

NOT TO SCALE

LOWER LAGOON VALLEY
Figure 7

**SCENARIO 2: EXISTING + APPROVED PROJECTS
AM (PM) Peak Hour Traffic Volumes**

Ex+Approved Vols.cdr

Table 12 Existing + Project Intersection LOS Summary (Scenarios 1-4)

| Intersection | | Peak Hour | Existing | Approved Projects | AP + Current Zoning | AP + PROJECT |
|--------------|--|-----------|---|-------------------|---------------------|-----------------|
| | | | Level of Service (Volume-to-Capacity Ratio) | | | |
| 1. | North Texas Street / I-80 Eastbound Ramps | AM | C (0.74) | C (0.78) | D (0.83) | D (0.85) |
| | | PM | E (0.94) | E (0.96) | E (0.96) | E (0.93) |
| 2. | Hilborn Rd / Lyon Rd / North Texas St / I-80 WB Ramps | AM | C (0.78) | C (0.80) | C (0.80) | C (0.76) |
| | | PM | C (0.74) | D (0.81) | D (0.81) | D (0.83) |
| 3. | Lagoon Valley Road/ I-80 Eastbound Ramps | AM | A (0.17) | A (0.12) | F (1.09) | A (0.57) |
| | | PM | A (0.27) | A (0.14) | F (1.48) | A (0.55) |
| 4. | Lagoon Valley Road / Rivera Road / Nelson Road | PM | A (0.17) | A (0.11) | F (1.60) | A (0.48) |
| 5. | Cherry Glen Road / I-80 Westbound Ramps | AM | A (0.23) | A (0.15) | E (0.97) | A (0.42) |
| | | PM | A (0.21) | A (0.14) | E (0.96) | A (0.53) |
| 6. | Cherry Glen Rd / Lyon Rd | PM | A (0.24) | A (0.20) | A (0.25) | A (0.17) |
| 7. | I-80 EB Ramps / Cherry Glen / Pena Adobe / Rivera Road | AM | A (0.14) | A (0.19) | F (1.24) | E (0.92) |
| | | PM | A (0.16) | A (0.19) | F (1.27) | E (0.95) |
| 8. | North Cherry Glen Road / I-80 WB Ramps/Cherry Glen | AM | A (0.14) | A (0.16) | D (0.89) | C (0.77) |
| | | PM | A (0.16) | A (0.16) | A (0.57) | A (0.37) |
| 9. | Cherry Glen Road / Pleasant Valley Road | PM | A (0.28) | A (0.20) | A (0.28) | A (0.19) |
| 10. | Alamo Drive / I-80 Eastbound Ramps | AM | B (0.63) | B (0.67) | C (0.73) | A (0.57) |
| | | PM | A (0.53) | A (0.55) | A (0.60) | A (0.54) |
| 11. | Alamo Drive / Merchant St | AM | C (0.80) | D (0.88) | E (0.91) | D (0.82) |
| | | PM | B (0.61) | C (0.76) | D (0.85) | C (0.75) |
| 12. | Alamo Drive / Marshall Rd | PM | B (0.70) | C (0.76) | D (0.88) | B (0.64) |
| B1 | Lagoon Valley Road / Commercial Access Road | PM | - | - | - | A (0.32) |
| B2 | Lagoon Valley Road / Arterial #1 | PM | - | - | - | A (0.51) |
| B3 | Lagoon Valley Road / Arterial #2 | PM | - | - | - | A (0.24) |
| B4 | Internal Collector Intersection | PM | - | - | - | A (0.11) |
| C1 | New Intersection #1 | PM | - | - | D (0.86) | - |
| C2 | New Intersection #2 | PM | - | - | A (0.24) | - |
| C3 | New Intersection #3 | PM | - | - | A (0.28) | - |

Note: Intersections with LOS E or LOS F in bold.

As indicated in Table 12, the study intersection level of service ratings remain satisfactory at the majority of intersections in scenarios 2-4, at LOS ratings of LOS A, B, and C. However, each scenario has intersections which would operate at unsatisfactory levels.

The proposed project contributes to a worsening of LOS at the I-80 Eastbound Ramps/Pena Adobe intersection in both the AM and PM peak hours, with LOS A degrading to LOS E in scenario 4.

Roadway Segments

Level of Service (LOS) is associated with a range of traffic congestion on a segment of roadway. LOS values are assigned according to a ratio of traffic volumes to total possible traffic capacity, called the Volume-to-Capacity (V/C) Ratio. A V/C ratio of 0.60 or less displays excellent traffic conditions; a V/C ratio greater than 1.0 demonstrates extremely congested conditions and unacceptable levels of delay.

Table 13 presents roadway segment LOS during the AM and PM peak hours for roads surrounding the project site. Segments are listed from west to east, and are numbered in Figure 4. In all four of the existing scenarios below, roadway segments were found to operate at acceptable levels of service in both the AM and PM peak hours, including when the project is added.

Table 13 Existing + Project Roadway Segments LOS (Scenarios 1-4)

| Segments | Peak Hour | Existing | | | Approved Projects | | | AP + Current Zoning | | | AP + PROJECT | | |
|---|-----------|----------|--------|-----------|-------------------|--------|-----------|---------------------|--------|-----------|--------------|--------|-----------|
| | | LOS | Volume | V/C Ratio | LOS | Volume | V/C Ratio | LOS | Volume | V/C Ratio | LOS | Volume | V/C Ratio |
| 1. Lagoon Valley Rd (I-80 EB Ramps to Rivera Road) | PM | A | 113 | (0.06) | A | 22 | (0.01) | D | 2,852 | (0.86) | A | 1,045 | (0.31) |
| 2. Lagoon Valley Rd (I-80 Overcrossing) | AM | A | 107 | (0.05) | A | 43 | (0.02) | B | 1,386 | (0.69) | A | 436 | (0.22) |
| | PM | A | 224 | (0.11) | A | 63 | (0.03) | C | 1,443 | (0.72) | A | 638 | (0.32) |
| 3. North Cherry Glen Rd (I-80 WB Off Ramp to Cherry Glen Rd) | PM | A | 89 | (0.07) | A | 0 | (0.00) | A | 61 | (0.05) | A | 43 | (0.03) |
| 4. Rivera Road (Lagoon Valley Rd to Cherry Glen/Pena Adobe) | PM | A | 16 | (0.01) | A | 12 | (0.01) | C | 968 | (0.73) | B | 1,319 | (0.66) |
| 5. Cherry Glen Road (I-80 WB Ramps (W) to Lyon Road) | PM | A | 249 | (0.12) | A | 81 | (0.04) | A | 99 | (0.05) | A | 69 | (0.03) |
| 6. Cherry Glen Road (Lyon Rd to Pleasant Valley Rd) | PM | A | 209 | (0.16) | A | 146 | (0.11) | A | 218 | (0.16) | A | 104 | (0.08) |
| 7. Cherry Glen Road (Pleasant Valley Rd to I-80 WB Ramps(E)) | PM | A | 76 | (0.06) | A | 31 | (0.02) | A | 67 | (0.05) | A | 47 | (0.04) |
| 8. Pleasant Valley Rd (North of Cherry Glen Road) | PM | A | 239 | (0.12) | A | 139 | (0.07) | A | 256 | (0.13) | A | 119 | (0.06) |
| 9. Cherry Glen/Pena Adobe (I-80 Overcrossing) | AM | A | 55 | (0.03) | A | 80 | (0.04) | B | 1,271 | (0.64) | A | 996 | (0.50) |
| | PM | A | 95 | (0.05) | A | 75 | (0.04) | A | 712 | (0.36) | A | 411 | (0.21) |
| 10. Alamo Drive (I-80 Overcrossing) | AM | A | 2,372 | (0.47) | A | 2,774 | (0.55) | B | 3,074 | (0.61) | A | 2,461 | (0.49) |
| | PM | A | 2,445 | (0.49) | A | 2,849 | (0.57) | B | 3,088 | (0.62) | A | 2,773 | (0.55) |

Freeway Segments

Table 14 presents freeway segment LOS during the AM and PM peak hours on Interstate 80 (I-80) near the project site. I-80 has four travel lanes in each direction from Fairfield through Vacaville, allowing a capacity of approximately 8,000 vehicles per hour per direction. Segments which were found to operate at LOS E or F are shown on bold.

Table 14 Existing + Project Freeway Segments LOS (Scenarios 1-4)

| Interstate 80 Freeway Segments | | Peak Hour | Existing | | Approved Projects | | AP + Current Zoning | | AP + PROJECT | |
|--|----|-----------|------------------|----------------------------|-------------------|----------------------------|---------------------|----------------------------|------------------|----------------------------|
| | | | Level of Service | (Volume-to-Capacity Ratio) | Level of Service | (Volume-to-Capacity Ratio) | Level of Service | (Volume-to-Capacity Ratio) | Level of Service | (Volume-to-Capacity Ratio) |
| East of Alamo Drive Overcrossing | EB | AM | A | (0.49) | A | (0.48) | A | (0.54) | B | (0.67) |
| | | PM | C | (0.77) | B | (0.69) | D | (0.81) | C | (0.74) |
| | WB | AM | B | (0.62) | B | (0.65) | D | (0.83) | B | (0.69) |
| | | PM | A | (0.54) | A | (0.53) | B | (0.61) | C | (0.74) |
| Alamo Drive Overcrossing – Cherry Glen/Pena Adobe Overcrossing | EB | AM | A | (0.52) | A | (0.58) | B | (0.69) | C | (0.78) |
| | | PM | D | (0.87) | E | (0.95) | F | (1.17) | E | (0.96) |
| North Cherry Glen Off Ramp – Cherry Glen/Pena Adobe Overcrossing | WB | AM | C | (0.79) | D | (0.85) | E | (0.98) | D | (0.85) |
| | | PM | B | (0.60) | B | (0.65) | C | (0.77) | D | (0.86) |
| Alamo Drive Overcrossing – North Cherry Glen Off Ramp | WB | AM | D | (0.80) | D | (0.85) | F | (1.06) | D | (0.86) |
| | | PM | B | (0.61) | B | (0.65) | C | (0.77) | D | (0.86) |
| Cherry Glen/Pena Adobe Overcrossing – Lagoon Valley Overcrossing | EB | AM | A | (0.52) | A | (0.57) | B | (0.63) | C | (0.73) |
| | | PM | D | (0.87) | E | (0.94) | F | (1.01) | D | (0.83) |
| | WB | AM | C | (0.80) | D | (0.84) | E | (0.91) | C | (0.74) |
| | | PM | A | (0.60) | B | (0.64) | C | (0.71) | D | (0.82) |
| Lagoon Valley Overcrossing – North Texas Overcrossing | EB | AM | A | (0.52) | A | (0.58) | B | (0.66) | C | (0.73) |
| | | PM | D | (0.89) | E | (0.94) | E | (0.95) | D | (0.84) |
| | WB | AM | C | (0.80) | D | (0.85) | D | (0.86) | C | (0.76) |
| | | PM | A | (0.60) | B | (0.65) | C | (0.75) | D | (0.82) |

Note: Segments with LOS E or LOS F in bold.

Ramp Capacity

Table 15 presents freeway ramp LOS during the AM and PM peak hours for I-80 in both directions. Two locations were found to operate at unacceptable conditions. The Alamo Drive/Merchant Street ramps in both the eastbound and westbound directions would operate at unacceptable ratings of LOS E or F. All other ramps were found to operate at LOS A or B.

Table 15 Existing + Project Freeway Ramp LOS (Scenarios 1-4)

| Freeway Ramps | Peak Hour | Existing | Approved Projects | AP + Current Zoning | | AP + PROJECT | |
|---|-----------|---|-------------------|---------------------|---------------|-----------------|---------------|
| | | Level of Service (Volume-to-Capacity Ratio) | | | | | |
| 1. Lagoon Valley I-80 Westbound On Ramp | AM | A (0.01) | A (0.04) | A | (0.36) | A | (0.19) |
| | PM | A (0.02) | A (0.03) | A | (0.58) | A | (0.23) |
| 2. Lagoon Valley I-80 Westbound Off Ramp | AM | A (0.02) | A (0.01) | A | (0.61) | A | (0.12) |
| | PM | A (0.03) | A (0.00) | A | (0.37) | A | (0.19) |
| 3. Lagoon Valley I-80 Eastbound On Ramp | AM | A (0.03) | A (0.00) | A | (0.36) | A | (0.18) |
| | PM | A (0.03) | A (0.00) | B | (0.65) | A | (0.12) |
| 4. Lagoon Valley I-80 Eastbound Off Ramp | AM | A (0.04) | A (0.02) | A | (0.51) | A | (0.20) |
| | PM | A (0.16) | A (0.03) | A | (0.36) | A | (0.21) |
| 5. Cherry Glen I-80 Westbound On Ramp | AM | A (0.01) | A (0.00) | A | (0.00) | A | (0.00) |
| | PM | A (0.01) | A (0.00) | A | (0.04) | A | (0.00) |
| 6. Cherry Glen I-80 Westbound Off Ramp | AM | A (0.02) | A (0.04) | A | (0.41) | A | (0.58) |
| | PM | A (0.02) | A (0.05) | A | (0.36) | A | (0.23) |
| 7. North Cherry Glen I-80 Westbound Off Ramp | AM | A (0.01) | A (0.01) | A | (0.42) | A | (0.07) |
| | PM | A (0.01) | A (0.00) | A | (0.04) | A | (0.03) |
| 8. Pena Adobe I-80 Eastbound On Ramp | AM | A (0.01) | A (0.05) | A | (0.38) | A | (0.26) |
| | PM | A (0.03) | A (0.05) | D | (0.86) | B | (0.70) |
| 9. Pena Adobe I-80 Eastbound Off Ramp | AM | A (0.01) | A (0.01) | A | (0.04) | A | (0.00) |
| | PM | A (0.02) | A (0.01) | A | (0.00) | A | (0.00) |
| 10. Alamo / Merchant Eastbound Off Ramp | AM | A (0.45) | E (0.93) | F (1.23) | (1.23) | E (0.92) | (0.92) |
| | PM | E (0.96) | F (1.81) | F (2.31) | (2.31) | F (1.48) | (1.48) |
| 11. Alamo / Merchant Westbound On Ramp | AM | F (1.27) | F (1.37) | F (1.49) | (1.49) | F (1.16) | (1.16) |
| | PM | B (0.67) | E (0.96) | F (1.20) | (1.20) | E (0.94) | (0.94) |
| 12. Manuel Campos Parkway I-80 Eastbound Off Ramp | AM | A (0.12) | A (0.12) | A | (0.12) | A | (0.12) |
| | PM | A (0.31) | A (0.31) | A | (0.31) | A | (0.31) |
| 13. Manuel Campos Parkway I-80 Eastbound On Ramp | AM | A (0.31) | A (0.35) | A | (0.40) | A | (0.44) |
| | PM | A (0.37) | A (0.40) | A | (0.40) | A | (0.35) |
| 14. Manuel Campos Parkway I-80 Westbound Off Ramp | AM | A (0.32) | A (0.34) | A | (0.34) | A | (0.30) |
| | PM | A (0.36) | A (0.47) | A | (0.45) | A | (0.50) |
| 15. Manuel Campos Parkway I-80 Westbound On Ramp | AM | A (0.28) | A (0.28) | A | (0.28) | A | (0.28) |
| | PM | A (0.14) | A (0.14) | A | (0.14) | A | (0.14) |

Note: Ramps with LOS E or LOS F in bold.

Merge-Diverge Analysis

Traffic operational analysis was conducted using the methodology of the Transportation Research Board’s 2000 Highway Capacity Manual for ramp junction merge and diverge areas. Table 16 presents the LOS ratings for freeway merge and diverge study locations in scenarios 1 to 4. These locations generally operate at LOS B to D for both the AM and PM peak periods of traffic on I-80.

However, in the PM peak hour, the eastbound off ramp at Alamo Drive was found to operate at LOS E in all of the existing plus approved project scenarios. Corresponding to local commute trends, westbound junction areas are more congested in the morning hours, with eastbound areas more congested in the evenings.

Table 16 Existing + Project Freeway Ramp Merge-Diverge LOS (S. 1-4)

| Freeway Merge – Diverge Locations | | Peak Hour | Existing | Approved Projects | AP + Current Zoning | AP + PROJECT |
|-----------------------------------|--|-----------|----------|-------------------|---------------------|--------------|
| | | | | | | |
| 1. | Lagoon Valley I-80 Westbound On (M) | AM | C 23 | C 24 | C 23 | C 21 |
| | | PM | B 18 | B 19 | C 21 | C 23 |
| 2. | Lagoon Valley I-80 Westbound Off (D) | AM | C 24 | C 25 | D 32 | C 23 |
| | | PM | B 17 | B 18 | C 23 | C 26 |
| 3. | Lagoon Valley I-80 Eastbound On (M) | AM | B 16 | B 17 | B 18 | C 21 |
| | | PM | C 25 | C 27 | C 26 | C 23 |
| 4. | Lagoon Valley I-80 Eastbound Off (D) | AM | B 15 | B 16 | C 23 | C 23 |
| | | PM | C 27 | D 29 | D 31 | C 27 |
| 5. | Cherry Glen I-80 Westbound On (M) | AM | B 19 | B 20 | C 21 | B 18 |
| | | PM | B 15 | B 16 | B 17 | B 20 |
| 6. | Cherry Glen I-80 Westbound Off (D) | AM | C 28 | D 30 | E 37 | D 34 |
| | | PM | C 22 | C 24 | D 30 | D 32 |
| 7. | North Cherry Glen I-80 Westbound Off (D) | AM | C 26 | C 27 | E 37 | D 28 |
| | | PM | B 19 | C 21 | C 25 | C 28 |
| 8. | Pena Adobe I-80 Eastbound On (M) | AM | B 14 | B 15 | B 17 | B 19 |
| | | PM | C 21 | C 22 | C 23 | C 21 |
| 9. | Pena Adobe I-80 Eastbound Off (D) | AM | B 17 | B 19 | C 21 | C 24 |
| | | PM | D 29 | D 31 | D 33 | C 27 |
| 10. | Alamo / Merchant Eastbound Off (D) | AM | B 19 | C 26 | D 32 | D 32 |
| | | PM | D 32 | E 45 | F 55 | E 42 |
| 11. | Alamo / Merchant Westbound On (M) | AM | C 20 | C 21 | C 22 | C 20 |
| | | PM | B 17 | B 18 | B 20 | B 20 |
| 12. | Manuel Campos Parkway I-80 Eastbound Off (D) | AM | B 18 | B 20 | C 23 | C 25 |
| | | PM | D 32 | D 33 | D 34 | D 30 |
| 13. | Manuel Campos Parkway I-80 Eastbound On (M) | AM | B 19 | C 21 | C 23 | C 26 |
| | | PM | D 30 | D 32 | D 32 | D 29 |
| 14. | Manuel Campos Parkway I-80 Westbound Off (D) | AM | C 23 | C 25 | C 25 | C 22 |
| | | PM | B 17 | C 24 | C 22 | C 25 |
| 15. | Manuel Campos Parkway I-80 Westbound On (M) | AM | C 22 | C 23 | C 23 | C 21 |
| | | PM | B 17 | C 21 | C 20 | C 22 |

Note: Locations with LOS E or LOS F in bold.

CUMULATIVE – YEAR 2025 (SCENARIOS 5-7)

The future scenarios represent traffic conditions forecast to prevail in the year 2025. Growth rates from the City of Vacaville's MINUTP Travel Demand Model were used to perform this analysis. This representation of future year 2025 traffic volumes is consistent with the City's General Plan, including approximately 500 new dwelling units per year, which is consistent with historical growth rates in the City. A 20-year horizon also corresponds with Caltrans specifications for future analysis. The following sections present the analysis of the increase in traffic from the existing scenario, without the addition of the proposed project.

Traffic Analysis

Three scenarios include future year 2025 traffic volumes without the proposed project, including a no-build alternative, the addition of the Current Zoning project, and the construction of an overcrossing of Interstate 80 at California Drive. All future scenarios include the extension of Manuel Campos Parkway to North Texas Street and Interstate 80.

