as a frontage road to US 101 north of Freitas Parkway.

### Study Intersections

The twelve intersections shown below in Table 1 were included in the traffic study. Peak traffic congestion in the region typically occurs during the commute peak periods between 7:00 a.m. and 9:00 a.m. and 4:00 p.m. and 6:00 p.m. The peak hour is defined as the highest one-hour volume counted during each of the two-hour time periods.

| ID   | Intersection                         |
|------|--------------------------------------|
| 587  | Civic Center Dr & McInnis Pkwy       |
| 588  | Las Gallinas Ave & Merrydale O.C.    |
| 589  | Civic Center Dr & Merrydale O.C.     |
| 590  | Freitas Pkwy & 101 NB Ramps          |
| 591  | Freitas Pkwy & Civic Center Dr       |
| 593  | Freitas Pkwy & Del Presidio Blvd     |
| 594  | Freitas Pkwy & Northgate Dr          |
| 595  | Freitas Pkwy & Las Gallinas Ave      |
| 596  | Las Gallinas Ave & Nova Albion Way   |
| 597  | Las Gallinas Ave & Northgate Dr      |
| 598  | Las Gallinas Ave & Del Presidio Blvd |
| 1409 | Nova Albion Way & Arias St           |

### Pedestrian and Bicycle Facilities

In the vicinity of the project site, there are Class II bike lanes on Las Gallinas Avenue north of Freitas Parkway and a Class I bike path on the perimeter of the Northgate Mall.

There are sidewalks meeting minimum requirements on both sides of Freitas Parkway from Del Presidio extending west. There are marked crosswalks and signalized crossings in the vicinity of the project site, but some lack pedestrian signal heads and/or push buttons.

The San Rafael Bicycle and Pedestrian Master Plan, 2018 Update calls out a proposed Class I multi-use path and/or a continuous six-foot wide sidewalk on both sides of Freitas Parkway from Monticello Road to Del Presidio Boulevard.

Transit

Golden Gate Transit operates bus service in Marin County, providing both local service within Marin County and regional service connecting Marin County to San Francisco and Richmond.

Marin Transit Route 49 provides service between Novato and San Rafael seven days per week with one-hour headways. There are bus stops in both directions on Freitas Parkway near Northgate Drive.

Sonoma-Marín Area Rail Transit (SMART) began passenger rail service in August 2017 and provides service along approximately 50 miles of the existing Northwestern Pacific (“NWP”) rail corridor from Santa Rosa in Sonoma County to San Rafael in Marin County, with the extension to Larkspur under construction. The closest station to the project site is at the Civic Center, approximately a one-mile walk.

**Analysis Methodology**

Intersection operating conditions are assessed through an evaluation of peak hour Levels of Service (LOS). The LOS methodology qualitatively characterizes traffic conditions through a measurement of overall congestion. There are six levels of operation or “grades,” ranging from LOS A to LOS F. LOS A represents free-flowing traffic conditions, where motorists are affected little by other motorists, and the level of comfort and convenience to the motorist is high. LOS F is characterized by congested conditions, where motorists usually experience discomfort, inconvenience, and long delays and have little, if any, freedom to choose speeds or lanes of travel. Table 2 shows the Level of Service criteria for signalized and unsignalized intersections.

**Table 2. LOS Criteria for Signalized and Unsignalized Intersections**

| LOS | Description         | Total Delay (seconds/vehicle) |                            |
|-----|---------------------|-------------------------------|----------------------------|
|     |                     | Signalized Intersections      | Unsignalized Intersections |
| A   | Little or no delay  | ≤ 10.0                        | ≤ 10.0                     |
| B   | Short traffic delay | >10.0 and ≤ 20.0              | >10.0 and ≤ 15.0           |
| C   | Average delay       | >20.0 and ≤ 35.0              | >15.0 and ≤ 25.0           |
| D   | Long delay          | >35.0 and ≤ 55.0              | >25.0 and ≤ 35.0           |
| E   | Very long delay     | > 55.0 and ≤ 80.0             | > 35.0 and ≤ 50.0          |
| F   | Extreme delay       | > 80.0                        | > 50.0                     |

Source: Highway Capacity Manual, Transportation Research Board, 2000.

For all study intersections (signalized and unsignalized), traffic conditions were evaluated using Synchro software and the 2000 Highway Capacity Manual (HCM) operations methodology. The delays presented in this document represent average delays for all vehicles entering a given intersection.

The Synchro and SimTraffic 10 software package was used to analyze the operating conditions and LOS at the study intersections.