The no-project scenarios in the future year 2025 conditions include:

- Scenario 5: Year 2025: Park/Open Space

Scenario 5 does not include any new development in the Lagoon Valley area. The area would be left as generally park/open space, as it is now.

- Scenario 6: Year 2025 + Current Zoning Project

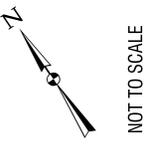
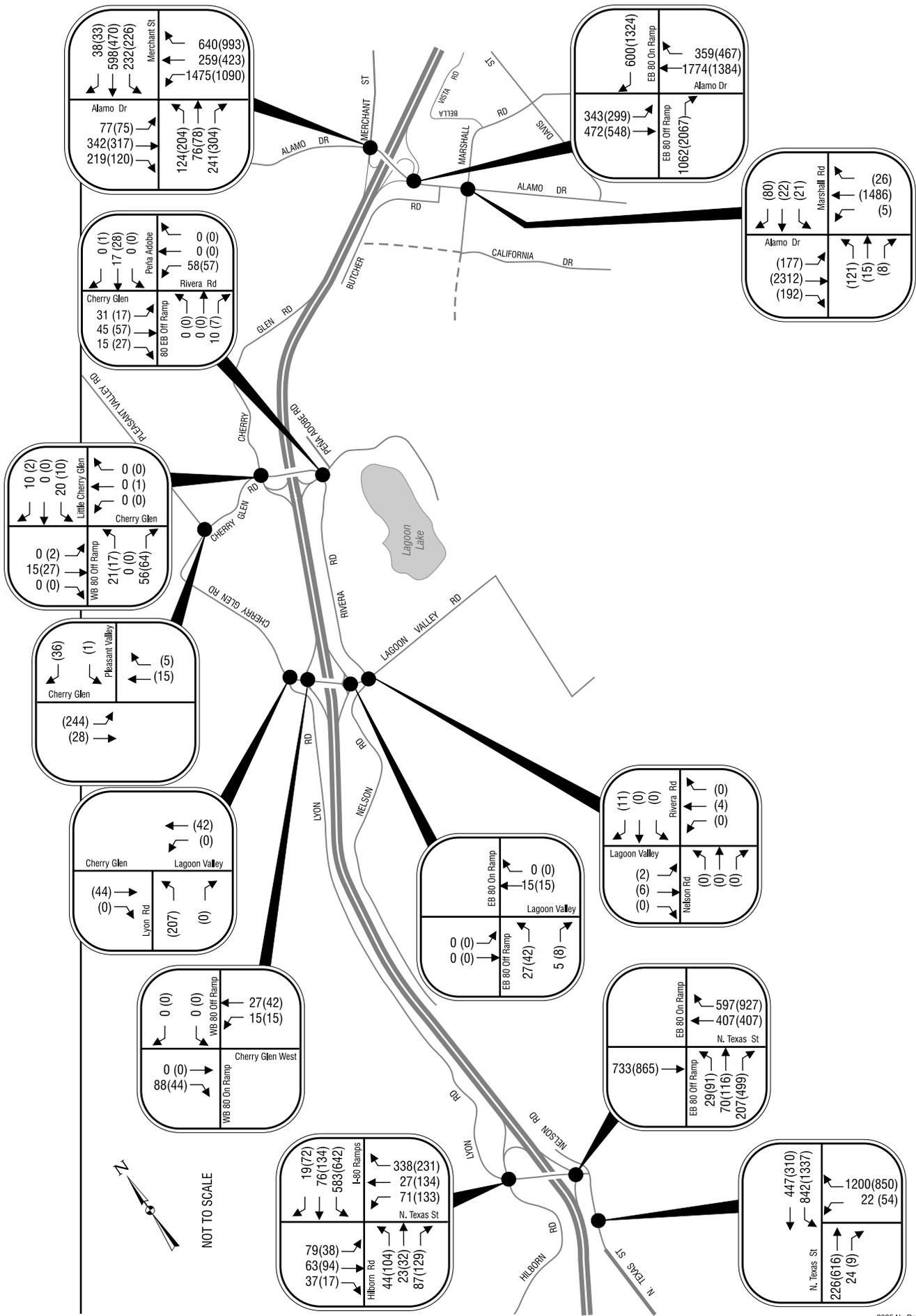
The approved Current Zoning plans include 730 residential units, 5 million square feet of commercial space, and a golf course, according to the *1990 Lower Lagoon Valley Policy Plan*. Scenario 6 does not include the proposed project.

- Scenario 7: Year 2025 + California Drive Overcrossing

Scenario 7 does not include any new development projects in the Lagoon Valley study area. Included in Scenario 7 is the construction of the two-lane California Drive Overcrossing, which would connect California Drive east of I-80 at Marshall and Butcher Roads with Cherry Glen Road. The westbound off ramp at North Cherry Glen Road would then be closed.

Intersection Operations

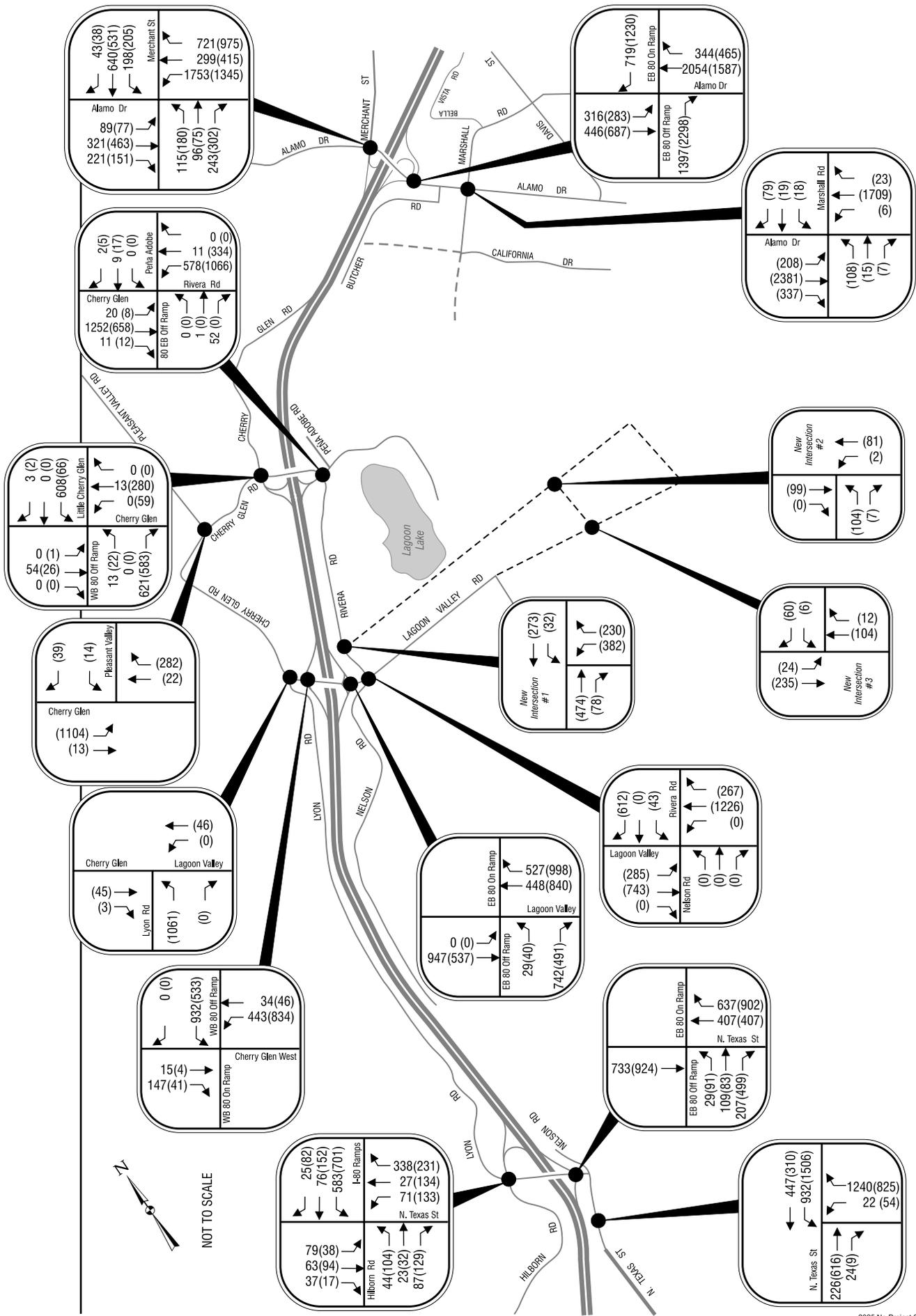
Table 17 provides intersection levels of service for scenarios 5-7. Level of service calculations appear in Technical Appendix C. Figures 10-12 present the Year 2025 traffic volumes for each of these three cumulative scenarios.



LOWER LAGOON VALLEY



SCENARIO 5: YEAR 2025 WITHOUT PROJECT (PARK/OPEN SPACE)
Figure 10
AM (PM) Peak Hour Traffic Volumes

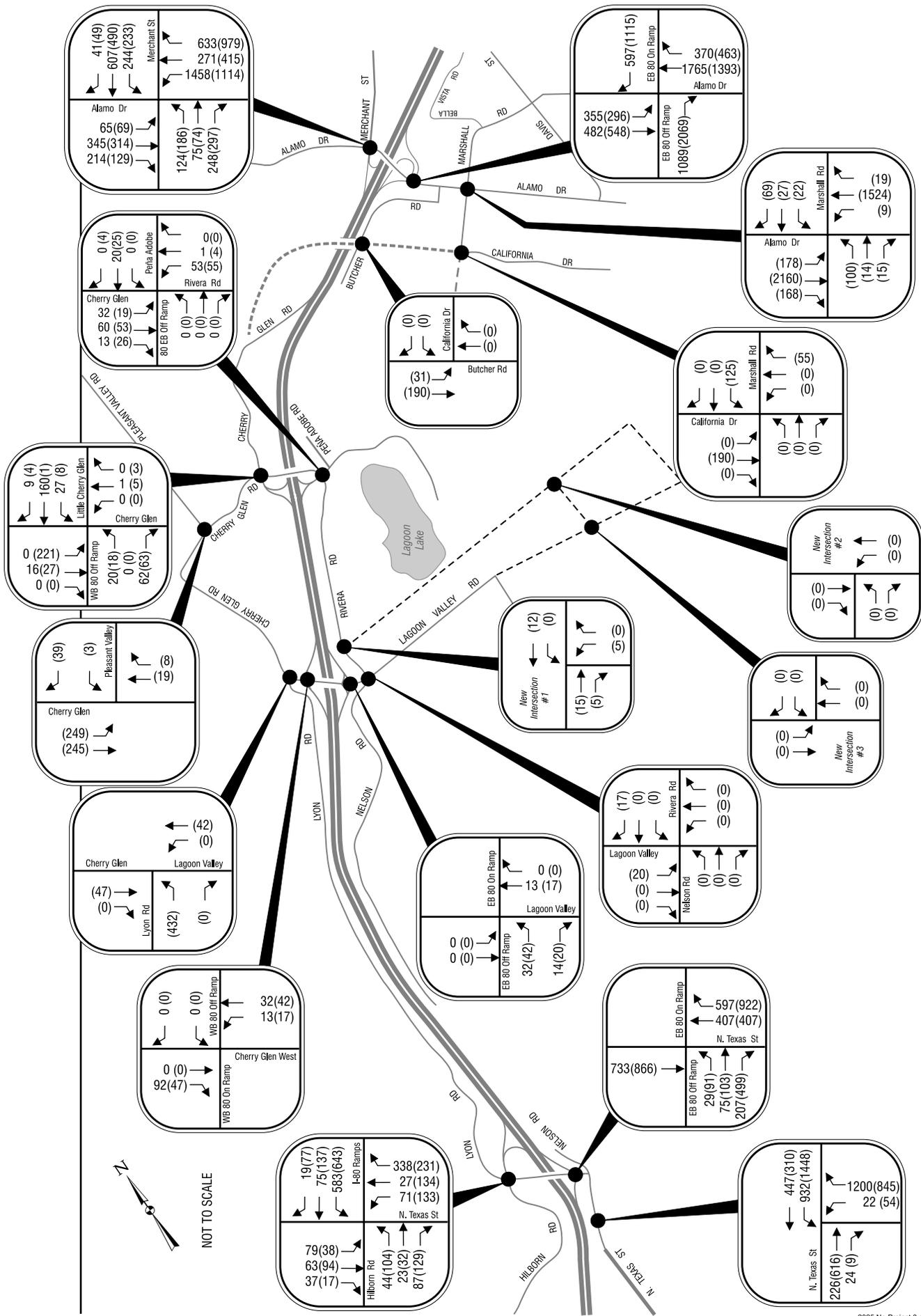


LOWER LAGOON VALLEY
Figure 11

SCENARIO 6: YEAR 2025 WITHOUT PROJECT WITH CURRENT ZONING
AM (PM) Peak Hour Traffic Volumes

NOT TO SCALE





LOWER LAGOON VALLEY



SCENARIO 7: YEAR 2025 WITHOUT PROJECT WITH CALIFORNIA DRIVE OVERCROSSING
AM (PM) Peak Hour Traffic Volumes
Figure 12

2025 No Project 3.cdr

Table 17 Year 2025 (no Project) Intersection LOS Summary (S. 5-7)

| | Intersection | Peak Hour | Park / Open Space | Current Zoning | California Drive Overcrossing |
|-----|---|-----------|---|-----------------|-------------------------------|
| | | | Level of Service (Volume-to-Capacity Ratio) | | |
| 1. | North Texas Street / I-80 Eastbound Ramps | AM | D (0.84) | D (0.86) | D (0.84) |
| | | PM | F (1.03) | E (0.99) | F (1.02) |
| 2. | Hilborn Rd / Lyon Rd / North Texas St / I-80 Westbound Ramps | AM | D (0.84) | D (0.84) | D (0.84) |
| | | PM | D (0.81) | D (0.84) | D (0.82) |
| 3. | Lagoon Valley Road / I-80 Eastbound Ramps | AM | A (0.13) | F (1.09) | A (0.13) |
| | | PM | A (0.14) | F (1.50) | A (0.14) |
| 4. | Lagoon Valley Road / Rivera Road / Nelson Road | PM | A (0.11) | F (1.62) | A (0.12) |
| 5. | Cherry Glen Road / I-80 Westbound Ramps | AM | A (0.17) | F (1.02) | A (0.17) |
| | | PM | A (0.14) | E (0.94) | A (0.14) |
| 6. | Cherry Glen Rd / Lyon Rd | PM | A (0.27) | D (0.84) | A (0.42) |
| 7. | I-80 Eastbound Ramps / Cherry Glen / Pena Adobe / Rivera Road | AM | A (0.21) | F (1.28) | A (0.22) |
| | | PM | A (0.22) | F (1.18) | A (0.22) |
| 8. | North Cherry Glen Road / I-80 Westbound Ramps/Cherry Glen | AM | A (0.17) | D (0.90) | A (0.25) |
| | | PM | A (0.18) | C (0.78) | A (0.32) |
| 9. | Cherry Glen Road / Pleasant Valley Road | PM | A (0.31) | E (0.97) | A (0.46) |
| 10. | Alamo Drive / I-80 Eastbound Ramps | AM | C (0.76) | D (0.84) | C (0.77) |
| | | PM | B (0.63) | B (0.69) | B (0.63) |
| 11. | Alamo Drive / Merchant St | AM | E (0.93) | F (1.04) | E (0.93) |
| | | PM | D (0.87) | E (0.94) | D (0.87) |
| 12. | Alamo Drive / Marshall Rd | PM | D (0.89) | D (0.90) | D (0.86) |
| A1 | North Texas St / Manuel Campos Parkway | AM | F (1.19) | F (1.22) | F (1.19) |
| | | PM | F (1.37) | F (1.41) | F (1.37) |
| C1 | (New Intersection #1) | PM | - | D (0.87) | A (0.12) |
| C2 | (New Intersection #2) | PM | - | A (0.24) | 0 (no volume) |
| C3 | (New Intersection #3) | PM | - | A (0.29) | 0 (no volume) |
| D1 | California / Marshall | PM | - | - | A (0.30) |
| D2 | California / Butcher | PM | - | - | A (0.22) |

Note: Intersections with LOS E or LOS F in bold.

As indicated in Table 17, the majority of study intersection LOS ratings in scenarios 5 and 7 would remain at acceptable levels of service. High levels of eastbound traffic would impact the areas of the North Texas Street and the Alamo Drive intersections.

Roadway Segments

Table 18 presents roadway segment LOS during the AM and PM peak hours for facilities surrounding the project site in the future year without the proposed project. Segments are listed from west to east, and are numbered in Figure 4. In all four of the existing scenarios below, roadway segments operate at acceptable levels of service in both the AM and PM peak hours, including when traffic associated with the Current Zoning project is added.

Table 18 Year 2025 (no Project) Roadway Segments LOS (Scenarios 5-7)

| | Segments | Peak Hour | Park/ Open Space | | | Current Zoning | | | California Dr | | |
|-----|--|-----------|------------------|--------|-----------|----------------|--------|-----------|---------------|--------|-----------|
| | | | LOS | Volume | V/C Ratio | LOS | Volume | V/C Ratio | LOS | Volume | V/C Ratio |
| 1. | Lagoon Valley Road (I-80 EB Ramps to Rivera Road) | PM | A | 23 | (0.01) | D | 2,866 | (0.86) | A | 37 | (0.02) |
| 2. | Lagoon Valley Road (I-80 Overcrossing) | AM | A | 42 | (0.02) | C | 1,424 | (0.71) | A | 45 | (0.02) |
| | | PM | A | 57 | (0.03) | C | 1,417 | (0.71) | A | 59 | (0.03) |
| 3. | North Cherry Glen Road (I-80 WB Off Ramp to Cherry Glen Rd) | PM | A | 14 | (0.01) | A | 72 | (0.05) | *** | *** | *** |
| 4. | Rivera Road (Lagoon Valley Rd to Cherry Glen/Pena Adobe) | PM | A | 13 | (0.01) | A | 1,011 | (0.51) | A | 4 | (0.00) |
| 5. | Cherry Glen Road (I-80 WB Ramps (W) to Lyon Road) | PM | A | 86 | (0.04) | A | 89 | (0.04) | A | 89 | (0.04) |
| 6. | Cherry Glen Road (Lyon Rd to Pleasant Valley Rd) | PM | A | 293 | (0.22) | D | 1,155 | (0.87) | A | 521 | (0.39) |
| 7. | Cherry Glen Road (Pleasant Valley Rd to I-80 WB Ramps(E)) | PM | A | 49 | (0.04) | A | 331 | (0.25) | A | 275 | (0.21) |
| 8. | Pleasant Valley Road (North of Cherry Glen Road) | PM | A | 286 | (0.14) | C | 1,439 | (0.72) | A | 299 | (0.15) |
| 9. | Cherry Glen/Pena Adobe (I-80 Overcrossing) | AM | A | 91 | (0.05) | B | 1,296 | (0.65) | A | 106 | (0.05) |
| | | PM | A | 102 | (0.05) | A | 1,017 | (0.51) | A | 106 | (0.05) |
| 10. | Alamo Drive (I-80 Overcrossing) | AM | B | 3,189 | (0.64) | C | 3,535 | (0.71) | B | 3,199 | (0.64) |
| | | PM | B | 3,353 | (0.67) | C | 3,705 | (0.74) | B | 3,352 | (0.67) |
| 11. | California Drive (I-80 Overcrossing) | AM | - | - | - | - | - | - | A | 195 | (0.10) |
| | | PM | - | - | - | - | - | - | A | 224 | (0.11) |

*** The North Cherry Glen Road segment would become California Drive, with the extension of the California Drive Overcrossing.

Freeway Segments

Table 19 presents freeway segment LOS during the AM and PM peak hours on Interstate 80 (I-80) near the project site. In the AM peak hour, the area between the North Texas overcrossing and the Alamo Drive overcrossing operates at LOS E or F in the westbound direction in each of scenarios 5-7. In the PM peak hour, the same segments operate at LOS E or F in the eastbound direction in all future year scenarios without the addition of the proposed project. All other segments and peak hours function at acceptable levels of service along Interstate 80.

Table 19 Year 2025 (no Project) Freeway Segments LOS (Scenarios 5-7)

| Interstate 80 Freeway Segments | | Peak Hour | Park/ Open Space | | Current Zoning | | California Dr Overcrossing | |
|---|----|-----------|---|---------------|----------------|---------------|----------------------------|---------------|
| | | | Level of Service (Volume-to-Capacity Ratio) | | | | | |
| East of Alamo Drive Overcrossing | EB | AM | A | (0.56) | B | (0.61) | A | (0.56) |
| | | PM | C | (0.78) | D | (0.86) | C | (0.78) |
| | WB | AM | C | (0.77) | E | (0.94) | C | (0.75) |
| | | PM | B | (0.63) | C | (0.71) | B | (0.63) |
| Alamo Drive Overcrossing – Cherry Glen/Pena Adobe Overcrossing | EB | AM | B | (0.68) | C | (0.80) | B | (0.68) |
| | | PM | F | (1.11) | F | (1.20) | F | (1.08) |
| North Cherry Glen Off Ramp – Cherry Glen/Pena Adobe Overcrossing | WB | AM | E | (0.99) | F | (1.13) | E | (0.97) |
| | | PM | C | (0.76) | D | (0.88) | C | (0.77) |
| Alamo Drive Overcrossing – North Cherry Glen Off Ramp | WB | AM | E | (1.00) | F | (1.20) | E | (0.97) |
| | | PM | C | (0.76) | D | (0.89) | C | (0.77) |
| Cherry Glen/Pena Adobe Overcrossing – Lagoon Valley Overcrossing | EB | AM | B | (0.67) | C | (0.73) | B | (0.67) |
| | | PM | F | (1.09) | F | (1.07) | F | (1.07) |
| | WB | AM | E | (0.98) | F | (1.05) | E | (0.98) |
| | | PM | C | (0.75) | D | (0.81) | C | (0.76) |
| Lagoon Valley Overcrossing – North Texas Overcrossing | EB | AM | B | (0.67) | C | (0.76) | B | (0.68) |
| | | PM | F | (1.10) | F | (1.01) | F | (1.07) |
| | WB | AM | E | (0.99) | F | (1.01) | E | (0.99) |
| | | PM | C | (0.75) | D | (0.85) | C | (0.76) |

Note: Segments with LOS E or LOS F in bold.

Ramp Capacity

Table 20 presents freeway ramp LOS during the AM and PM peak hours for I-80 in both directions. Most ramps operate at LOS A, however two locations were found to operate at unacceptable conditions. These locations are the Alamo/I-80 eastbound off ramp and the Alamo/Merchant westbound on ramp in both the AM and the PM peak hour, which would operate at LOS F in all four of the scenarios. As in the existing conditions scenarios, the ramps at Alamo Drive/Merchant Street would operate at unacceptable conditions (LOS F) in the future year 2025 conditions.

Table 20 Year 2025 (no Project) Freeway Ramp LOS (Scenarios 5-7)

| Freeway Ramps | | Peak Hour | Park/ Open Space | | Current Zoning | | California Dr Overcrossing | |
|---------------|---|-----------|---|---------------|----------------|---------------|----------------------------|---------------|
| | | | Level of Service (Volume-to-Capacity Ratio) | | | | | |
| 1. | Lagoon Valley I-80 Westbound On Ramp | AM | A | (0.07) | A | (0.39) | A | (0.07) |
| | | PM | A | (0.04) | A | (0.58) | A | (0.04) |
| 2. | Lagoon Valley I-80 Westbound Off Ramp | AM | A | (0.00) | B | (0.62) | A | (0.00) |
| | | PM | A | (0.00) | A | (0.36) | A | (0.00) |
| 3. | Lagoon Valley I-80 Eastbound On Ramp | AM | A | (0.00) | A | (0.35) | A | (0.00) |
| | | PM | A | (0.00) | B | (0.67) | A | (0.00) |
| 4. | Lagoon Valley I-80 Eastbound Off Ramp | AM | A | (0.02) | A | (0.51) | A | (0.03) |
| | | PM | A | (0.03) | A | (0.35) | A | (0.04) |
| 5. | Cherry Glen I-80 Westbound On Ramp | AM | A | (0.00) | A | (0.00) | A | (0.11) |
| | | PM | A | (0.00) | A | (0.04) | A | (0.00) |
| 6. | Cherry Glen I-80 Westbound Off Ramp | AM | A | (0.05) | A | (0.42) | A | (0.05) |
| | | PM | A | (0.05) | A | (0.40) | A | (0.05) |
| 7. | North Cherry Glen I-80 Westbound Off Ramp | AM | A | (0.02) | A | (0.41) | * | * |
| | | PM | A | (0.01) | A | (0.05) | * | * |
| 8. | Pena Adobe I-80 Eastbound On Ramp | AM | A | (0.06) | A | (0.40) | A | (0.06) |
| | | PM | A | (0.07) | C | (0.73) | A | (0.07) |
| 9. | Pena Adobe I-80 Eastbound Off Ramp | AM | A | (0.01) | A | (0.04) | A | (0.00) |
| | | PM | A | (0.00) | A | (0.00) | A | (0.00) |
| 10. | Alamo / Merchant Eastbound Off Ramp | AM | F | (1.11) | F | (1.41) | F | (1.12) |
| | | PM | F | (2.26) | F | (2.35) | F | (2.12) |
| 11. | Alamo / Merchant Westbound On Ramp | AM | F | (1.52) | F | (1.73) | F | (1.51) |
| | | PM | F | (1.12) | F | (1.36) | F | (1.15) |
| 12. | Manuel Campos Parkway I-80 Eastbound Off Ramp | AM | A | (0.12) | A | (0.12) | A | (0.12) |
| | | PM | A | (0.31) | A | (0.31) | A | (0.31) |
| 13. | Manuel Campos Parkway I-80 Eastbound On Ramp | AM | A | (0.40) | A | (0.46) | A | (0.41) |
| | | PM | A | (0.46) | A | (0.42) | A | (0.45) |
| 14. | Manuel Campos Parkway I-80 Westbound Off Ramp | AM | A | (0.40) | A | (0.40) | A | (0.40) |
| | | PM | A | (0.45) | A | (0.51) | A | (0.46) |
| 15. | Manuel Campos Parkway I-80 Westbound On Ramp | AM | A | (0.28) | A | (0.28) | A | (0.28) |
| | | PM | A | (0.14) | A | (0.14) | A | (0.14) |

Note: Ramps with LOS E or LOS F in bold.

*The North Cherry Glen Westbound Off Ramp would be closed with the extension of the California Drive Overcrossing.

Merge-Diverge Analysis

Table 21 presents the LOS ratings for freeway merge and diverge study locations in future year conditions. These locations generally operate at LOS B, C, or D for both the AM and PM peak periods of traffic on I-80. Corresponding to local commute trends, westbound junction areas are more congested in the morning hours, with eastbound more congested in the evenings.

Table 21 Year 2025 (no Project) Freeway Ramp Merge-Diverge LOS (S. 5-7)

| Freeway Merge – Diverge Locations | | Peak Hour | Park/ Open Space | Current Zoning | California Dr Overcrossing |
|-----------------------------------|--|-----------|------------------|----------------|----------------------------|
| | | | | | |
| 1. | Lagoon Valley I-80 Westbound On (M) | AM | D 28 | C 27 | D 28 |
| | | PM | C 22 | C 23 | C 22 |
| 2. | Lagoon Valley I-80 Westbound Off (D) | AM | D 30 | E 37 | D 30 |
| | | PM | C 22 | C 27 | C 22 |
| 3. | Lagoon Valley I-80 Eastbound On (M) | AM | B 19 | C 20 | B 20 |
| | | PM | D 29 | C 27 | D 29 |
| 4. | Lagoon Valley I-80 Eastbound Off (D) | AM | B 20 | C 26 | B 20 |
| | | PM | D 34 | D 33 | D 33 |
| 5. | Cherry Glen I-80 Westbound On (M) | AM | C 23 | C 24 | C 22 |
| | | PM | B 18 | B 19 | B 18 |
| 6. | Cherry Glen I-80 Westbound Off (D) | AM | D 35 | E 42 | D 34 |
| | | PM | C 27 | D 34 | C 28 |
| 7. | North Cherry Glen I-80 Westbound Off (D) | AM | D 32 | E 42 | * * |
| | | PM | C 24 | D 29 | * * |
| 8. | Pena Adobe I-80 Eastbound On (M) | AM | B 17 | B 19 | B 17 |
| | | PM | C 25 | C 23 | C 24 |
| 9. | Pena Adobe I-80 Eastbound Off (D) | AM | C 22 | C 24 | C 22 |
| | | PM | E 36 | E 35 | E 35 |
| 10. | Alamo / Merchant Eastbound Off (D) | AM | D 30 | E 37 | D 31 |
| | | PM | F 53 | F 57 | F 51 |
| 11. | Alamo / Merchant Westbound On (M) | AM | C 22 | C 22 | C 22 |
| | | PM | B 19 | C 21 | B 20 |
| 12. | Manuel Campos Parkway I-80 Eastbound Off (D) | AM | C 23 | C 26 | C 23 |
| | | PM | E 39 | E 36 | E 38 |
| 13. | Manuel Campos Parkway I-80 Eastbound On (M) | AM | C 24 | C 26 | C 24 |
| | | PM | E 37 | D 34 | E 36 |
| 14. | Manuel Campos Parkway I-80 Westbound Off (D) | AM | D 30 | D 31 | D 30 |
| | | PM | C 23 | C 26 | C 23 |
| 15. | Manuel Campos Parkway I-80 Westbound On (M) | AM | C 26 | C 26 | C 26 |
| | | PM | C 20 | C 23 | C 21 |

Note: Ramps with LOS E or LOS F in bold.

*The North Cherry Glen Westbound Off Ramp would be closed with the extension of the California Drive Overcrossing.

CUMULATIVE - YEAR 2025 WITH PROJECT (SCENARIOS 8-12)

The Future Year with Project scenarios represent traffic conditions forecast to prevail in the year 2025, including the proposed project in various conditions.

Traffic Analysis

Using the future year 2025 traffic volumes identified in the previous sections, the Future Year + Project scenarios combine the forecasted cumulative traffic volumes with those volumes generated by the five project variations under consideration. The Future Year + Project scenario (8) is used as the basis for comparison in level of service ratings and delay experienced. All future scenarios include the extension of Manuel Campos Parkway to North Texas Street and Interstate 80.

The project scenarios in the year 2025 conditions include:

- Scenario 8: Year 2025 + Project

The proposed project includes 1,325 residential units, 1 million square feet of commercial space, 50,000 square feet of Town Center retail, a 212-acre golf course with clubhouse, a community center, and a school.

- Scenario 9: Year 2025 + Project + California Drive Overcrossing

The proposed project is included as described above. Also included is the construction of the two-lane California Drive Overcrossing, which would connect California Drive east of I-80 at Marshall and Butcher Roads with Cherry Glen Road. The westbound off ramp at North Cherry Glen Road would then be closed.

- Scenario 10: Year 2025 + Alternative A Project

Alternative A is the proposed project, however it would include a reduction in the number of residential units by 570.

- Scenario 11: Year 2025 + Alternative B Project

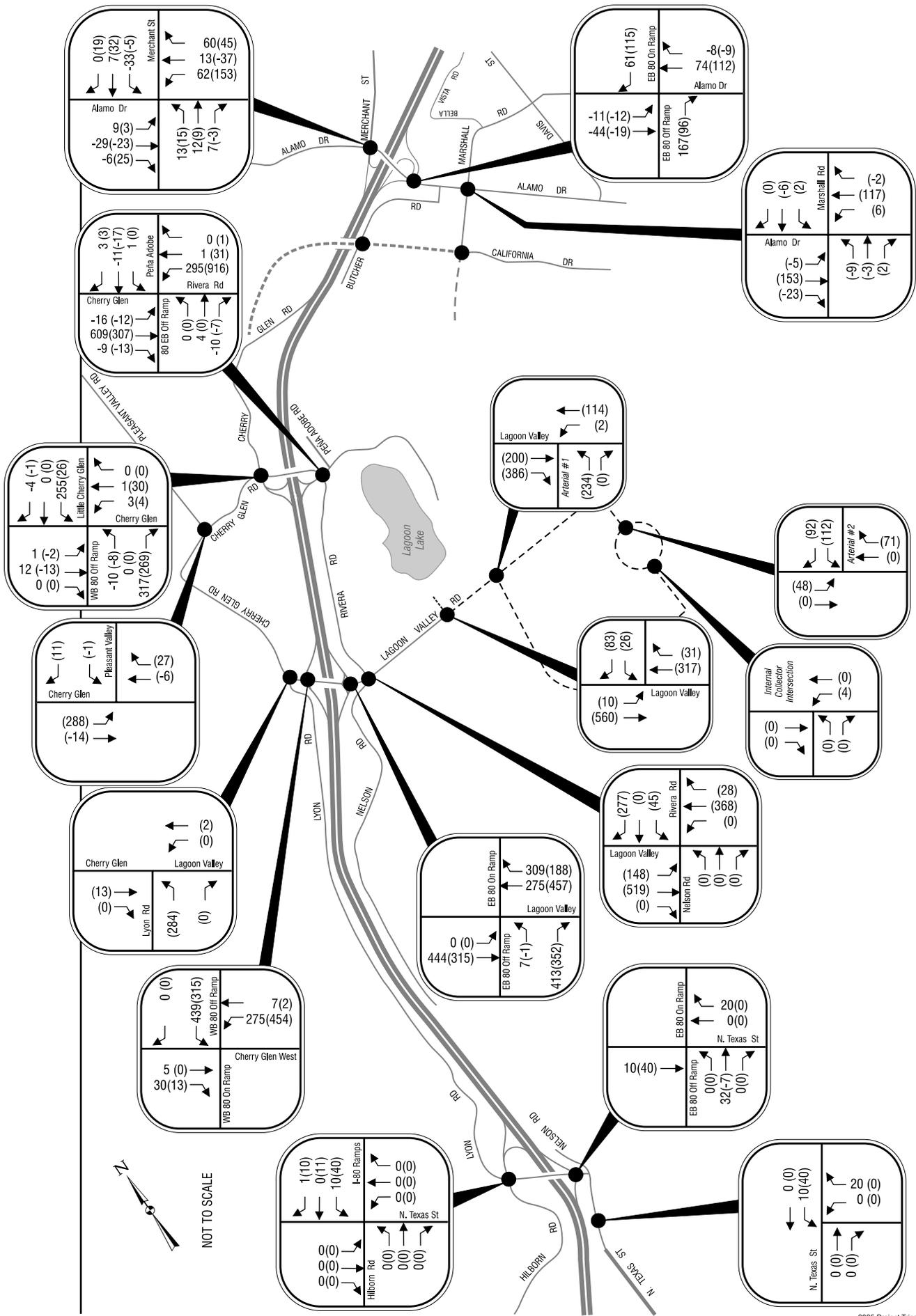
Alternative B is the proposed project, however it would include an increase in the amount of commercial/office space.

- Scenario 12: Year 2025 + Offsite Project

The Offsite Project is the proposed project, however it would not be located in the Lagoon Valley study area. The project would be located elsewhere in the City of Vacaville.

Intersection Operations

Table 22 presents the results of the future year 2025 with project analyses at each of the 22 study intersections. Level of Service calculation worksheets for all scenarios are attached in Technical Appendix C. Figures 13-17 present the future year 2025 traffic volumes for each of the five future year with project scenarios.

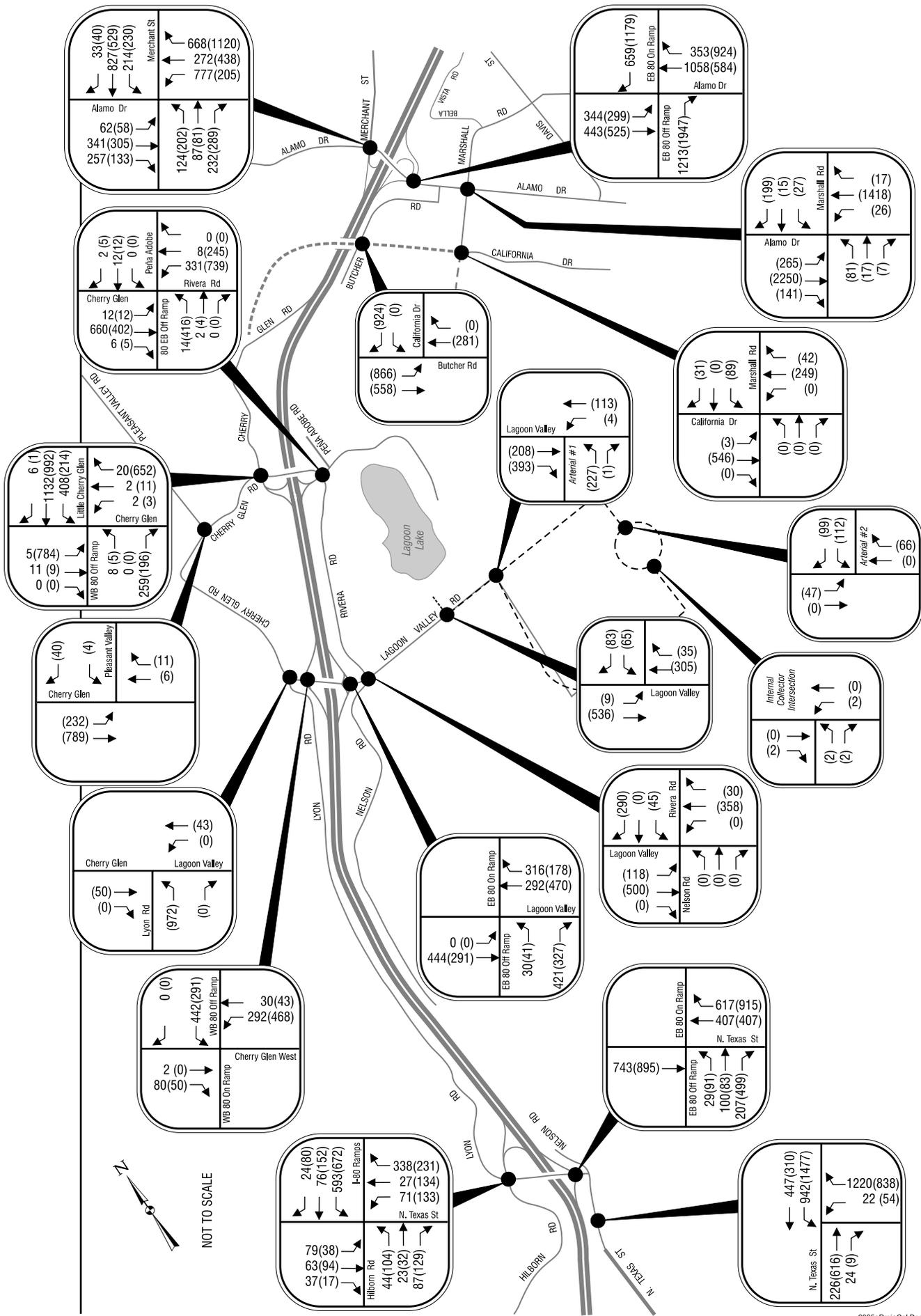


NOT TO SCALE

LOWER LAGOON VALLEY



Figure 13a
FUTURE YEAR 2025 PROJECT TRIPS ASSIGNMENT
 AM (PM) Peak Hour Traffic Volumes



NOT TO SCALE

LOWER LAGOON VALLEY



SCENARIO 9: YEAR 2025 WITH PROPOSED PROJECT WITH CALIFORNIA DRIVE OVERCROSSING
AM (PM) Peak Hour Traffic Volumes
Figure 14