### **Level of Service Standards**

The Circulation Element of the City of San Rafael General Plan 2020 establishes policies and standards for traffic levels of service. The LOS standard that applies to the study intersections would be that signalized intersections must maintain a LOS D during the peak hours of operation. One exception is the intersection of Merrydale Overcrossing at Civic Center Drive, which must maintain LOS E standard.

The General Plan 2020 Draft EIR states the following standards for unsignalized intersections:

- If an unsignalized intersection with baseline traffic volumes is operating at an acceptable LOS (LOS A, B, C, D, or E) and deteriorates to an unacceptable operation (LOS F), this impact is significant.
- If an unsignalized intersection with baseline traffic volumes is already operating at LOS F and there is an increase in the delay of five seconds or more, this impact is significant.

For signalized intersections, the following standards are used:

- If a signalized intersection with baseline traffic volumes is operating at an acceptable LOS and deteriorates to an unacceptable operation (LOS E or F), this impact is significant.
- If a signalized intersection with baseline traffic volumes is at an unacceptable LOS or already operating at LOS F and there is an increase in the delay of five seconds or more, this impact is significant.

### **Trip Generation**

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in Trip Generation Manual, 9<sup>th</sup> Edition, 2012 for “Residential Condominiums/Townhouse” (ITE LU #230) and “Senior Adult Housing-Attached” (IT LU #252). Application of these rates indicates the proposed project would be expected to generate 719 new daily trips, including 53 trips during the a.m. peak hour and 62 trips during the p.m. peak hour.

The site is currently occupied by a gas station and UPS store, so the trip generation of the existing uses were considered. Counts were obtained at both driveways during both the morning and evening peak periods for three consecutive days of October 27 to 29, 2015. The average of the counts for the three days indicates that the existing uses currently generate an average of 53 trips during the morning peak hour and 128 trips during the evening peak hour. These actual counts are comparable to the trip generation of a gas

station with eight fueling positions using the ITE standard rates. Because counts were not obtained for all 24 hours for the three days of data collection, the ITE Trip Generation Manual was used to estimate daily trips.

Gas stations typically draw some of their traffic from passing volumes. However, since both driveways are located on the side street off Freitas Parkway, it was determined the percentage for “diverted trips” should be applied to the existing uses. Based on the average “diverted trip” percentages from the ITE Trip Generation Handbook for Gas Stations, 20.9 percent was used for the a.m. peak hour, 31.2 percent was used for the p.m. peak hour, and 25 percent was used for the daily trips.

The expected trip generation potential for the proposed project is shown below in Table 3. Deductions were taken for trips made to and from the existing use at the site, which will cease with the construction of the project. Based on counts of existing trips to the gas station site, and with deductions applied for diverted trips, the project would be expected to result in a net decrease of 140 trips per day, including 11 new trips during the morning peak hour, and 26 less trips during the shows the trip generation information for the proposed project, which is expected to result in a daily decrease of 140 trips, with an increase of 11 trips during the a.m. peak hour and a decrease of 26 trips during the p.m. peak hour.

**Table 3. Trip Generation**

| Land Use                         | Qty    | Daily |             | AM Peak Hour |           |            |           | PM Peak Hour |            |           |            |
|----------------------------------|--------|-------|-------------|--------------|-----------|------------|-----------|--------------|------------|-----------|------------|
|                                  |        | Rate  | Trips       | Rate         | Trips     | In         | Out       | Rate         | Trips      | In        | Out        |
| Existing (Actual)                |        |       |             |              |           |            |           |              |            |           |            |
| Gas/Service Station              | -8 vfp | n/a   | -1,145      | n/a          | -53       | -28        | -25       | n/a          | -128       | -63       | -65        |
| Diverted Trips                   |        | -25%  | 286         | -20.9%       | 11        | 6          | 5         | -31.2%       | 40         | 20        | 20         |
| Net Primary Trips                |        |       | -859        |              | -42       | -22        | -20       |              | -88        | -43       | -45        |
| Proposed                         |        |       |             |              |           |            |           |              |            |           |            |
| Condominiums                     | 106 du | 5.81  | 616         | 0.44         | 47        | 8          | 39        | 0.52         | 55         | 37        | 18         |
| Senior Adult Housing – Attached  | 30 du  | 3.44  | 103         | 0.19         | 6         | 2          | 4         | 0.23         | 7          | 4         | 3          |
| Sub-total Proposed               |        |       | 719         |              | 53        | 10         | 43        |              | 62         | 41        | 21         |
| <b>Net Increase (vs. Actual)</b> |        |       | <b>-140</b> |              | <b>11</b> | <b>-12</b> | <b>23</b> |              | <b>-26</b> | <b>-2</b> | <b>-24</b> |

Note: vfp = vehicle fueling positions; du = dwelling units

**Trip Distribution**

Table 4 shows the trip distribution of the project-added trips through the study area.

| To/From               | Percentage |
|-----------------------|------------|
| East of project site  | 55%        |
| West of project site  | 20%        |
| South of project site | 45%        |

**Operational Analysis**

Existing and Existing plus Project

Table 5 shows the intersection operation under Existing and Existing plus Project volumes.

| ID   | Intersection                  | AM          |          |             |          | PM          |          |             |          |
|------|-------------------------------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|
|      |                               | Delay       | LOS      | + Project   |          | Delay       | LOS      | + Project   |          |
|      |                               |             |          | Delay       | LOS      |             |          | Delay       | LOS      |
| 587  | Civic Center & McInnis        | 19.5        | B        | 19.5        | B        | 13.4        | B        | 13.4        | B        |
| 588  | Las Gallinas & Merrydale O.C. | 16.0        | B        | 16.0        | B        | 39.1        | D        | 38.8        | D        |
| 589  | Civic Center & Merrydale O.C. | 79.4        | E        | 79.7        | E        | 36.6        | D        | 36.6        | D        |
| 590  | Freitas & 101 NB Ramps*       | 10.9        | B        | 10.3        | B        | 14.7        | B        | 14.7        | B        |
|      | <i>Southbound Left Turn</i>   | <i>51.9</i> | <i>E</i> | <i>45.8</i> | <i>E</i> | <i>89.4</i> | <i>F</i> | <i>92.5</i> | <i>F</i> |
| 591  | Freitas & Civic Center*       | 10.1        | B        | 12.6        | B        | 15.3        | B        | 15.8        | B        |
|      | <i>Northbound Left Turn</i>   | <i>7.7</i>  | <i>A</i> | <i>13.7</i> | <i>B</i> | <i>28.4</i> | <i>D</i> | <i>30.8</i> | <i>D</i> |
|      | <i>Southbound Through</i>     | <i>25.0</i> | <i>C</i> | <i>30.8</i> | <i>D</i> | <i>13.9</i> | <i>B</i> | <i>15.6</i> | <i>B</i> |
| 593  | Freitas & Del Presidio        | 11.9        | B        | 11.9        | B        | 28.9        | C        | 28.9        | C        |
| 594  | Freitas & Northgate           | 18.3        | B        | 18.8        | B        | 22.5        | C        | 22.1        | C        |
| 595  | Freitas & Las Gallinas        | 29.7        | C        | 29.8        | C        | 25.1        | C        | 25.0        | C        |
| 596  | Las Gallinas & Nova Albion    | 32.5        | C        | 32.5        | C        | 24.2        | C        | 24.2        | C        |
| 597  | Las Gallinas & Northgate      | 17.4        | B        | 17.4        | B        | 19.6        | B        | 19.5        | B        |
| 598  | Las Gallinas & Del Presidio   | 14.8        | B        | 14.7        | B        | 17.2        | C        | 17.3        | C        |
| 1409 | Nova Albion & Arias           | 17.3        | B        | 17.4        | B        | 7.5         | A        | 7.5         | A        |

Note: \* indicates intersection is Unsignalized and was analyzed using SimTraffic  
*Italics* represent minor movement delay at a side-street STOP controlled intersection

The intersections are all operating acceptably, according to the standards set forth in the General Plan. With the addition of project-generated traffic, the intersections are expected to continue operating acceptably.

Baseline and Baseline plus Project

Table 6 shows the Baseline and Baseline plus Project LOS. The Baseline scenario is Existing volumes plus traffic generated by other approved projects in the area which are expected to be constructed in the near-term. It is expected that these projects would be completed or be closed to completion upon the development of the proposed project analyzed in this study.