2025+Proj+Cal Dr.cdr

Table 22 Year 2025 + Project Intersection LOS Summary (S.8-12)

| | Intersection | Peak Hour | Project | Project w/ CA Drive | Alt. A | Alt. B | Offsite Project |
|-----|--|-----------|-----------------|---------------------|-----------------|-----------------|-----------------|
| | | | | | | | |
| 1. | North Texas Street / I-80 Eastbound Ramps | AM | D (0.85) | D (0.85) | D (0.85) | D (0.85) | D (0.87) |
| | | PM | F (1.02) | E (1.00) | F (1.02) | E (1.00) | E (1.00) |
| 2. | Hilborn Rd/ Lyon Rd/ North Texas St / I-80 WB Ramps | AM | D (0.84) | D (0.84) | D (0.84) | D (0.84) | D (0.83) |
| | | PM | D (0.84) | D (0.83) | D (0.83) | D (0.83) | D (0.85) |
| 3. | Lagoon Valley Rd/ I-80 Eastbound Ramps | AM | C (0.72) | C (0.73) | A (0.59) | B (0.70) | F (1.12) |
| | | PM | E (0.93) | B (0.70) | E (0.91) | B (0.67) | F (1.47) |
| 4. | Lagoon Valley Rd / Rivera Rd / Nelson Rd | PM | A (0.54) | A (0.53) | C (0.72) | A (0.54) | F (1.24) |
| 5. | Cherry Glen Rd / I-80 Westbound Ramps | AM | B (0.67) | B (0.64) | A (0.59) | A (0.51) | F (1.12) |
| | | PM | B (0.66) | B (0.64) | A (0.55) | B (0.66) | F (1.01) |
| 6. | Cherry Glen Rd / Lyon Rd | PM | A (0.47) | C (0.78) | A (0.39) | A (0.40) | E (0.92) |
| 7. | I-80 EB Ramps / Cherry Glen / Pena Adobe / Rivera Rd | AM | C (0.79) | C (0.79) | C (0.80) | E (0.96) | F (1.22) |
| | | PM | F (1.21) | F (1.06) | F (1.32) | E (0.94) | F (1.14) |
| 8. | North Cherry Glen Rd/ I-80 WB Ramps/ Cherry Glen Rd | AM | A (0.56) | F (1.06) | A (0.57) | B (0.69) | E (0.93) |
| | | PM | A (0.38) | F (1.77) | A (0.39) | A (0.45) | C (0.76) |
| 9. | Cherry Glen Rd / Pleasant Valley Rd | PM | A (0.51) | D (0.81) | A (0.43) | A (0.45) | F (1.25) |
| 10. | Alamo Drive / I-80 Eastbound Ramps | AM | C (0.78) | A (0.55) | C (0.79) | C (0.77) | D (0.85) |
| | | PM | B (0.66) | A (0.39) | B (0.66) | B (0.67) | C (0.72) |
| 11. | Alamo Drive / Merchant St | AM | E (0.96) | D (0.84) | E (0.96) | E (0.93) | F (1.08) |
| | | PM | D (0.90) | D (0.88) | D (0.89) | D (0.90) | E (0.98) |
| 12. | Alamo Drive / Marshall Rd | PM | E (0.91) | E (0.92) | D (0.90) | D (0.90) | D (0.90) |
| A1 | North Texas St / Manuel Campos Parkway | AM | F (1.21) | F (1.21) | F (1.21) | F (1.21) | F (1.22) |
| | | PM | F (1.40) | F (1.39) | F (1.39) | F (1.39) | F (1.42) |
| B1 | Lagoon Valley Road / Commercial Access Road | PM | A (0.29) | A (0.31) | A (0.21) | A (0.29) | - |
| B2 | Lagoon Valley Road / Arterial #1 | PM | A (0.51) | A (0.52) | A (0.38) | A (0.52) | - |
| B3 | Lagoon Valley Road / Arterial #2 | PM | A (0.25) | A (0.25) | A (0.19) | A (0.24) | - |
| B4 | Internal Collector Intersection | PM | A (0.10) | A (0.11) | A (0.10) | A (0.10) | - |
| C1 | (New Intersection #1) | PM | - | - | - | - | D (0.87) |
| C2 | (New Intersection #2) | PM | - | - | - | - | A (0.25) |
| C3 | (New Intersection #3) | PM | - | - | - | - | A (0.28) |
| D1 | California / Marshall | PM | - | A (0.49) | - | - | - |
| D2 | California / Butcher | PM | - | F (1.02) | - | - | - |

Note: Intersections with LOS E or LOS F in bold.

As indicated in Table 22, the future scenarios including the proposed project are expected to result in unacceptable levels of service and poor operating conditions at about one-half of the study intersections, in either or both of the AM and PM peak hours.

North Texas Street/Manuel Campos Parkway would operate at LOS F for each of the future scenarios, for both peak hours. The four new project intersections (B1-B4) would

all operate at LOS A for scenarios 8-11. Two of the three new project intersections (C1-C3) would operate at LOS A in scenario 12, with New Intersection #1 operating at LOS D.

Roadway Segments

Table 23 presents roadway segment LOS during the AM and PM peak roadway segments in the future year scenarios, including project traffic. Segments are listed from west to east, and are numbered in Figure 4. Segments resulting in LOS E or LOS F are shown in bold. In three of the scenarios, scenarios 8, 10, and 11, roadway segments would operate at acceptable levels of service in both the AM and PM peak hours, including those scenarios wherein the project is added.

As Pleasant Valley Road is a two-lane road with no shoulder, an increase of traffic volume on this roadway could affect the relative safety of the area given the limited availability for improvements.

Table 23 Year 2025 + Project Roadway Segments LOS (Scenarios 8-12)

| Segments | Peak Hour | Project | | | Project w/ CA Drive | | | Alternative A | | | Alternative B | | | Offsite Project | | |
|---|-----------|---------|-------|-----------|---------------------|-------|-----------|---------------|-------|-----------|---------------|-------|-----------|-----------------|-------|-----------|
| | | LOS | Vol. | V/C Ratio | LOS | Vol. | V/C Ratio | LOS | Vol. | V/C Ratio | LOS | Vol. | V/C Ratio | LOS | Vol. | V/C Ratio |
| 1. Lagoon Valley Rd (I-80 EB Ramps to Rivera Rd) | PM | A | 1,784 | (0.54) | A | 1,266 | (0.38) | A | 1,587 | (0.48) | A | 1,335 | (0.40) | A | 1,070 | (0.32) |
| 2. Lagoon Valley Rd (I-80 Overcrossing) | AM | A | 768 | (0.38) | A | 766 | (0.38) | A | 644 | (0.32) | A | 519 | (0.26) | C | 1,472 | (0.74) |
| | PM | A | 828 | (0.41) | A | 802 | (0.40) | A | 670 | (0.34) | A | 834 | (0.42) | C | 1,530 | (0.77) |
| 3. North Cherry Glen (I-80 WB Off Ramp to Cherry Glen Rd) | PM | A | 37 | (0.03) | *** | *** | *** | A | 39 | (0.03) | A | 64 | (0.05) | A | 62 | (0.05) |
| 4. Rivera Road (Lagoon Vly to Cherry Glen/Pena Adobe) | PM | D | 1,745 | (0.87) | B | 1,318 | (0.66) | E | 1,865 | (0.93) | B | 1,322 | (0.66) | A | 1,008 | (0.50) |
| 5. Cherry Glen Rd (I-80 WB Ramps (W) to Lyon Road) | PM | A | 101 | (0.05) | A | 93 | (0.05) | A | 88 | (0.04) | A | 93 | (0.05) | A | 264 | (0.13) |
| 6. Cherry Glen Rd (Lyon Rd to Pleasant Valley Rd) | PM | A | 592 | (0.44) | C | 1,065 | (0.80) | A | 479 | (0.36) | A | 494 | (0.37) | F | 1,491 | (1.12) |
| 7. Cherry Glen Rd (Pleasant Valley Rd to I-80 WB Ramps(E)) | PM | A | 55 | (0.04) | B | 810 | (0.61) | A | 51 | (0.04) | A | 62 | (0.05) | A | 413 | (0.31) |
| 8. Pleasant Valley Rd (N of Cherry Glen Rd) | PM | A | 611 | (0.31) | A | 287 | (0.14) | A | 493 | (0.25) | A | 508 | (0.25) | E | 1,866 | (0.93) |
| 9. Cherry Glen/Pena Adobe (I-80 Overcrossing) | AM | A | 679 | (0.34) | A | 702 | (0.35) | A | 691 | (0.35) | A | 878 | (0.44) | B | 1,315 | (0.66) |
| | PM | A | 418 | (0.21) | A | 1,085 | (0.54) | A | 446 | (0.22) | A | 536 | (0.27) | A | 1,056 | (0.53) |
| 10. Alamo Drive (I-80 Overcrossing) | AM | B | 3,269 | (0.65) | A | 2,504 | (0.50) | B | 3,300 | (0.66) | B | 3,271 | (0.65) | C | 3,629 | (0.73) |
| | PM | B | 3,483 | (0.70) | A | 2,587 | (0.52) | B | 3,446 | (0.69) | B | 3,507 | (0.70) | C | 3,803 | (0.76) |
| 11. California Drive (I-80 Overcrossing) | AM | - | - | - | C | 1,572 | (0.79) | - | - | - | - | - | - | - | - | - |
| | PM | - | - | - | F | 2,646 | (1.32) | - | - | - | - | - | - | - | - | - |

Freeway Segments

Table 24 presents freeway segment LOS during the AM and PM peak hours on Interstate 80 near the project site. In the AM peak hour, the area between the North Texas Street overcrossing and the Alamo Drive overcrossing would operate at LOS E or F in the westbound direction in each of scenarios 8-12. In scenario 12, the westbound segment east of Alamo Drive would also operate at LOS E (0.94) in the AM peak hour.

In the PM peak hour, the same segments between the North Texas Street Overcrossing and the Alamo Drive Overcrossing would operate at LOS E or F in the eastbound direction in all future year scenarios including those with the project. All other segments would function at acceptable levels of service along Interstate 80 in both peak hours.

Table 24 Year 2025 + Project Freeway Segments LOS (Scenarios 8-12)

| Interstate 80 Freeway Segments | | Peak Hour | Project | | Project w/ CA Drive | | Alt. A | | Alt. B | | Offsite Project |
|--|----|-----------|------------------|----------------------------|---------------------|----------------------------|------------------|----------------------------|------------------|----------------------------|-----------------|
| | | | Level of Service | (Volume-to-Capacity Ratio) | Level of Service | (Volume-to-Capacity Ratio) | Level of Service | (Volume-to-Capacity Ratio) | Level of Service | (Volume-to-Capacity Ratio) | |
| East of Alamo Drive Overcrossing | EB | AM | B (0.61) | B (0.61) | A (0.59) | B (0.62) | B (0.62) | B (0.62) | B (0.62) | B (0.62) | |
| | | PM | D (0.83) | D (0.81) | D (0.84) | D (0.84) | D (0.84) | D (0.85) | D (0.85) | | |
| | WB | AM | D (0.87) | C (0.75) | D (0.87) | D (0.87) | D (0.87) | E (0.94) | E (0.94) | | |
| | | PM | B (0.68) | B (0.66) | B (0.67) | B (0.70) | C (0.71) | C (0.71) | | | |
| Alamo Dr Overcrossing – Cherry Glen / Pena Adobe Overcrossing | EB | AM | C (0.76) | C (0.75) | C (0.74) | C (0.77) | D (0.80) | D (0.80) | | | |
| | | PM | F (1.19) | F (1.05) | F (1.19) | F (1.19) | F (1.21) | F (1.21) | | | |
| North Cherry Glen Off Ramp – Cherry Glen / Pena Adobe Overcrossing | WB | AM | F (1.07) | E (0.92) | F (1.06) | F (1.06) | F (1.05) | F (1.05) | | | |
| | | PM | D (0.84) | B (0.69) | D (0.82) | D (0.85) | D (0.88) | D (0.88) | | | |
| Alamo Dr Overcrossing – North Cherry Glen Off Ramp | WB | AM | F (1.10) | E (0.92) | F (1.09) | F (1.09) | F (1.21) | F (1.21) | | | |
| | | PM | D (0.84) | B (0.69) | D (0.82) | D (0.86) | D (0.89) | D (0.89) | | | |
| Cherry Glen / Pena Adobe Overcrossing – Lagoon Valley Overcrossing | EB | AM | C (0.71) | C (0.71) | B (0.69) | B (0.70) | C (0.73) | C (0.73) | | | |
| | | PM | F (1.01) | F (1.01) | E (1.00) | F (1.08) | F (1.08) | | | | |
| | WB | AM | F (1.02) | F (1.03) | F (1.01) | E (0.99) | E (0.98) | | | | |
| | | PM | C (0.80) | C (0.79) | C (0.77) | C (0.80) | D (0.82) | D (0.82) | | | |
| Lagoon Valley Overcrossing – North Texas Overcrossing | EB | AM | C (0.73) | C (0.73) | C (0.72) | C (0.71) | C (0.77) | C (0.77) | | | |
| | | PM | F (1.09) | F (1.03) | F (1.09) | F (1.12) | F (1.03) | | | | |
| | WB | AM | F (1.01) | F (1.02) | F (1.00) | F (1.03) | E (0.96) | | | | |
| | | PM | D (0.82) | D (0.82) | D (0.81) | D (0.80) | D (0.87) | D (0.87) | | | |

Note: Segments with LOS E or LOS F in bold.

Ramp Capacity

Table 25 presents freeway ramp LOS during the AM and PM peak hours for I-80 in both directions. Three locations were found to operate at unacceptable conditions.

Two ramps would operate at unacceptable conditions in both the AM and PM peak hours - Alamo Drive at the I-80 eastbound off ramp and the Merchant Street westbound on ramp. These ramps would operate at LOS F in all five of the scenarios, except the westbound Merchant Street on ramp in the PM peak hour which improves to LOS A. This is a result of the California Drive overcrossing, as it accommodates traffic that would otherwise use the Merchant Street on ramp.

Table 25 Year 2025 + Project Freeway Ramp LOS (Scenarios 8-12)

| Freeway Ramps | Peak Hour | Project | | Project w/ CA Drive | | Alt. A | | Alt. B | | Offsite Project | |
|---|-----------|------------------|--------------------------|---------------------|--------------------------|------------------|--------------------------|------------------|--------------------------|-----------------|---------------|
| | | Level of Service | Volume-to-Capacity Ratio | Level of Service | Volume-to-Capacity Ratio | Level of Service | Volume-to-Capacity Ratio | Level of Service | Volume-to-Capacity Ratio | | |
| 1. Lagoon Valley I-80 Westbound On Ramp | AM | A | (0.27) | A | (0.25) | A | (0.23) | A | (0.32) | A | (0.49) |
| | PM | A | (0.35) | A | (0.35) | A | (0.32) | A | (0.29) | B | (0.61) |
| 2. Lagoon Valley I-80 Westbound Off Ramp | AM | A | (0.29) | A | (0.29) | A | (0.26) | A | (0.08) | A | (0.60) |
| | PM | A | (0.21) | A | (0.19) | A | (0.12) | A | (0.27) | A | (0.37) |
| 3. Lagoon Valley I-80 Eastbound On Ramp | AM | A | (0.21) | A | (0.21) | A | (0.13) | A | (0.18) | A | (0.35) |
| | PM | A | (0.13) | A | (0.12) | A | (0.09) | A | (0.48) | B | (0.63) |
| 4. Lagoon Valley I-80 Eastbound Off Ramp | AM | A | (0.30) | A | (0.30) | A | (0.28) | A | (0.25) | A | (0.57) |
| | PM | A | (0.56) | A | (0.25) | A | (0.58) | A | (0.30) | A | (0.40) |
| 5. Cherry Glen I-80 Westbound On Ramp | AM | A | (0.00) | C | (0.76) | A | (0.00) | A | (0.00) | A | (0.00) |
| | PM | A | (0.00) | B | (0.66) | A | (0.00) | A | (0.00) | A | (0.04) |
| 6. Cherry Glen I-80 Westbound Off Ramp | AM | A | (0.26) | A | (0.18) | A | (0.27) | A | (0.39) | A | (0.39) |
| | PM | A | (0.23) | A | (0.13) | A | (0.24) | A | (0.29) | A | (0.36) |
| 7. North Cherry Glen I-80 Westbound Off Ramp | AM | A | (0.19) | * | * | A | (0.19) | A | (0.18) | D | (0.84) |
| | PM | A | (0.02) | * | * | A | (0.03) | A | (0.04) | A | (0.04) |
| 8. Pena Adobe I-80 Eastbound On Ramp | AM | A | (0.24) | A | (0.23) | A | (0.24) | A | (0.38) | A | (0.38) |
| | PM | E | (0.96) | A | (0.50) | F | (1.05) | A | (0.61) | B | (0.71) |
| 9. Pena Adobe I-80 Eastbound Off Ramp | AM | A | (0.00) | A | (0.01) | A | (0.00) | A | (0.00) | A | (0.00) |
| | PM | A | (0.00) | A | (0.28) | A | (0.00) | A | (0.00) | A | (0.00) |
| 10. Alamo / Merchant Eastbound Off Ramp | AM | F | (1.26) | F | (1.25) | F | (1.23) | F | (1.30) | F | (1.42) |
| | PM | F | (2.40) | F | (2.08) | F | (2.39) | F | (2.38) | F | (2.37) |
| 11. Alamo / Merchant Westbound On Ramp | AM | F | (1.57) | F | (1.24) | F | (1.56) | F | (1.51) | F | (1.76) |
| | PM | F | (1.26) | A | (0.58) | F | (1.25) | F | (1.28) | F | (1.39) |
| 12. Manuel Campos Parkway I-80 Eastbound Off Ramp | AM | A | (0.12) | A | (0.12) | A | (0.12) | A | (0.12) | A | (0.12) |
| | PM | A | (0.31) | A | (0.31) | A | (0.31) | A | (0.31) | A | (0.31) |
| 13. Manuel Campos Parkway I-80 Eastbound On Ramp | AM | A | (0.44) | A | (0.44) | A | (0.43) | A | (0.43) | A | (0.46) |
| | PM | A | (0.46) | A | (0.43) | A | (0.46) | A | (0.44) | A | (0.43) |
| 14. Manuel Campos Parkway I-80 Westbound Off Ramp | AM | A | (0.41) | A | (0.41) | A | (0.40) | A | (0.41) | A | (0.38) |
| | PM | A | (0.50) | A | (0.49) | A | (0.49) | A | (0.48) | A | (0.52) |
| 15. Manuel Campos Parkway I-80 Westbound On Ramp | AM | A | (0.28) | A | (0.28) | A | (0.28) | A | (0.28) | A | (0.28) |
| | PM | A | (0.14) | A | (0.14) | A | (0.14) | A | (0.14) | A | (0.14) |

Note: Ramps with LOS E or LOS F in bold.

*The North Cherry Glen Westbound Off Ramp would be closed with the extension of the California Drive Overcrossing.

Merge-Diverge Analysis

Table 26 presents the LOS ratings for freeway merge and diverge study locations in future year plus project conditions. These locations generally operate at acceptable LOS ratings for both the AM and PM peak periods of traffic on I-80. However, in the PM peak hour, five locations would operate at LOS E in a number of the scenarios listed below. All four locations are in the eastbound direction and all four are diverge points from the freeway. In the AM peak hour, two intersections would operate at LOS E in scenario 8 and 10-12. Both of these locations are diverge areas – the Cherry Glen and North Cherry Glen I-80 westbound off ramps.