**Table 6. Baseline and Baseline plus Project Peak Hour Intersection Levels of Service**

| ID   | Intersection                           | AM          |          |             |          | PM           |          |              |          |
|------|--|-------------|----------|-------------|----------|--------------|----------|--------------|----------|
|      |  | Delay       | LOS      | + Project   |          | Delay        | LOS      | + Project    |          |
|      |  |             |          | Delay       | LOS      |              |          | Delay        | LOS      |
| 587  | Civic Center & McInnis                 | 19.5        | B        | 19.5        | B        | 13.1         | B        | 13.1         | B        |
| 588  | Las Gallinas & Merrydale O.C.          | 23.9        | C        | 23.8        | C        | 45.0         | D        | 45.0         | D        |
| 589  | Civic Center & Merrydale O.C.          | <b>82.3</b> | <b>F</b> | <b>82.6</b> | <b>F</b> | 47.5         | D        | 47.5         | D        |
| 590  | Freitas & 101 NB Ramps*                | 22.8        | C        | 27.6        | D        | 22.9         | C        | 24.0         | C        |
|      | <i>Southbound Left Turn</i>            | <i>75.6</i> | <i>F</i> | <i>90.9</i> | <i>F</i> | <i>122.5</i> | <i>F</i> | <i>120.9</i> | <i>F</i> |
| 591  | Freitas & Civic Center*                | 23.8        | C        | 23.9        | C        | 25.1         | D        | 23.6         | C        |
|      | <i>Northbound Left Turn</i>            | <i>12.3</i> | <i>B</i> | <i>11.8</i> | <i>B</i> | <i>48.8</i>  | <i>E</i> | <i>47.2</i>  | <i>E</i> |
|      | <i>Southbound Through</i>              | <i>56.9</i> | <i>F</i> | <i>55.0</i> | <i>F</i> | <i>21.6</i>  | <i>C</i> | <i>20.5</i>  | <i>C</i> |
| 593  | Freitas & Del Presidio                 | 12.5        | B        | 12.5        | B        | 34.0         | C        | 34.1         | C        |
| 594  | Freitas & Northgate                    | 27.5        | C        | 28.6        | C        | 23.6         | C        | 23.4         | C        |
| 595  | Freitas & Las Gallinas                 | 31.9        | C        | 32.0        | C        | 25.5         | C        | 25.3         | C        |
| 596  | Las Gallinas & Nova Albion-Nove Albion | 33.4        | C        | 33.3        | C        | 24.7         | C        | 24.6         | C        |
| 597  | Las Gallinas & Northgate               | 17.9        | B        | 17.5        | B        | 20.9         | C        | 20.8         | C        |
| 598  | Las Gallinas & Del Presidio            | 14.7        | B        | 14.7        | B        | 17.6         | B        | 17.5         | B        |
| 1409 | Nova Albion & Arias                    | 17.8        | B        | 17.9        | B        | 7.6          | A        | 7.5          | A        |

Note: \* indicates intersection is Unsignalized and was analyzed using SimTraffic

Values in **Bold** indicate unacceptable operation

*Italics* represent minor movement delay at a side-street STOP controlled intersection

Under Baseline conditions, the intersections are expected to operate acceptably, except for the intersection of Civic Center Drive/Merrydale Overcrossing during the a.m. peak hour. However, the project-added trips increase delay at the intersection by no more than 0.3 seconds, which is well under the five-second increase in delay that would be considered a significant impact.

Cumulative and Cumulative plus Project

Cumulative Conditions are defined as traffic conditions set forth by the City of San Rafael General Plan 2020, which focuses on achievable goals that could be implemented

by 2020. Some of the achievable goals included in the Cumulative analysis are: optimized signal timing, signaling the Freitas interchange, and increasing capacity with additional lanes or turn pockets. Because of these improvements, some delays are expected to decrease at certain intersections compared to Existing and Baseline scenarios.

Cumulative Conditions traffic volumes are existing traffic volumes plus Baseline Conditions traffic volumes plus other approved projects that have not been constructed and were not considered as part of the Baseline Conditions entitled projects. These additional projects are part of the City of San Rafael traffic model which models General Plan 2020 expected volumes. Because the 136 residential units were not accounted for in General Plan 2020, they were added to Cumulative volumes to show the project impacts at the study intersections. Table 7 shows the LOS for the study intersections under Cumulative and Cumulative plus Project conditions.