Table 26 Year 2025 + Project Freeway Ramp Merge-Diverge LOS (S. 8-12)

| Freeway Merge – Diverge Locations | | Peak Hour | Project | Project w/ CA Drive | Alt. A | Alt. B | Offsite Project |
|-----------------------------------|--|-----------|-------------|---------------------|-------------|-------------|-----------------|
| | | | | | | | |
| 1. | Lagoon Valley I-80 Westbound On (M) | AM | C 28 | C 28 | C 27 | C 28 | C 25 |
| | | PM | C 23 | C 23 | C 22 | C 25 | C 23 |
| 2. | Lagoon Valley I-80 Westbound Off (D) | AM | D 33 | D 33 | D 33 | D 31 | D 34 |
| | | PM | C 25 | C 25 | C 24 | C 26 | C 27 |
| 3. | Lagoon Valley I-80 Eastbound On (M) | AM | C 20 | C 20 | B 20 | B 20 | C 21 |
| | | PM | D 28 | D 28 | C 28 | D 28 | C 27 |
| 4. | Lagoon Valley I-80 Eastbound Off (D) | AM | C 24 | C 24 | C 23 | C 23 | C 27 |
| | | PM | E 37 | D 33 | E 37 | D 34 | D 34 |
| 5. | Cherry Glen I-80 Westbound On (M) | AM | C 23 | C 21 | C 23 | C 23 | C 23 |
| | | PM | B 19 | B 19 | B 19 | B 19 | B 20 |
| 6. | Cherry Glen I-80 Westbound Off (D) | AM | E 39 | D 34 | E 39 | E 40 | E 39 |
| | | PM | D 31 | C 26 | D 31 | D 32 | D 34 |
| 7. | North Cherry Glen I-80 Westbound Off (D) | AM | E 37 | * * | E 37 | E 37 | E 45 |
| | | PM | C 27 | * * | C 27 | C 28 | D 29 |
| 8. | Pena Adobe I-80 Eastbound On (M) | AM | B 18 | B 18 | B 18 | B 18 | B 19 |
| | | PM | C 23 | C 22 | C 22 | C 24 | C 24 |
| 9. | Pena Adobe I-80 Eastbound Off (D) | AM | C 24 | C 24 | C 23 | C 23 | C 24 |
| | | PM | D 33 | E 35 | D 33 | E 36 | E 36 |
| 10. | Alamo / Merchant Eastbound Off (D) | AM | D 34 | D 34 | D 33 | D 35 | E 37 |
| | | PM | F 57 | E 50 | F 57 | F 57 | F 57 |
| 11. | Alamo / Merchant Westbound On (M) | AM | C 22 | C 21 | C 22 | C 22 | C 22 |
| | | PM | C 20 | B 17 | C 20 | C 21 | C 21 |
| 12. | Manuel Campos Parkway I-80 Eastbound Off (D) | AM | C 25 | C 25 | C 25 | C 24 | C 26 |
| | | PM | E 38 | E 36 | E 38 | E 37 | E 37 |
| 13. | Manuel Campos Parkway I-80 Eastbound On (M) | AM | C 26 | C 25 | C 25 | C 25 | C 27 |
| | | PM | E 36 | D 35 | E 36 | E 35 | D 35 |
| 14. | Manuel Campos Parkway I-80 Westbound Off (D) | AM | D 31 | D 31 | D 31 | D 32 | D 29 |
| | | PM | C 25 | C 25 | C 25 | C 25 | C 27 |
| 15. | Manuel Campos Parkway I-80 Westbound On (M) | AM | C 26 | C 26 | C 26 | C 26 | C 25 |
| | | PM | C 22 | C 22 | C 22 | C 21 | C 23 |

Note: Locations with LOS E or LOS F in bold.

*The North Cherry Glen Westbound Off Ramp would be closed with the extension of the California Drive Overcrossing.

PROJECT IMPACTS

Significance Criteria

The City of Vacaville has established a threshold of significance which states that an impact is considered significant if the LOS transitions from LOS A, B, C, or D to LOS E, or if LOS E conditions exist, when LOS transitions from LOS E to LOS F. The level of service standard of LOS D or better represents a volume/capacity ratio of 0.90 or less, and LOS E represents 0.90-1.00.

To determine the impacts of the project-related traffic in both the existing and year 2025 conditions, the scenarios including the proposed project were compared to their corresponding base conditions scenarios. For existing conditions impacts, scenarios 2 and 4 were compared; for year 2025 impacts (including both project and cumulative impacts), scenarios 5 and 8 were compared. The impacts for both existing and future conditions are listed for each of the intersections, roadway segments, freeway segments, ramps, and merge-diverge locations impacted.

In the Existing plus Project conditions, if the project traffic causes a facility to deteriorate from LOS A, B, C, or D to LOS E or from LOS E to LOS F, the impact is considered a significant Project Impact. In the Year 2025 plus Project conditions, if the project traffic causes a facility to deteriorate from LOS A, B, C, or D to LOS E or from LOS E to LOS F, the impact is also considered a significant Project Impact. In addition, in the Year 2025 plus Project conditions, if the project adds traffic to a facility operating at LOS F in the base condition, the impact is considered a significant Project Impact if the volume-to-capacity ratio increases by 0.02 or greater. The Project would be responsible for its “equitable share” of the improvements identified for the mitigation. The Caltrans formula for calculating “equitable mitigation measures”, as documented in the *Caltrans Guide for the Preparation of Traffic Impact Studies* dated December 2002, shall be the basis for determining Project percent responsibility for the mitigation measures required to address Project impacts.

In the Year 2025 plus Project conditions, if a facility is operating at LOS F without the project, and project traffic would increase the volume-to-capacity ratio by less than 0.02, the impact would be considered a Cumulative Impact.

Intersection Impacts

Project-related impacts in the Existing plus Project scenario (Scenario 4):

Transportation Impact 1: I-80 Eastbound Ramps / Cherry Glen Road / Pena Adobe / Rivera Road

Level of service would worsen from LOS A to LOS E, and the V/C ratio would increase by 0.78 to 0.92, in the AM peak hour. The project would contribute 89 percent of total traffic to this intersection in the AM peak hour.

Level of service would worsen from LOS A to LOS E, and the V/C ratio would increase by 0.79 to 0.95, in the PM peak hour. The project would contribute 90 percent of total traffic to this intersection in the PM peak hour.

Project-related impacts in the Year 2025 plus Project scenario (Scenario 8):

Transportation Impact 2: Lagoon Valley Road / I-80 Eastbound Ramps

Level of service would worsen from LOS A to LOS E, and the V/C ratio would increase by 0.79 to 0.93, in the PM peak hour. The project would contribute 96 percent of total traffic to this intersection in the PM peak hour.

Transportation Impact 3: I-80 Eastbound Ramps / Cherry Glen Road / Pena Adobe / Rivera Road

Level of service would worsen from LOS A to LOS F, and the V/C ratio would increase by 0.99 to 1.21, in the PM peak hour. The project would contribute 90 percent of total traffic to this intersection in the PM peak hour.

Transportation Impact 4: Alamo Drive / Marshall Road

Level of service would worsen from LOS D to LOS E, and the V/C ratio would increase by 0.02 to 0.91, in the PM peak hour. The project would contribute 5 percent of total traffic to this intersection in the PM peak hour.

Project Contribution at Intersections

Tables 27 and 28 display the percent contribution of project trips to the total intersection traffic volumes at each of the study intersections in both the Existing + Approved Projects + Project conditions (Scenario 4) and in the Year 2025 + Project conditions (Scenario 8).

Four of the study intersections (B1-B4) show a project trip contribution of 100 percent. These intersections represent the new intersections created by the proposed project. Although the project contributes 100 percent of the traffic at these intersections, all four would still operate at LOS A in each of the scenarios including the proposed project.

Intersections where the project percent contribution is greater than 50 percent include the intersections at both ends of the Lagoon Valley and Pena Adobe/Cherry Glen overcrossings, as they would be the main access points to the project site from I-80. The project percent contribution at Lagoon Valley Road/Rivera Road/Nelson Road would also be almost 100 percent. Most of these intersections would continue to operate at acceptable service levels when project traffic is included; however in the existing plus project conditions, the I-80 EB Ramps/Cherry Glen/Pena Adobe/Rivera Road intersection would degrade from LOS A to LOS E. In the cumulative plus project conditions (without the California Drive overcrossing) the eastbound PM peak hour conditions at the intersections of LV/I-80 and Lagoon Valley Road/Rivera Road/Nelson Road would deteriorate from LOS A to LOS E, and I-80 EB Ramps/Cherry Glen/Pena Adobe/Rivera Road would deteriorate from LOS A to LOS F.

Other intersection impacts occur along Alamo Drive at the intersections with Marshall Road and Merchant Street, both of which would operate at LOS E in the cumulative conditions. The project contributes 5 percent or less to total traffic at these intersections.

At intersections with negative project trip volumes, as shown in Figure 9a, the addition of the project has resulted in the model redistributing the productions and attractions of each of the City's trip generators. This has created a different trip distribution than in the base conditions (Existing + Approved Projects, Scenario 2). This trip balancing has assigned fewer trips along the Alamo Drive corridor in scenario 4, resulting in the

presentation of negative volumes of project trips traveling along Alamo Drive; however, the project would not necessarily remove existing non-project trips from this area.

In Year 2025 plus Project conditions, no substantial redistribution of non-project trips was found to occur. The contribution of project trips to the Alamo Drive corridor is five percent or less at each of the three study intersections in that area.

Table 27 Intersection Project Trip Contribution - Existing + Project

| Intersection | | Peak Hour | Total E+AP+P Trips | Project Trips | Percent Project Contribution |
|--------------|--|-----------|--------------------|---------------|------------------------------|
| 1 | North Texas Street / I-80 Eastbound Ramps | AM | 1,984 | 86 | 4% |
| | | PM | 2,772 | (23) | (1%) |
| 2 | Hilborn Rd/ Lyon Rd/ North Texas St / I-80 WB Ramps | AM | 1,302 | (55) | (4%) |
| | | PM | 1,822 | 45 | 2% |
| 3 | Lagoon Valley Rd/ I-80 Eastbound Ramps | AM | 984 | 936 | 95% |
| | | PM | 1,080 | 1,010 | 94% |
| 4 | Lagoon Valley Rd / Rivera Rd / Nelson Rd | PM | 1,035 | 1,013 | 98% |
| 5 | Cherry Glen Rd / I-80 Westbound Ramps | AM | 495 | 395 | 80% |
| | | PM | 662 | 566 | 85% |
| 6 | Cherry Glen Rd / Lyon Rd | PM | 104 | (42) | (40%) |
| 7 | I-80 EB Ramps / Cherry Glen / Pena Adobe / Rivera Rd | AM | 1,371 | 1,226 | 89% |
| | | PM | 1,443 | 1,300 | 90% |
| 8 | Cherry Glen Rd / I-80 WB Ramps / North Cherry Glen | AM | 1,008 | 912 | 90% |
| | | PM | 423 | 333 | 79% |
| 9 | Cherry Glen Rd / Pleasant Valley Rd | PM | 146 | (21) | (14%) |
| 10 | Alamo Drive / I-80 Eastbound Ramps | AM | 3,459 | (439) | (13%) |
| | | PM | 4,166 | (768) | (18%) |
| 11 | Alamo Drive / Merchant St | AM | 3,580 | (337) | (9%) |
| | | PM | 3,685 | (66) | (2%) |
| 12 | Alamo Drive / Marshall Rd | PM | 2,882 | (618) | (21%) |
| A1 | North Texas St / Manuel Campos Parkway | AM | N/A | | |
| | | PM | | | |
| B1 | Lagoon Valley Road / Commercial Access Road | PM | 910 | 910 | 100% |
| B2 | Lagoon Valley Road / Arterial #1 | PM | 903 | 903 | 100% |
| B3 | Lagoon Valley Road / Arterial #2 | PM | 297 | 297 | 100% |
| B4 | Internal Collector Intersection | PM | 16 | 16 | 100% |

Table 28 Intersection Project Trip Contribution - Year 2025 + Project

| | Intersection | Peak Hour | Total 2025+Pjt Trips | Project Trips | Percent Project Contribution |
|----|--|------------------|-----------------------------|----------------------|-------------------------------------|
| 1 | North Texas Street / I-80 Eastbound Ramps | AM | 2,105 | 62 | 3% |
| | | PM | 2,938 | 33 | 1% |
| 2 | Hilborn Rd/ Lyon Rd/ North Texas St / I-80 WB Ramps | AM | 1,458 | 11 | 1% |
| | | PM | 1,821 | 61 | 3% |
| 3 | Lagoon Valley Rd/ I-80 Eastbound Ramps | AM | 1,495 | 1,448 | 97% |
| | | PM | 1,822 | 1,757 | 96% |
| 4 | Lagoon Valley Rd / Rivera Rd / Nelson Rd | PM | 1,854 | 1,831 | 99% |
| 5 | Cherry Glen Rd / I-80 Westbound Ramps | AM | 886 | 756 | 85% |
| | | PM | 885 | 784 | 89% |
| 6 | Cherry Glen Rd / Lyon Rd | PM | 592 | 299 | 51% |
| 7 | I-80 EB Ramps / Cherry Glen / Pena Adobe / Rivera Rd | AM | 1,043 | 867 | 83% |
| | | PM | 1,853 | 1,659 | 90% |
| 8 | Cherry Glen Rd/ I-80 WB Ramps/ North Cherry Glen | AM | 697 | 575 | 82% |
| | | PM | 428 | 305 | 71% |
| 9 | Cherry Glen Rd / Pleasant Valley Rd | PM | 634 | 305 | 48% |
| 10 | Alamo Drive / I-80 Eastbound Ramps | AM | 4,849 | 239 | 5% |
| | | PM | 6,372 | 283 | 4% |
| 11 | Alamo Drive / Merchant St | AM | 4,436 | 115 | 3% |
| | | PM | 4,546 | 213 | 5% |
| 12 | Alamo Drive / Marshall Rd | PM | 4,697 | 232 | 5% |
| A1 | North Texas St / Manuel Campos Parkway | AM | 2,881 | 30 | 1% |
| | | PM | 3,326 | 40 | 1% |
| B1 | Lagoon Valley Road / Commercial Access Road | PM | 1,027 | 1,027 | 100% |
| B2 | Lagoon Valley Road / Arterial #1 | PM | 936 | 936 | 100% |
| B3 | Lagoon Valley Road / Arterial #2 | PM | 323 | 323 | 100% |
| B4 | Internal Collector Intersection | PM | 6 | 6 | 100% |

Roadway Segment Impacts

Project-related roadway segment impacts in the Existing plus Project scenario (Scenario 4):

- None.

Project-related roadway segment impacts in the Year 2025 plus Project scenario (Scenario 8):

- None.

Project Contribution to Roadway Segments

The following tables illustrate the percent contribution of project trips to the total traffic volumes at each of the roadway segments, in both the Existing + Approved Projects + Project conditions (Scenario 4) and in the Year 2025 + Project conditions (Scenario 8).

Roadway segments in the existing conditions show negative project trip volumes in cases where the addition of the project has resulted in the model redistributing the productions and attractions of each of the City's trip generators. This has created a different trip distribution than in the base conditions (Existing + Approved Projects, Scenario 2). This trip balancing has assigned fewer trips along the Cherry Glen Road segments between Lyon Road and Pleasant Valley Road, as well as over the Alamo Drive overcrossing, in scenario 4. This results in the presentation of negative volumes of project trips along the segments; however, the project would not necessarily remove existing non-project trips from this area. In Year 2025 plus Project conditions, no substantial redistribution of non-project trips was found to occur.

Table 29 Roadway Segment Project Trip Contribution - Existing + Project

| | Roadway Segment | Peak Hour | Total E+AP+P Trips | Project Trips | Percent Project Contribution |
|----|---|------------------|---------------------------|----------------------|-------------------------------------|
| 1 | Lagoon Valley Rd <i>(I-80 EB Ramps to Rivera Road)</i> | AM | 966 | 944 | 98% |
| | | PM | 1,045 | 1,023 | 98% |
| 2 | Lagoon Valley Rd <i>(I-80 Overcrossing)</i> | AM | 436 | 393 | 90% |
| | | PM | 638 | 575 | 90% |
| 3 | North Cherry Glen Rd <i>(I-80 WB Off Ramp to Cherry Glen Rd)</i> | AM | 105 | 95 | 90% |
| | | PM | 43 | 43 | 100% |
| 4 | Rivera Road <i>(Lagoon Valley Rd to Cherry Glen/Pena Adobe)</i> | PM | 1,319 | 1,307 | 99% |
| 5 | Cherry Glen Road <i>(I-80 WB Ramps (W) to Lyon Road)</i> | AM | 78 | (5) | (6%) |
| | | PM | 69 | (12) | (17%) |
| 6 | Cherry Glen Road <i>(Lyon Rd to Pleasant Valley Rd)</i> | PM | 104 | (42) | (40%) |
| 7 | Cherry Glen Road <i>(Pleasant Valley Rd to I-80 WB Ramps(E))</i> | AM | 38 | 3 | 8% |
| | | PM | 47 | 16 | 34% |
| 8 | Pleasant Valley Rd <i>(North of Cherry Glen Road)</i> | AM | 89 | (17) | (19%) |
| | | PM | 119 | (20) | (17%) |
| 9 | Cherry Glen/Pena Adobe <i>(I-80 Overcrossing)</i> | PM | 411 | 336 | 82% |
| 10 | Alamo Drive <i>(I-80 Overcrossing)</i> | AM | 2,461 | (313) | (13%) |
| | | PM | 2,773 | (76) | (3%) |

Table 30 Roadway Segment Project Trip Contribution - Year 2025 + Project

| | Roadway Segment | Peak Hour | Total 2025+P Trips | Project Trips | Percent Project Contribution |
|----|---|-----------|--------------------|---------------|------------------------------|
| 1 | Lagoon Valley Rd <i>(I-80 EB Ramps to Rivera Road)</i> | AM | 1,461 | 1,441 | 99% |
| | | PM | 1,784 | 1,761 | 99% |
| 2 | Lagoon Valley Rd <i>(I-80 Overcrossing)</i> | AM | 768 | 726 | 95% |
| | | PM | 828 | 771 | 93% |
| 3 | North Cherry Glen Rd <i>(I-80 WB Off Ramp to Cherry Glen Rd)</i> | AM | 282 | 252 | 89% |
| | | PM | 37 | 23 | 62% |
| 4 | Rivera Road <i>(Lagoon Valley Rd to Cherry Glen/Pena Adobe)</i> | PM | 1,745 | 1,732 | 99% |
| 5 | Cherry Glen Road <i>(I-80 WB Ramps (W) to Lyon Road)</i> | AM | 157 | 42 | 27% |
| | | PM | 101 | 15 | 15% |
| 6 | Cherry Glen Road <i>(Lyon Rd to Pleasant Valley Rd)</i> | PM | 592 | 299 | 51% |
| 7 | Cherry Glen Road <i>(Pleasant Valley Rd to I-80 WB Ramps(E))</i> | AM | 46 | 0 | 0% |
| | | PM | 55 | 6 | 11% |
| 8 | Pleasant Valley Rd <i>(North of Cherry Glen Road)</i> | AM | 266 | 75 | 28% |
| | | PM | 611 | 325 | 53% |
| 9 | Cherry Glen/Pena Adobe <i>(I-80 Overcrossing)</i> | PM | 418 | 316 | 76% |
| 10 | Alamo Drive <i>(I-80 Overcrossing)</i> | AM | 3,269 | 80 | 2% |
| | | PM | 3,483 | 130 | 4% |

Freeway Segment Impacts

Project-related freeway segment impacts in the Existing plus Project scenario (Scenario 4):

- None.

Project-related freeway segment impacts in the Year 2025 plus Project scenario (Scenario 8):

Transportation Impact 5: I-80 Cherry Glen/Pena Adobe Overcrossing to Alamo Drive Overcrossing (EB)

Level of service would remain at LOS F for the eastbound segment, and the V/C ratio would increase by 0.08 to 1.19, in the PM peak hour. The project would contribute 7 percent of total traffic to this segment in the PM peak hour.

Transportation Impact 6: I-80 North Cherry Glen Off Ramp to Cherry Glen/Pena Adobe Overcrossing (WB)

Level of service would worsen from LOS E to LOS F for the westbound segment, and the V/C ratio would increase by 0.08 to 1.07, in the AM peak hour. The project would contribute 7 percent of total traffic to this segment in the AM peak hour.

Transportation Impact 7: I-80 Alamo Drive Overcrossing to North Cherry Glen Off Ramp (WB)

Level of service would worsen from LOS E to LOS F for the westbound segment, and the V/C ratio would increase by 0.10 to 1.10, in the AM peak hour. The project would contribute 10 percent of total traffic to this segment in the AM peak hour.