**Table 7. Cumulative and Cumulative plus Project Peak Hour Intersection Levels of Service**

| ID   | Intersection                  | AM           |          |             |          | PM           |          |              |          |
|------|-------------------------------|--------------|----------|-------------|----------|--------------|----------|--------------|----------|
|      |                               | Delay        | LOS      | + Project   |          | Delay        | LOS      | + Project    |          |
|      |                               |              |          | Delay       | LOS      |              |          | Delay        | LOS      |
| 587  | Civic Center & McInnis        | 11.6         | B        | 11.6        | B        | 12.0         | B        | 12.0         | B        |
| 588  | Las Gallinas & Merrydale O.C. | 18.9         | B        | 19.0        | B        | 51.2         | D        | 50.9         | D        |
| 589  | Civic Center & Merrydale O.C. | 53.9         | D        | 53.3        | D        | 59.6         | E        | 59.7         | E        |
| 590  | Freitas & 101 NB Ramps*       | 18.3         | C        | 15.5        | C        | 25.5         | D        | 25.1         | D        |
|      | <i>Southbound Left Turn</i>   | <i>108.2</i> | <i>F</i> | <i>84.7</i> | <i>F</i> | <i>124.9</i> | <i>F</i> | <i>126.9</i> | <i>F</i> |
|      | <b>Signalized</b>             | <b>24.3</b>  | <b>C</b> | <b>23.7</b> | <b>C</b> | <b>7.3</b>   | <b>A</b> | <b>7.3</b>   | <b>A</b> |
| 591  | Freitas & Civic Center*       | 17.5         | C        | 20.3        | C        | 27.3         | D        | 26.8         | D        |
|      | <i>Northbound Left Turn</i>   | <i>10.4</i>  | <i>B</i> | <i>14.7</i> | <i>B</i> | <i>63.4</i>  | <i>F</i> | <i>67.0</i>  | <i>F</i> |
|      | <i>Southbound Through</i>     | <i>46.6</i>  | <i>E</i> | <i>55.6</i> | <i>F</i> | <i>19.3</i>  | <i>C</i> | <i>17.7</i>  | <i>C</i> |
|      | <b>Signalized</b>             | <b>36.0</b>  | <b>C</b> | <b>36.0</b> | <b>D</b> | <b>18.6</b>  | <b>B</b> | <b>18.6</b>  | <b>B</b> |
| 593  | Freitas & Del Presidio        | 11.6         | B        | 11.7        | B        | 37.3         | D        | 36.3         | D        |
| 594  | Freitas & Northgate           | 17.1         | B        | 17.5        | B        | 23.4         | C        | 22.6         | C        |
| 595  | Freitas & Las Gallinas        | 62.3         | E        | 62.9        | E        | 30.0         | C        | 30.0         | C        |
| 596  | Las Gallinas & Nova Albion    | 28.5         | C        | 28.4        | C        | 29.3         | C        | 29.4         | C        |
| 597  | Las Gallinas & Northgate      | 18.1         | B        | 18.1        | B        | 25.4         | C        | 25.2         | C        |
| 598  | Las Gallinas & Del Presidio   | 16.3         | B        | 16.1        | B        | 21.1         | C        | 21.2         | C        |
| 1409 | Nova Albion & Arias           | 19.9         | B        | 19.7        | B        | 7.7          | A        | 7.7          | A        |

Note: \* indicates intersection is Unsignalized and was analyzed using SimTraffic

Values in **Bold** indicate unacceptable operation

*Italics* represent minor movement delay at a side-street STOP controlled intersection

**Shaded cells** indicate a future signalized intersection

The intersections are all operating acceptably, according to the standards set forth in the General Plan. With the addition of project-generated traffic, the intersections are expected to continue operating acceptably.

### **Site Access**

Northgate Drive will provide access to the proposed project via four different driveways. The existing driveway on Northgate Drive closest to Freitas Parkway will remain and provide access to the Ground Level residential parking. Another driveway will be added to the west side of Northgate Drive, approximately 120 feet north of the first driveway. Two other driveways are proposed on the east side of Northgate Drive. Due to the proximity of the first driveway to Freitas Parkway, “KEEP CLEAR” markings should be striped on Northgate Drive.

### **Project Impacts**

#### Vehicular Circulation

While the channelized right-turns are good for vehicle circulation, they are not ideal for pedestrian circulation. The intersection of Freitas Parkway/Northgate Drive should be redesigned to eliminate the pork chop islands on the north leg of the intersection. The intersection was modeled without the channelized right-turn lanes and operation was found to be LOS C or better under all scenarios. This should be done in conjunction with added pedestrian crossing features, as discussed in the pedestrian and bicycle impacts below.

#### Parking

A total of 519 parking spaces will be provided with the project and is intended for both the project use as well as the existing hotel use, which meets the requirement of the City of San Rafael Municipal Code.

#### Pedestrian and Bicycle Impacts

A Class I path or a six-foot wide sidewalk is proposed on the north side of Freitas Parkway, and the project should provide the right-of-way or help build a wider path along its frontage.

The intersection of Freitas Parkway/Northgate Drive is lacking pedestrian heads and push buttons for the crossing on the north leg. The project should contribute to the installation of pedestrian facilities at that location.

#### Transit Impacts

The existing bus stops are within walking distance of the project site and are adequate.