Transportation Impact 8: I-80 Cherry Glen/Pena Adobe Overcrossing to Lagoon Valley Overcrossing (WB)

Level of service would worsen from LOS E to LOS F for the westbound segment, and the V/C ratio would increase by 0.04 to 1.02, in the AM peak hour. The project would contribute 4 percent of total traffic to this segment in the AM peak hour.

Transportation Impact 9: I-80 Lagoon Valley Overcrossing to North Texas Overcrossing (WB)

Level of service would worsen from LOS E to LOS F for the westbound segment, and the V/C ratio would increase by 0.02 to 1.01, in the AM peak hour. The project would contribute 2 percent of total traffic to this segment in the AM peak hour.

Project Contribution to Freeway Segments

The following tables display the percent contribution of project trips to the total traffic volumes at each of the freeway segments, in both the Existing + Approved Projects + Project conditions (Scenario 4) and in the Year 2025 + Project conditions (Scenario 8).

Freeway segments in the existing conditions show negative project trip volumes in cases where the addition of the project has resulted in the model redistributing the productions and attractions of each of the City's trip generators. This has created a different trip distribution than in the base conditions (Existing + Approved Projects, Scenario 2). This trip balancing has assigned fewer trips along I-80 between the North Texas and the Pena Adobe/Cherry Glen overcrossings, in the eastbound direction in the PM peak hour and in the westbound direction in the AM peak hour of scenario 4. This results in the presentation of negative volumes of project trips along these segments; however, the project would not necessarily remove existing non-project trips from this area.

In Year 2025 plus Project conditions, the same eastbound segments along I-80 show negative volumes for PM peak hour traffic as in the existing conditions.

Table 31 Freeway Segment Project Trip Contribution - Existing + Project

| I-80 Freeway Segment | | Peak Hour | Total E+AP+P Trips | Project Trips | Percent Project Contribution |
|---|----|-----------|--------------------|---------------|------------------------------|
| East of Alamo Drive Overcrossing | EB | AM | 5,388 | 1,520 | 28% |
| | | PM | 5,899 | 397 | 7% |
| | WB | AM | 5,553 | 346 | 6% |
| | | PM | 5,935 | 1,659 | 28% |
| Alamo Drive Overcrossing – Cherry Glen/Pena Adobe Overcrossing | EB | AM | 6,233 | 1,573 | 25% |
| | | PM | 7,652 | 90 | 1% |
| North Cherry Glen Off Ramp – Cherry Glen/Pena Adobe Overcrossing | WB | AM | 6,808 | 39 | 1% |
| | | PM | 6,866 | 1,655 | 24% |
| Alamo Drive Overcrossing – North Cherry Glen Off Ramp | WB | AM | 6,913 | 135 | 2% |
| | | PM | 6,910 | 1,699 | 25% |
| Cherry Glen/Pena Adobe Overcrossing – Lagoon Valley Overcrossing | EB | AM | 5,851 | 1,253 | 21% |
| | | PM | 6,607 | (889) | (13%) |
| | WB | AM | 5,935 | (773) | (13%) |
| | | PM | 6,523 | 1,380 | 21% |
| Lagoon Valley Overcrossing – North Texas Overcrossing | EB | AM | 5,877 | 1,252 | 21% |
| | | PM | 6,742 | (797) | (12%) |
| | WB | AM | 6,041 | (723) | (12%) |
| | | PM | 6,584 | 1,399 | 21% |

Table 32 Freeway Segment Project Trip Contribution - Year 2025 + Project

| I-80 Freeway Segment | | Peak Hour | Total 2025+P Trips | Project Trips | Percent Project Contribution |
|--|----|-----------|--------------------|---------------|------------------------------|
| East of Alamo Drive Overcrossing | EB | AM | 4,850 | 384 | 8% |
| | | PM | 6,641 | 404 | 6% |
| | WB | AM | 6,976 | 788 | 11% |
| | | PM | 5,479 | 443 | 8% |
| Alamo Drive Overcrossing – Cherry Glen/Pena Adobe Overcrossing | EB | AM | 6,057 | 631 | 10% |
| | | PM | 9,498 | 636 | 7% |
| North Cherry Glen Off Ramp – Cherry Glen/Pena Adobe Overcrossing | WB | AM | 8,525 | 594 | 7% |
| | | PM | 6,701 | 643 | 10% |
| Alamo Drive Overcrossing – North Cherry Glen Off Ramp | WB | AM | 8,805 | 844 | 10% |
| | | PM | 6,737 | 667 | 10% |
| Cherry Glen/Pena Adobe Overcrossing – Lagoon Valley Overcrossing | EB | AM | 5,696 | 350 | 6% |
| | | PM | 8,058 | (699) | (9%) |
| | WB | AM | 8,144 | 290 | 4% |
| | | PM | 6,363 | 386 | 6% |
| Lagoon Valley Overcrossing – North Texas Overcrossing | EB | AM | 5,839 | 461 | 8% |
| | | PM | 8,717 | (90) | (1%) |
| | WB | AM | 8,113 | 156 | 2% |
| | | PM | 6,574 | 538 | 8% |

Freeway Ramp Impacts

Project-related freeway ramp impacts in the Existing plus Project scenario (Scenario 4):

- None.

Project-related freeway ramp impacts in the Year 2025 plus Project scenario (Scenario 8):

Transportation Impact 10: I-80 Pena Adobe, eastbound on ramp

Level of service would worsen from LOS A to LOS E, and the V/C ratio would increase by 0.89 to 0.96, in the PM peak hour. The project would contribute 92 percent of total traffic to this ramp in the PM peak hour.

Transportation Impact 11: I-80 Alamo Drive/Merchant Street, eastbound off ramp

Level of service would remain at LOS F, and the V/C ratio would increase by 0.15 to 1.26, in the AM peak hour. The project would contribute 12 percent of total traffic to this ramp in the AM peak hour.

Level of service would remain at LOS F, and the V/C ratio would increase by 0.14 to 2.40, in the PM peak hour. The project would contribute 6 percent of total traffic to this ramp in the PM peak hour.

Transportation Impact 12: I-80 Alamo Drive/Merchant Street, westbound on ramp

Level of service would remain at LOS F, and the V/C ratio would increase by 0.05 to 1.57, in the AM peak hour. The project would contribute 3 percent of total traffic to this ramp in the AM peak hour.

Level of service would remain at LOS F, and the V/C ratio would increase by 0.14 to 1.26, in the PM peak hour. The project would contribute 11 percent of total traffic to this ramp in the PM peak hour.

Project Contribution to Freeway Ramps

The following tables display the percent contribution of project trips to the total traffic volumes at each of the freeway ramps, in both the Existing + Approved Projects + Project conditions (Scenario 4) and in the Year 2025 + Project conditions (Scenario 8).

Freeway ramps in the existing conditions show negative project trip volumes in cases where the addition of the project has resulted in the model redistributing the productions and attractions of each of the City's trip generators. This has created a different trip distribution than in the base conditions (Existing + Approved Projects, Scenario 2). This trip balancing has assigned fewer trips to the eastbound off ramps and the westbound on ramps at the Alamo Drive/Merchant Street and Pena Adobe/Cherry Glen interchanges, in both the AM and PM peak hours of scenario 4. This results in the presentation of negative volumes of project trips at these freeway ramps; however, the project would not necessarily remove existing non-project trips from this area.

In Year 2025 plus Project conditions, the Pena Adobe I-80 Eastbound Off Ramp shows negative volumes for both the AM and PM peak hours. The total volumes at this off ramp are less than ten for both of the peak hours.

Table 33 Freeway Ramp Project Trip Contribution - Existing + Project

| Freeway Ramp | | Peak Hour | Total E+AP+P Trips | Project Trips | Percent Project Contribution |
|--------------|---|-----------|--------------------|---------------|------------------------------|
| 1 | Lagoon Valley I-80 Westbound On Ramp | AM | 291 | 226 | 78% |
| | | PM | 339 | 294 | 87% |
| 2 | Lagoon Valley I-80 Westbound Off Ramp | AM | 185 | 176 | 95% |
| | | PM | 278 | 275 | 99% |
| 3 | Lagoon Valley I-80 Eastbound On Ramp | AM | 270 | 268 | 99% |
| | | PM | 176 | 170 | 97% |
| 4 | Lagoon Valley I-80 Eastbound Off Ramp | AM | 296 | 267 | 90% |
| | | PM | 311 | 262 | 84% |
| 5 | Cherry Glen I-80 Westbound On Ramp | AM | 2 | (1) | (50%) |
| | | PM | 1 | (2) | (200%) |
| 6 | Cherry Glen I-80 Westbound Off Ramp | AM | 875 | 811 | 93% |
| | | PM | 344 | 273 | 79% |
| 7 | North Cherry Glen I-80 Westbound Off Ramp | AM | 105 | 96 | 91% |
| | | PM | 44 | 44 | 100% |
| 8 | Pena Adobe I-80 Eastbound On Ramp | AM | 384 | 312 | 81% |
| | | PM | 1,046 | 972 | 93% |
| 9 | Pena Adobe I-80 Eastbound Off Ramp | AM | 2 | (8) | (400%) |
| | | PM | 1 | (7) | (700%) |
| 10 | Alamo / Merchant I-80 Eastbound Off Ramp | AM | 1,377 | (17) | (1%) |
| | | PM | 2,222 | (500) | (23%) |
| 11 | Alamo / Merchant I-80 Westbound On Ramp | AM | 1,736 | (317) | (18%) |
| | | PM | 1,407 | (26) | (2%) |
| 12 | Manuel Campos Parkway I-80 Eastbound Off Ramp | AM | 180 | 0 | 0% |
| | | PM | 470 | 0 | 0% |
| 13 | Manuel Campos Parkway I-80 Eastbound On Ramp | AM | 662 | 141 | 21% |
| | | PM | 530 | (63) | (12%) |
| 14 | Manuel Campos Parkway I-80 Westbound Off Ramp | AM | 455 | (55) | (12%) |
| | | PM | 744 | 45 | 6% |
| 15 | Manuel Campos Parkway I-80 Westbound On Ramp | AM | 420 | 0 | 0% |
| | | PM | 210 | 0 | 0% |

Table 34 Freeway Ramp Project Trip Contribution - Year 2025 + Project

| Freeway Ramp | | Peak Hour | Total 2025+P Trips | Project Trips | Percent Project Contribution |
|--------------|---|-----------|--------------------|---------------|------------------------------|
| 1 | Lagoon Valley I-80 Westbound On Ramp | AM | 408 | 305 | 75% |
| | | PM | 526 | 467 | 89% |
| 2 | Lagoon Valley I-80 Westbound Off Ramp | AM | 439 | 439 | 100% |
| | | PM | 315 | 315 | 100% |
| 3 | Lagoon Valley I-80 Eastbound On Ramp | AM | 309 | 309 | 100% |
| | | PM | 188 | 188 | 100% |
| 4 | Lagoon Valley I-80 Eastbound Off Ramp | AM | 452 | 420 | 93% |
| | | PM | 847 | 797 | 94% |
| 5 | Cherry Glen I-80 Westbound On Ramp | AM | 3 | 3 | 100% |
| | | PM | 4 | 4 | 100% |
| 6 | Cherry Glen I-80 Westbound Off Ramp | AM | 384 | 307 | 80% |
| | | PM | 342 | 261 | 76% |
| 7 | North Cherry Glen I-80 Westbound Off Ramp | AM | 280 | 250 | 89% |
| | | PM | 36 | 24 | 67% |
| 8 | Pena Adobe I-80 Eastbound On Ramp | AM | 365 | 275 | 75% |
| | | PM | 1,444 | 1,332 | 92% |
| 9 | Pena Adobe I-80 Eastbound Off Ramp | AM | 4 | (6) | (150%) |
| | | PM | 4 | (3) | (75%) |
| 10 | Alamo / Merchant I-80 Eastbound Off Ramp | AM | 1,890 | 228 | 12% |
| | | PM | 3,602 | 211 | 6% |
| 11 | Alamo / Merchant I-80 Westbound On Ramp | AM | 2,350 | 67 | 3% |
| | | PM | 1,895 | 216 | 11% |
| 12 | Manuel Campos Parkway I-80 Eastbound Off Ramp | AM | 180 | 0 | 0% |
| | | PM | 470 | 0 | 0% |
| 13 | Manuel Campos Parkway I-80 Eastbound On Ramp | AM | 658 | 52 | 8% |
| | | PM | 686 | (7) | (1%) |
| 14 | Manuel Campos Parkway I-80 Westbound Off Ramp | AM | 611 | 11 | 2% |
| | | PM | 743 | 61 | 8% |
| 15 | Manuel Campos Parkway I-80 Westbound On Ramp | AM | 420 | 0 | 0% |
| | | PM | 210 | 0 | 0% |

Freeway Merge-Diverge Impacts

Project-related merge-diverge impacts in the Existing plus Project scenario (Scenario 4):

- None.

Project-related merge-diverge impacts in the Year 2025 plus Project scenario (Scenario 8):

Transportation Impact 13: I-80 Lagoon Valley, eastbound diverge

Level of service would worsen from LOS D to LOS E, and the density would increase by 3 (pc/mi/ln) to 37, in the PM peak hour. The project would contribute 94 percent of total traffic to this location in the PM peak hour.

Transportation Impact 14: I-80 Cherry Glen, westbound diverge

Level of service would worsen from LOS D to LOS E, and the density would increase by 4 (pc/mi/ln) to 39, in the AM peak hour. The project would contribute 80 percent of total traffic to this location in the AM peak hour.

Transportation Impact 15: I-80 North Cherry Glen, westbound diverge

Level of service would worsen from LOS D to LOS E, and the density would increase by 5 (pc/mi/ln) to 37, in the AM peak hour. The project would contribute 89 percent of total traffic to this location in the AM peak hour.

Transportation Impact 16: I-80 Alamo Drive/Merchant Street, eastbound diverge

Level of service would remain at LOS F, and the density would increase by 4 (pc/mi/ln) to 57, in the PM peak hour. The project would contribute 6 percent of total traffic to this location in the PM peak hour.

Project Contribution to Freeway Merge-Diverge Impacts

Project contribution to the freeway merge and diverge area volumes is the same percent contribution as on the adjacent freeway on and off ramps. Tables 33 and 34 display the project percent contribution applicable to both freeway ramps and merge-diverge locations.

Impacts of the Current Zoning Project

Scenario 3 (Existing + Approved Projects with Current Zoning) and Scenario 6 (Year 2025 without Proposed Project with Current Zoning) include the development of the site as currently zoned. The Current Zoning Project includes 577 fewer residential units and 4 million square feet more commercial area than the proposed project.

With a much larger amount of space for commercial use, Table 6 shows that the number of trips generated by the project as currently zoned (Scenarios 3 and 6) would be double the number of trips generated by the proposed project's land uses. As it is a much more intensive land use, the Current Zoning project would have much greater traffic impacts in the study area, including impacts to study intersections, roadway segments, and the freeway segments, ramps, and merge-diverge operations.

Scenario 3: Existing + Approved Projects + Current Zoning Project

With the addition of Current Zoning Project volumes in Scenario 3, many of the study intersections, segments, and ramp areas would be significantly impacted.

- Six study intersections would operate at LOS E or F in the AM or PM peak hours, or both, under the Current Zoning scenario:
 - North Texas Street/I-80 Eastbound Ramps;
 - Lagoon Valley Road/I-80 Eastbound Ramps;
 - Lagoon Valley Road/Rivera Road/Nelson Road;
 - Cherry Glen/I-80 WB Ramps;
 - I-80 Eastbound Ramps/Cherry Glen Road/Pena Adobe/Rivera Road; and
 - Alamo Drive/Merchant Street.
- Five I-80 freeway segments would operate at LOS E or F in the westbound AM peak hour and the eastbound PM peak hour:
 - Lagoon Valley to Pena Adobe/Cherry Glen;
 - Pena Adobe/Cherry Glen to Alamo Drive;
 - Alamo Drive to North Cherry Glen Road Off Ramp;
 - North Cherry Glen Road Off Ramp to Pena Adobe/Cherry Glen; and
 - Pena Adobe/Cherry Glen to Lagoon Valley.
- Two I-80 freeway ramps would operate at LOS F in both peak hours:
 - Alamo Drive/Merchant Street eastbound off ramp; and
 - Alamo Drive/Merchant Street westbound on ramp.
- Three I-80 diverge locations would operate at LOS E or F:
 - Alamo Drive/Merchant Street eastbound (PM);
 - North Cherry Glen Road westbound (AM); and
 - Cherry Glen Road westbound (AM).

Scenario 6: Cumulative + Current Zoning Project

The addition of Current Zoning Project volumes in Scenario 6 would significantly impact many of the study intersections, freeway segments, ramps, and diverge movements.

- Seven study intersections would operate at LOS E or F in either the AM or PM peak hour, under the Year 2025 with Current Zoning alternative:
 - North Texas Street/I-80 Eastbound Ramps;
 - Lagoon Valley Road/I-80 Eastbound Ramps;
 - Lagoon Valley Road/Rivera Road/Nelson Road;
 - Cherry Glen/I-80 WB Ramps;
 - I-80 Eastbound Ramps/Cherry Glen Road/Pena Adobe/Rivera Road;
 - Alamo Drive/Merchant Street; and
 - Cherry Glen Road/Pleasant Valley Road.
- All of the study freeway segments (North Texas/Manuel Campos overcrossing to Alamo Drive overcrossing) would operate at LOS E or F in the cumulative base conditions. With the addition of Current Zoning Project volumes, conditions on each of these segments would worsen, either from LOS E to LOS F, or remain at LOS F with an increasing V/C ratio.
- The Current Zoning project would not substantially impact the area freeway ramps in the year 2025 analysis. Project traffic would, however, contribute to an increase in V/C ratio at the Alamo/Merchant eastbound off ramp and the Alamo/Merchant westbound on ramp, both of which would operate at LOS F without the project.
- Five diverge locations would worsen to LOS E or F:
 - North Cherry Glen Road westbound (AM);
 - Pena Adobe/Cherry Glen westbound (AM);
 - Lagoon Valley Road westbound (AM);
 - Pena Adobe/Cherry Glen eastbound (PM); and
 - Alamo/Merchant eastbound (PM).

Effects of the California Drive Overcrossing

The extension of California Drive from Marshall Road, east of Interstate 80, to Cherry Glen Road would create a new overcrossing of I-80. This overcrossing is only analyzed in the future year 2025 conditions, included in this analysis as part of Scenario 7 (without Project) and Scenario 9 (with Project). The California Drive overcrossing would function as the fifth freeway overcrossing in the Lagoon Valley area, including those at North Texas Street, Lagoon Valley Road, Cherry Glen Road/Pena Adobe, and Alamo Drive.

The California Drive overcrossing is planned to be a 2-lane arterial, which would have a carrying capacity of 2,000 (according to the City of Vacaville General Plan roadway capacity specifications). The westbound off ramp at North Cherry Glen Road would be closed with the extension of the California Drive Overcrossing, as the two roadways would connect on the western side of I-80.

Scenario 7: Cumulative + California Drive without Project

In scenario 7, without the project, approximately 195 total trips (both directions) would use the overcrossing in the AM peak hour, with approximately 224 trips in the PM peak hour. The facility would operate at LOS A in both peak hour periods.

The construction of the California Drive overcrossing, without the addition of project traffic, would result in no substantial positive or negative effects to the study intersections, roadway segments, and freeway segments, ramps, and merge-diverge locations.

Scenario 9: Cumulative + Project + California Drive

In scenario 9, including traffic associated with the proposed project, approximately 1,572 trips (both directions) would occur on the overcrossing in the AM peak hour, with approximately 2,646 trips in the PM peak hour. The facility would operate at LOS C in the AM peak hour and LOS F in the PM peak hour.

Improvements

With the California Drive overcrossing, the Alamo Drive overcrossing at I-80 would improve from LOS B to LOS A operations, with 765 less trips in the AM peak hour and 896 less trips in the PM peak hour. The California Drive overcrossing would remove a substantial number of vehicles from the Alamo Drive corridor. Levels of service at the intersection of Alamo Drive/I-80 Eastbound Ramps would improve to LOS A in both peak hours. The Alamo Drive/Merchant Street intersection would also improve to LOS D in both peak hours.

The overcrossing would alleviate congestion at the Lagoon Valley interchange with eastbound traffic in scenario 9, improving the level of service at Lagoon Valley/I-80 Eastbound Ramps to LOS B and at Lagoon Valley/Nelson Road/Rivera Road to LOS A, in the PM peak hour. Without the overcrossing, the intersections of Lagoon Valley/I-80 Eastbound Ramps and Lagoon Valley/Nelson Road/Rivera Road would operate at LOS E and LOS C, respectively, in the PM peak hour.

The construction of the California Drive overcrossing would also:

- Improve Rivera Road and Alamo Drive roadway segment service levels to LOS A
- Improve operations in the westbound direction along I-80, on the freeway segments between Alamo Drive and Cherry Glen/Pena Adobe. All other freeway segments would maintain the same service levels.
- Improve the Pena Adobe eastbound on ramp from LOS E to LOS A. Freeway ramp service level ratings remain at LOS A at most other locations.
- Improve Alamo Drive/Merchant Street westbound on ramp from LOS F to LOS A, as the downstream off ramp at North Cherry Glen Road would be closed with the construction of the California Drive overcrossing.
- Help to relieve congestion at the merge and diverge areas along I-80 in both peak hours. Service levels would not change for about one-half of the study areas, and improve at all other areas.

Negative Effects

With the new overcrossing, levels of service would also worsen at some study intersections. The intersection of North Cherry Glen Road with the I-80 Westbound Ramps and Cherry Glen Road would worsen from LOS A to LOS F with the addition of project traffic, in both the AM and PM peak hours. This is a result of increased volumes traveling to and from North Cherry Glen Road as it would be converted from a freeway off ramp to a connection with California Drive. This intersection would facilitate all traffic from both directions of the overcrossing. The trips on California Drive would access westbound I-80 at this intersection, adding approximately 1,156 total trips to the intersection in the AM peak hour, and adding approximately 2,439 total trips to the intersection in the PM peak hour. Additional trips from Rivera Road and Cherry Glen Road would also contribute to the activity at this intersection.

Improvements to the intersection of North Cherry Glen Road/I-80 Westbound Ramps/Cherry Glen Road would be necessary to handle the negative effects of the overcrossing traffic. To mitigate the increase in traffic, one additional southbound left turn lane, and one additional northbound right turn lane would need to be installed. Also, the westbound approach from California Drive (North Cherry Glen Road) would need to include one shared through-left turn lane, one dedicated through lane, and one left turn lane. These changes would improve the intersection to an acceptable service level.

The Cherry Glen I-80 westbound on ramp would also experience a worsening level of service in both peak hours, as traffic from California Drive would use this on ramp to enter the freeway.

The diverge point at Alamo/Merchant eastbound off ramp would improve to LOS E while the upstream diverge point at Pena Adobe would worsen to LOS D. Vehicles are removed from Alamo Drive to instead access the California Drive extension at Cherry Glen Road.

Mitigations

To mitigate the large forecasted volumes on the overcrossing under the Year 2025 with Project with California Drive Overcrossing scenario, the overcrossing would need to be constructed as a 4-lane undivided arterial, resulting in a carrying capacity of 3,333 (according to the City of Vacaville General Plan roadway capacity specifications). With the mitigation to widen the overcrossing to 4-lanes, in the PM peak hour the facility would operate at LOS C.

The City of Vacaville shall continue to monitor the demand for capacity on the proposed California Drive overcrossing. The City shall provide for a four-lane California Drive overcrossing update to the Transportation portion of Development Impact Fee Program if it should be warranted.

CUMULATIVE IMPACTS

A cumulative impact occurs when the future year 2025 service levels are LOS F, prior to the addition of project traffic. The cumulative impacts at each of the study intersections, segments, and ramps are described in the following sections.

Intersection Impacts

Cumulative impacts in the Year 2025 with Project scenario (Scenario 8):

Cumulative Impact 1: North Texas Street/I-80 Eastbound Ramps

Level of service would operate at LOS F (1.02) in the PM peak hour. The project would contribute approximately 1 percent of total traffic to this intersection in the PM peak hour.

Cumulative Impact 2: North Texas Street/Manuel Campos Parkway

Level of service would operate at LOS F (1.21) in the AM peak hour. The project would contribute approximately 1 percent of total traffic to this intersection in the AM peak hour.

Level of service would operate at LOS F (1.40) in the PM peak hour. The project would contribute approximately 1 percent of total traffic to this intersection in the PM peak hour.

Roadway Segment Impacts

Cumulative impacts in the Year 2025 with Project scenario (Scenario 8):

- None.

Freeway Segment Impacts

Cumulative impacts in the Year 2025 with Project scenario (Scenario 8):

Cumulative Impact 3: I-80 Lagoon Valley Overcrossing to Cherry Glen/Pena Adobe Overcrossing (EB)

Level of service would operate at LOS F (1.01) in the PM peak hour. The project would contribute approximately 9 percent of total traffic to this segment in the PM peak hour.

Cumulative Impact 4: I-80 Lagoon Valley Overcrossing to North Texas Overcrossing (EB)

Level of service would operate at LOS F (1.09) in the PM peak hour. The project would contribute approximately 1 percent of total traffic to this segment in the PM peak hour.

Freeway Ramp Impacts

Cumulative impacts in the Year 2025 with Project scenario (Scenario 8):

- None.

Freeway Merge-Diverge Impacts

Cumulative impacts in the Year 2025 with Project scenario (Scenario 8):

- None.

PROJECT MITIGATIONS

Intersection Mitigations

Ten study intersections would require geometric mitigations to accommodate projected traffic in one or more of the study scenarios. Tables 35 and 36 display the intersections requiring mitigation, the scenarios in which the mitigation is required, and the geometric mitigation proposed. Figure 18 illustrates the intersection geometry required to support the Year 2025 with Project scenario. Appendix D contains the calculations for each of the intersection mitigations.

Project-related mitigations for the Existing plus Project scenario (Scenario 4):

- See Tables 29 and 30, Scenario 4.

Transportation Impact 1: I-80 Eastbound Ramps / Cherry Glen Road / Pena Adobe / Rivera Road

Implement Mitigation Measure A-1: Convert Northbound Approach to 2 Left Turn Lanes and 1 Shared Through-Right Turn Lane

The geometry at this intersection is currently one approach lane in each direction with shared left-through-right operation. This mitigation measure would add two left turn lanes and convert the existing lane to a shared through-right turn lane.

Level of service would improve to LOS D (0.87) in the AM peak hour with this mitigation. The project contributes 89 percent of total traffic to this intersection in the AM peak hour.

Level of service would improve to LOS C (0.75) in the PM peak hour with this mitigation. The project contributes 90 percent of total traffic to this intersection in the PM peak hour.

Secondary Impacts: The existing width of Rivera Road at this intersection would need to be widened to accommodate the additional left turn lanes, as the roadway currently is one lane in each direction. Also, the eastbound I-80 on ramp would need to be widened to accept the two turning lanes, and would merge into one lane as it reached the merge location. Right-of-way would need to be obtained from either side of Rivera Road.

OR

Implement Mitigation Measure A-2: Redesign Project Access Intersections to Shift Focus to Lagoon Valley Road

Two freeway interchanges provide access to the project's residential and commercial areas – Lagoon Valley and Pena Adobe/Cherry Glen. With this mitigation measure, the commercial portion of the project site would be configured so as to focus the roadway access points and driveways and the vehicle parking lots to direct traffic to Lagoon Valley Road and away from Rivera Road and the I-80/Pena Adobe interchange.

The current traffic distribution assigns all commercial outbound project trips to the I-80 eastbound freeway on ramp at Pena Adobe. By redistributing a majority of the assigned commercial traffic (85 percent, or 867 vehicles) from this freeway interchange to the interchange at Lagoon Valley Road, the service level at Pena Adobe would improve to LOS A. In turn, the intersection of Lagoon Valley

Road/Nelson Road/Rivera Road would operate at LOS C and the intersection of Lagoon Valley Road/I-80 Eastbound Ramps would operate at LOS F. The project intersection at Lagoon Valley Road/Commercial Access Road would operate at LOS A.

This change in trip assignment would also affect the study area roadways. The freeway segment between Lagoon Valley and Pena Adobe eastbound would operate at LOS E. The roadway segment on Lagoon Valley between the I-80 Eastbound Ramps and Rivera Road would operate at LOS A. The Rivera Road segment would operate at LOS A.

The I-80 freeway ramps would operate at LOS B at the Lagoon Valley eastbound on ramp and at LOS A at the Pena Adobe eastbound on ramp. The corresponding freeway merge locations would both operate at LOS C.

Secondary Impacts: To mitigate the secondary impacts of the trip redistribution, the intersection of Lagoon Valley Road/I-80 Eastbound Ramps and the eastbound freeway segment would be the only areas in need of improvement. The intersection would be mitigated by converting the northbound shared through-right lane into two separate lanes, one through lane and one right turn lane. With this mitigation, the intersection would operate at LOS D.

The freeway impact would be mitigated by the addition of an auxiliary lane between Lagoon Valley Road and Pena Adobe/Cherry Glen, in the eastbound direction, also referred to as Mitigation Measure E.

Project-related mitigations for the Year 2025 plus Project scenario (Scenario 8):

- See Tables 29 and 30, Scenario 8.

Transportation Impact 2: Lagoon Valley Road / I-80 Eastbound Ramps

Implement Mitigation Measure B: Add Northbound Right Turn Lane

This intersection is currently 4-way STOP controlled. This mitigation measure would involve widening Lagoon Valley Road at the base of the overcrossing to accommodate an additional right turn lane. The intersection would also need to be signalized.

Level of service would improve to LOS D (0.85) in the PM peak hour with this mitigation. The project contributes 96 percent of total traffic to this intersection in the PM peak hour.

Secondary Impacts: Widening Lagoon Valley Road at the base of the overcrossing would be possible if the right-of-way were obtained to widen towards the east for the additional right turn lane. The eastbound I-80 on ramp would also need to be widened to accept the additional turning lane, and then merged back into one lane before reaching the freeway merge location.

Transportation Impact 3: I-80 Eastbound Ramps / Cherry Glen Road / Pena Adobe / Rivera Road

Implement Mitigation Measure A-1: Convert Northbound Approach to 2 Left Turn Lanes and 1 Shared Through-Right Turn Lane

Level of service would improve to LOS D (0.86) in the PM peak hour with this mitigation. The project contributes 90 percent of total traffic to this intersection in the PM peak hour.

OR**Implement Mitigation Measure A-2: Redesign Project Access Intersections to Shift Focus to Lagoon Valley Road**

With this mitigation, the service level at Pena Adobe would improve to LOS A. The intersection of Lagoon Valley Road/Nelson Road/Rivera Road would operate at LOS D. The intersection of Lagoon Valley Road/I-80 Eastbound Ramps would operate at LOS F. The project intersection at Lagoon Valley Road/Commercial Access Road would operate at LOS A.

This change in trip assignment would also affect the study area roadways. The freeway segment between Lagoon Valley and Pena Adobe eastbound would operate at LOS F. The roadway segment on Lagoon Valley between the I-80 Eastbound Ramps and Rivera Road would operate at LOS B. The Rivera Road segment would operate at LOS A.

The I-80 freeway ramps would operate at LOS B at the Lagoon Valley eastbound on ramp and at LOS A at the Pena Adobe eastbound on ramp. The corresponding freeway merge locations would both operate at LOS C. The Lagoon Valley eastbound off ramp would operate at LOS A, but the corresponding diverge location would operate at LOS D.

Secondary Impacts: To mitigate the secondary impacts of the trip redistribution, the intersection of Lagoon Valley Road/I-80 Eastbound Ramps and the eastbound freeway segment would be the only areas in need of improvement. The intersection would be mitigated by converting the northbound shared through-right lane into two separate lanes, one through lane and one right turn lane. With this mitigation, the intersection would operate at LOS D.

The freeway impact would be mitigated by the addition of an auxiliary lane between Lagoon Valley Road and Pena Adobe/Cherry Glen, in the eastbound direction, also referred to as Mitigation Measure E.

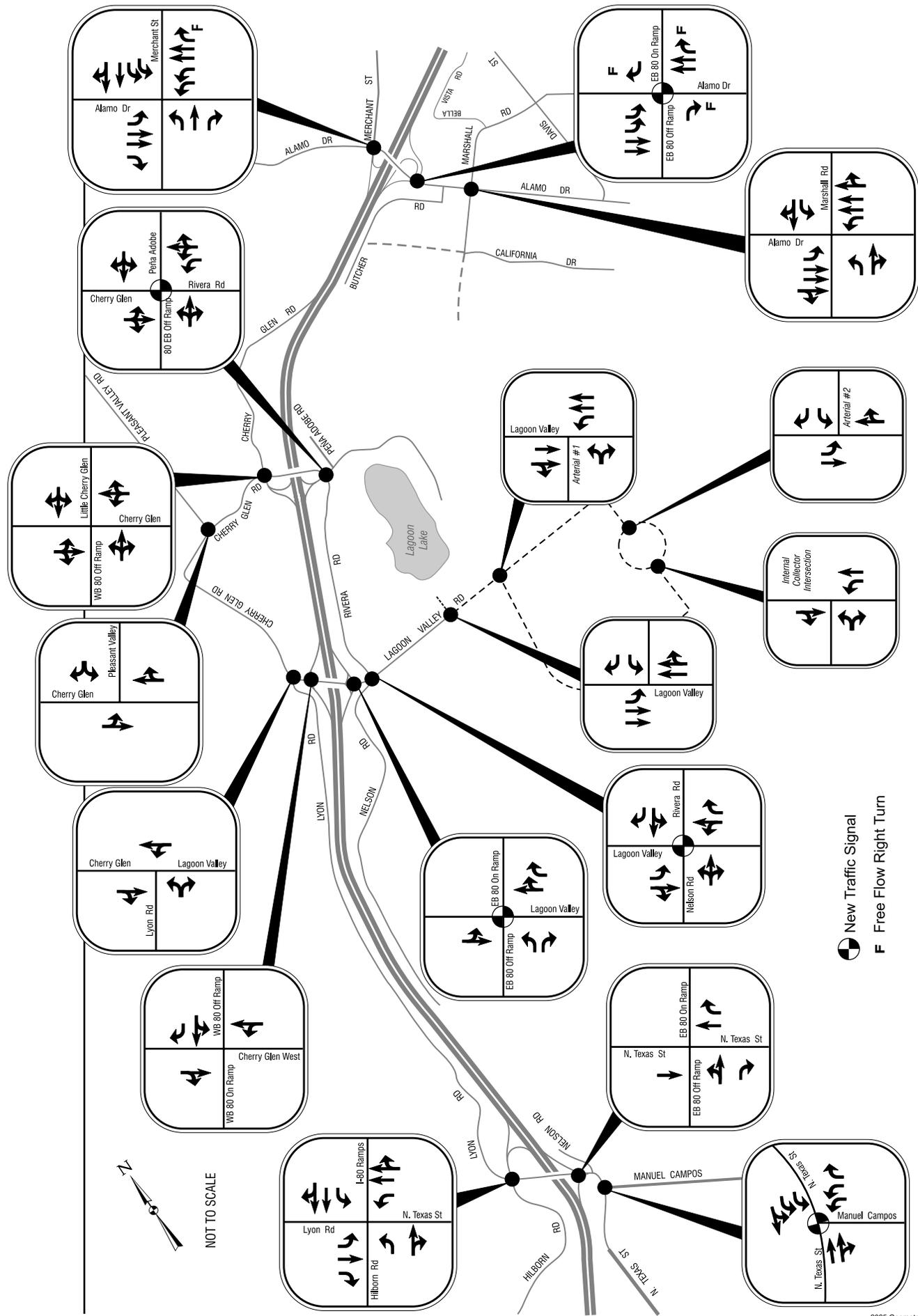
Transportation Impact 4: Alamo Drive / Marshall Road**Implement Mitigation Measure C: Convert Southbound Right Turn Lane to Shared Through-Right Turn Lane**

This mitigation measure would involve converting the southbound right turn lane to allow for both through movements and right turns. It would include striping changes and a widening of the roadway at this approach, plus it would involve a merge into a new lane at the other side of the intersection.

Level of service would improve to LOS C (0.79) in the PM peak hour with this mitigation. The project contributes 5 percent of total traffic to this intersection in the PM peak hour.

OR

The construction of the California Drive overcrossing would reduce traffic impacts at this intersection, as shown in Scenario 9. Approximately 325 vehicles in the northbound and southbound directions would be removed from Alamo Drive/Marshall Road and redirected to the overcrossing. However, this decrease in trips does not improve the LOS E condition, and thus would not fully mitigate the project's impact at this location.



LOWER LAGOON VALLEY

Figure 18

YEAR 2025 + PROJECT INTERSECTION GEOMETRIES WITH MITIGATION

Table 35 Summary of Mitigations for Intersections - Scenarios 1 to 6

| | | Scenario | | | | | |
|--------------|--|------------------------|----------------------------------|--|--|--------------------------------|--|
| Intersection | Existing Geometry | (1) Existing Condition | (2) Existing + Approved Projects | (3) Existing + Approved Projects + Current Zoning | (4) Existing + Approved Projects + PROJECT | (5) Year 2025: Park/Open Space | (6) Year 2025 + Current Zoning |
| 1 | North Texas St / I-80 Eastbound Ramps | | Change NB to 1T & 1R | - | - | - | - |
| 2 | Hilborn Rd / Lyon Rd / North Texas St / I-80 Westbound Ramps | | - | - | - | - | - |
| 3 | Lagoon Valley Road / I-80 Eastbound Ramps | | - | <ul style="list-style-type: none"> Change SB to 1L-T & 1T Change NB to 1T & 1R | - | - | <ul style="list-style-type: none"> Add 1 SB T Change NB to 1T & 2R |
| 4 | Lagoon Valley Road / Rivera Road / Nelson Road | | - | <ul style="list-style-type: none"> Change WB to 1L-T & 1R Change NB to 1L-T, 1T & 1R Change SB to 1L & 1T-R | - | - | <ul style="list-style-type: none"> Change SB to 1L & 1T-R Change WB to 1L-T & 1R Change NB to 1L-T, 1T & 1R Change WB to 2L & 1T-R |
| 5 | Cherry Glen Road / I-80 Westbound Ramps | | - | Change WB to 1L & 1 L-T-R | - | - | - |
| 6 | Cherry Glen Rd / Lyon Rd | | - | - | - | - | - |
| 7 | I-80 Eastbound Ramps / Cherry Glen Rd / Pena Adobe / Rivera Road | | - | <ul style="list-style-type: none"> Change SB to 1L-T & 1T-R Change NB to 1L & 1L-T-R | Change NB to 2L & 1T-R | - | <ul style="list-style-type: none"> Change SB to 1L-T & 1T-R Change NB to 1L & 1L-T-R |

| Intersection | Existing Geometry | Scenario | | | | | |
|--|-------------------|------------------------|----------------------------------|---|--|--------------------------------|--|
| | | (1) Existing Condition | (2) Existing + Approved Projects | (3) Existing + Approved Projects + Current Zoning | (4) Existing + Approved Projects + PROJECT | (5) Year 2025: Park/Open Space | (6) Year 2025 + Current Zoning |
| 8 North Cherry Glen Road / I-80 WB Ramps / Cherry Glen Rd | | - | - | - | - | - | - |
| 9 Cherry Glen Road / Pleasant Valley Road | | - | - | - | - | - | Change SB to 1L & 1L-T |
| 10 Alamo Drive / I-80 Eastbound Ramps | | - | - | - | - | - | - |
| 11 Alamo Drive / Merchant St | | - | - | Change NB to 3L, 1T & 1 Free R | - | Change NB to 3L, 1T & 1 Free R | - |
| 12 Alamo Drive / Marshall Rd | | - | - | - | - | - | - |
| 13 Manuel Campos Parkway / North Texas Street | | - | - | - | - | - | <ul style="list-style-type: none"> Add 1 WB L 2L Add 1 NB R Change EB to 1T & 1T-R Add to WB Add 1 NB R Change EB to 1T-R & 1R |

Key

- NB Northbound
- EB Eastbound
- SB Southbound
- WB Westbound
- L Left-turn lane
- R Right-turn lane
- T Through traffic lane
- L-T Shared lane for left-turn and through traffic
- T-R Shared lane for right-turn and through traffic
- L-T-R Shared lane for left-turn, right-turn and through traffic
- Free Turns
- No mitigations needed

Table 36 Summary of Mitigations for Intersections - Scenarios 7 to 12

| | Intersection | Existing Geometry | Scenario | | | | | |
|---|--|-------------------|---|-------------------------|---|--------------------------------|--------------------------------|--|
| | | | (7) Year 2025 + California Drive Overcrossing | (8) Year 2025 + PROJECT | (9) Year 2025 + PROJECT + California Drive Overcrossing | (10) Year 2025 + Alternative A | (11) Year 2025 + Alternative B | (12) Year 2025 + Offsite Project |
| 1 | North Texas St / I-80 Eastbound Ramps | | Change NB to 1T & 1R | | | | | |
| 2 | Hilborn Rd / Lyon Rd / North Texas St / I-80 Westbound Ramps | | - | - | - | - | - | - |
| 3 | Lagoon Valley Road / I-80 Eastbound Ramps | | - | Add 1 NB R | - | - | - | Add 1 NB R Add 1 SB T |
| 4 | Lagoon Valley Road / Rivera Road / Nelson Road | | - | - | - | - | - | Add 1 SB T Add 1 NB T |
| 5 | Cherry Glen Road / I-80 Westbound Ramps | | - | - | - | - | - | Change WB to 1L & 1L-T-R Add 1 EB R |
| 6 | Cherry Glen Rd / Lyon Rd | | - | - | - | - | - | - |
| 7 | I-80 Eastbound Ramps / Cherry Glen / Pena Adobe / Rivera Road | | - | Add 1 NB L | - | - | - | Change SB to 1L-T & 1T-R Add NB L |
| 8 | North Cherry Glen Road / I-80 Westbound Ramps / Cherry Glen Rd | | - | - | Add SB L Change WB to 1L, 1T & 1T-R Add NB R | - | - | Change WB to 1L & 1T-R |
| 9 | Cherry Glen Road / Pleasant Valley Road | | - | - | - | - | - | Change SB to 1L & 1L-T |

| | | Scenario | | | | | | |
|--------------|---|-------------------|--|--|---|--|--------------------------------|--|
| Intersection | | Existing Geometry | (7) Year 2025 + California Drive Overcrossing | (8) Year 2025 + PROJECT | (9) Year 2025 + PROJECT + California Drive Overcrossing | (10) Year 2025 + Alternative A | (11) Year 2025 + Alternative B | (12) Year 2025 + Offsite Project |
| 10 | Alamo Drive / I-80 Eastbound Ramps | | - | - | - | - | - | - |
| 11 | Alamo Drive / Merchant St | | Change NB to 3L, 1T & 1 Free R | - | - | Change NB to 3L, 1T & 1 Free R | - | Change WB to 1L, 2T & 1T-R Change NB to 3L, 1T & 1 Free R |
| 12 | Alamo Drive / Marshall Rd | | - | Change SB to 1L, 2T & 1T-R | - | - | - | - |
| 13 | Manuel Campos Parkway/ North Texas Street | | Add 1 NB R Add 1 WB L Change EB to 1T-R & 1R | Add 1 NB R Change WB to 2L & 1L-T Change EB to 1T-R & 1R | Add 1 NB R Add 1 WB L Change EB to 1T-R & 1R | Add 1 NB R Change WB to 2L & 1L-T Change EB to 1T-R & 1R | - | - |
| 22 | California Drive / Butcher Road | | - | - | Change WB to 1L-R & 1R Add 1 SB L | - | - | - |

Key

- NB Northbound
- EB Eastbound
- SB Southbound
- WB Westbound
- L Left-turn lane
- R Right-turn lane
- T Through traffic lane
- L-T Shared lane for left-turn and through traffic
- T-R Shared lane for right-turn and through traffic
- L-T-R Shared lane for left-turn, right-turn and through traffic
- F Free Turns
- No mitigations needed

Signal Warrant Analysis

In addition to the geometric modifications noted above, the installation of traffic signals would be required at a number of the study intersections in several of the 12 analysis scenarios. Signal warrant analysis was conducted at each intersection under each scenario and seven new intersections of the 22 analyzed were found meet the warrant for the installation of a traffic signal. Table 37 summarizes the results of this analysis.

Four existing intersections are currently signalized. Alamo Drive is signalized at the eastbound ramps intersection, as well as the intersections with Merchant Street and Marshall Road. A traffic signal was recently installed at the North Texas Street intersection with the eastbound on/off ramps to I-80.

Table 37 Signal Warrant Mitigations

| Intersection | | Scenario | Peak Hour |
|--|--|----------|---------------|
| Existing plus Project Scenarios | | | |
| 3 | Lagoon Valley Road / I-80 Eastbound Ramps | 3 | AM - PM |
| 4 | Lagoon Valley Road / Rivera Road / Nelson Road | 3 | PM |
| 5 | Cherry Glen Road / I-80 Westbound Ramps | 3 | AM - PM |
| Future Year without Project Scenarios | | | |
| 3 | Lagoon Valley Road / I-80 Eastbound Ramps | 6 | AM - PM |
| 4 | Lagoon Valley Road / Rivera Road / Nelson Road | 6 | PM |
| 5 | Cherry Glen Road / I-80 Westbound Ramps | 6 | AM - PM |
| 6 | Cherry Glen Road / Lyon Road | 6 | PM |
| 8 | North Cherry Glen Road / I-80 Westbound Ramps / Cherry Glen Rd | 6 | PM |
| 13 | North Texas Street / Manuel Campos Parkway | 5,6,7 | AM - PM |
| Future Year with Project Scenarios | | | |
| 3 | Lagoon Valley Road / I-80 Eastbound Ramps | 8-12 | AM - PM |
| 4 | Lagoon Valley Road / Rivera Road / Nelson Road | 10-12 | PM |
| 5 | Cherry Glen Road / I-80 Westbound Ramps | 12 | AM - PM |
| 6 | Cherry Glen Road / Lyon Road | 12 | PM |
| 7 | I-80 Eastbound Ramps / Cherry Glen / Pena Adobe / Rivera Road | 9 | PM |
| 8 | North Cherry Glen Road / I-80 Westbound Ramps / Cherry Glen Rd | 9 12 | AM AM - PM |
| 9 | Cherry Glen Road / Pleasant Valley Road | 12 | PM |
| 13 | North Texas Street / Manuel Campos Parkway | 8-12 | AM - PM |
| 22 | California Drive / Butcher Road | 9 | PM |

Development of the proposed project would warrant traffic signals at the following intersections in cumulative conditions (year 2025):

- Lagoon Valley Road / I-80 Eastbound Ramps (#3);
- Lagoon Valley Road / Rivera Road / Nelson Road (#4); and
- North Texas Street / Manuel Campos Parkway (#13).

Roadway Segment Mitigations

Project-related roadway segment mitigations for the Year 2025 plus Project scenario (Scenario 8):

Freeway Segment Mitigations

Project-related freeway segment mitigations for the Year 2025 plus Project scenario (Scenario 8):

Transportation Impact 5: I-80 Cherry Glen/Pena Adobe Overcrossing to Alamo Drive Overcrossing (EB)

Implement Mitigation Measure F: Add Auxiliary Lane, EB I-80 from Cherry Glen/Pena Adobe to Alamo Drive

The addition of an auxiliary lane along I-80 eastbound from Cherry Glen/Pena Adobe to Alamo Drive would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Level of service would improve to LOS D (0.81) with this mitigation. The project contributes 7 percent of total traffic to this segment in the PM peak hour.

Secondary Impacts: Implementing this mitigation would include widening the eastbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would be relocated into the adjacent right-of-way. In this segment of I-80 eastbound, there is a hill adjacent to the roadway, which would need to be retained to provide the extra traffic lane.

Transportation Impact 6: I-80 North Cherry Glen Off Ramp to Cherry Glen/Pena Adobe Overcrossing (WB)

Implement Mitigation Measure H: Add Auxiliary Lane, WB I-80 from North Cherry Glen Off Ramp to Cherry Glen/Pena Adobe

The addition of an auxiliary lane along I-80 westbound from North Cherry Glen Off Ramp to Cherry Glen/Pena Adobe would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Level of service would improve to LOS D (0.90) with this mitigation. The project contributes 7 percent of total traffic to this segment in the PM peak hour.

Secondary Impacts: Implementing this mitigation would include widening the westbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would be relocated into the adjacent right-of-way.

Transportation Impact 7: I-80 Alamo Drive Overcrossing to North Cherry Glen Off Ramp (WB)

Implement Mitigation Measure G: Add Auxiliary Lane, WB I-80 from Alamo Drive to North Cherry Glen Off Ramp

The addition of an auxiliary lane along I-80 westbound from Alamo Drive to the North Cherry Glen Off Ramp would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Level of service would improve to LOS E (0.93) with this mitigation. The project contributes 10 percent of total traffic to this segment in the AM peak hour.

Secondary Impacts: Implementing this mitigation would include widening the westbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would therefore be widened into the adjacent right-of-way. In this segment of I-80 westbound, there is a hill adjacent to the roadway, which would need to be retained to provide the additional traffic lane.

Transportation Impact 8: I-80 Cherry Glen/Pena Adobe Overcrossing to Lagoon Valley Overcrossing (WB)

Implement Mitigation Measure I: Add Auxiliary Lane, WB I-80 from Cherry Glen/Pena Adobe to Lagoon Valley Road

The addition of an auxiliary lane along I-80 westbound from Cherry Glen/Pena Adobe to Lagoon Valley Road would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating the merge and diverge conflict.

Level of service would improve to LOS D (0.86) with this mitigation. The project contributes 4 percent of total traffic to this segment in the AM peak hour.

Secondary Impacts: Implementing this mitigation would include widening the westbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would be relocated into the adjacent right-of-way. The right-of-way is currently unencumbered.

Transportation Impact 9: I-80 Lagoon Valley Overcrossing to North Texas Overcrossing (WB)

Implement Mitigation Measure J: Add Auxiliary Lane, WB I-80 from Lagoon Valley Road to North Texas Street

The addition of an auxiliary lane along I-80 westbound from Lagoon Valley Road to North Texas Street would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Level of service would improve to LOS D (0.85) with this mitigation. The project contributes 2 percent of total traffic to this segment in the AM peak hour.

Secondary Impacts: Implementing this mitigation would include widening the westbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would be relocated into the adjacent right-of-way. Lyon Road runs adjacent to this segment of I-80 as a westbound frontage road. It is located approximately 150 feet from the existing shoulder of the freeway. In this segment of I-80 westbound, there is a hill adjacent to the roadway, which would need to be retained to provide the extra traffic lane.

Freeway Ramp Mitigations

Project-related freeway ramp mitigations for the Year 2025 plus Project scenario (Scenario 8):

Transportation Impact 10: I-80 Pena Adobe, eastbound on ramp

Implement Mitigation Measure E: Add Auxiliary Lane, EB I-80 from Lagoon Valley Road to Cherry Glen/Pena Adobe

The addition of an auxiliary lane along I-80 eastbound from Lagoon Valley Road to Cherry Glen/Pena Adobe would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Level of service would improve to LOS C (0.80) in the PM peak hour with this mitigation. The project contributes 92 percent of total traffic to this ramp in the PM peak hour.

Secondary Impacts: Implementing this mitigation would include widening the eastbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would be relocated into the adjacent right-of-way. Rivera Road runs adjacent to this segment of I-80 as an eastbound frontage road. It is located less than 50 feet from the existing shoulder of the freeway.

Rivera Road is slated to be reconstructed as part of the development plan, as it would provide major access to the project's commercial area. Relocation or widening of the freeway and roadway would need to be coordinated.

OR

Implement Mitigation Measure A-2: Redesign Project Access Intersections to Shift Focus to Lagoon Valley Road

With this mitigation measure, the Pena Adobe eastbound on ramp would improve to LOS A as a result of reduced volume accessing the I-80 freeway at this ramp.

Transportation Impact 11: I-80 Alamo Drive/Merchant Street, eastbound off ramp

Implement Mitigation Measure F: Add Auxiliary Lane, EB I-80 from Cherry Glen/Pena Adobe to Alamo Drive

Level of service would improve to LOS F (1.05) in the AM peak hour with this mitigation. The project contributes 12 percent of total traffic to this ramp in the AM peak hour.

Level of service would improve to LOS F (2.00) in the PM peak hour with this mitigation. The project contributes 6 percent of total traffic to this ramp in the PM peak hour.

AND

Implement Mitigation Measure F-2: Widen Off Ramp to Two Traffic Lanes, Alamo Drive/Merchant Street Eastbound Off Ramp

To further mitigate this impact, the off ramp should be widened to two lanes, creating a capacity for approximately 3,200 vehicles. Implementing this mitigation

would require widening the off ramp by 12 feet and adding a separate lane at the downstream intersection to accommodate the extra off ramp lane.

This mitigation would result in LOS A (0.59) in the AM peak hour and LOS F (1.13) in the PM peak hour.

Transportation Impact 12: I-80 Alamo Drive/Merchant Street, westbound on ramp

Implement Mitigation Measure G: Add Auxiliary Lane, WB I-80 from Alamo Drive to North Cherry Glen Off Ramp

Level of service would improve to LOS F (1.31) in the AM peak hour with this mitigation. The project contributes 3 percent of total traffic to this ramp in the AM peak hour.

Level of service would improve to LOS F (1.05) in the PM peak hour with this mitigation. The project contributes 11 percent of total traffic to this ramp in the PM peak hour.

AND

Implement Mitigation Measure G-2: Widen On Ramp to Two Traffic Lanes, Alamo Drive/Merchant Street Westbound On Ramp

To further mitigate this impact, the off ramp should be widened to two lanes, creating a capacity for approximately 3,200 vehicles. Implementing this mitigation would require widening the off ramp by 12 feet. The additional on ramp lane would change operations at the freeway merge, and would require a revised merge area.

This mitigation would result in LOS C (0.73) in the AM peak hour and LOS A (0.59) in the PM peak hour.

Freeway Merge-Diverge Mitigations

Project-related impacts in the Year 2025 plus Project scenario (Scenario 8):

Transportation Impact 13: I-80 Lagoon Valley, eastbound diverge

Implement Mitigation Measure D: Add Auxiliary Lane, EB I-80 from North Texas Street to Lagoon Valley Road

The addition of an auxiliary lane along I-80 eastbound from Alamo Drive to North Texas Street (Manuel Campos Parkway) would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating the merge and diverge conflict.

Secondary Impacts: Implementing this mitigation would include widening the eastbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would be relocated into the adjacent right-of-way. Nelson Road runs adjacent to this segment of I-80, and begins approximately 1.3 miles south of the Lagoon Valley Road interchange. It is located approximately 100 feet from the existing shoulder of the freeway near North Texas Street and as far as 1,000 feet from the shoulder near Lagoon Valley Road.

Paradise Valley Golf Course and residential development is also located adjacent to the freeway at the southern end of this segment. The edge of the development is located approximately 100 feet from the existing shoulder of the freeway. There is a bicycle path between the golf course and the freeway, which connects the North Texas Street intersection to the end of Nelson Road.

Transportation Impact 14: I-80 Cherry Glen, westbound diverge

Implement Mitigation Measure H: Add Auxiliary Lane, WB I-80 from North Cherry Glen Off Ramp to Cherry Glen/Pena Adobe

The addition of an auxiliary lane along I-80 westbound from North Cherry Glen Off Ramp to Cherry Glen/Pena Adobe would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Transportation Impact 15: I-80 North Cherry Glen, westbound diverge

Implement Mitigation Measure G: Add Auxiliary Lane, WB I-80 from Alamo Drive to North Cherry Glen Off Ramp

The addition of an auxiliary lane along I-80 westbound from Alamo Drive to the North Cherry Glen Off Ramp would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Transportation Impact 16: I-80 Alamo Drive/Merchant Street, eastbound diverge

Implement Mitigation Measure F: Add Auxiliary Lane, EB I-80 from Cherry Glen/Pena Adobe to Alamo Drive

The addition of an auxiliary lane along I-80 eastbound from Cherry Glen/Pena Adobe to Alamo Drive would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

CUMULATIVE MITIGATIONS

Intersection Mitigations

Cumulative mitigations for the Year 2025 with Project scenario (Scenario 8):

Cumulative Impact 1: North Texas Street/I-80 Eastbound Ramps

Implement Mitigation Measure K: Convert Northbound to 1 Through Lane and 1 Right Turn Lane

This intersection is included in the City of Fairfield's plans to redesign North Texas Street and Manuel Campos Parkway. This mitigation to convert one shared through-right traffic lane into two separate lanes would need to be included to serve Year 2025 plus Project traffic levels. The intersection approach would need to be widened to include both a through lane and a right turn lane at the northbound approach.

Level of service would improve to LOS C (0.80) in the PM peak hour with this mitigation. The project contributes 1 percent of total traffic to this intersection in the PM peak hour.

Cumulative Impact 2: North Texas Street/Manuel Campos Parkway

Implement Mitigation Measure L: Add Northbound Right Turn Lane, Convert Westbound to 2 Left Turn Lanes and 1 Shared Left-Through Lane, and Convert Eastbound to 1 Shared Through-Right Turn Lane and 1 Right Turn Lane

This intersection geometry was initially analyzed as one lane for each maneuver at each approach, which is not adequate for the volume of traffic forecast in the future year 2025. Since this intersection does not yet exist and is currently in the design stage, the mitigations recommended may be included as part of the intersection design. The intersection would need to be signalized. The signal would be in the City of Fairfield jurisdiction, and if the intersection is to be created, it would completely warrant a traffic signal.

Level of service would improve to LOS D (0.81) in the AM peak hour with this mitigation. The project contributes 1 percent of total traffic to this intersection in the PM peak hour.

Level of service would improve to LOS D (0.85) in the PM peak hour with this mitigation. The project contributes 1 percent of total traffic to this intersection in the PM peak hour.

Roadway Segment Mitigations

Cumulative mitigations for the Year 2025 with Project scenario (Scenario 8):

- None.

Freeway Segment Mitigations

Cumulative mitigations for the Year 2025 with Project scenario (Scenario 8):

Cumulative Impact 3: I-80 Lagoon Valley Overcrossing to Cherry Glen/Pena Adobe Overcrossing (EB)

Implement Mitigation Measure E: Add Auxiliary Lane, EB I-80 from Lagoon Valley Road to Cherry Glen/Pena Adobe

Level of service would improve to LOS D (0.85) with this mitigation. The project would contribute 9 percent of total traffic to this segment in the PM peak hour.

Cumulative Impact 4: I-80 Lagoon Valley Overcrossing to North Texas Overcrossing (EB)

Implement Mitigation Measure D: Add Auxiliary Lane, EB I-80 from North Texas to Lagoon Valley Road

The addition of an auxiliary lane along I-80 eastbound from Alamo Drive to North Texas Street (Manuel Campos Parkway) would add capacity to the freeway, creating a fifth traffic lane for a short distance and eliminating merge and diverge conflict.

Level of service would improve to LOS E (0.92) with this mitigation. The project would contribute 1 percent of total traffic to this segment in the PM peak hour.

Secondary Impacts: Implementing this mitigation would include widening the eastbound direction of I-80 by 12 feet. The auxiliary lane would take the place of the existing shoulder and the shoulder would be relocated into the adjacent right-of-way. Nelson Road runs adjacent to this segment of I-80, and begins approximately 1.3 miles south of the Lagoon Valley Road interchange. It is located approximately 100 feet from the existing shoulder of the freeway near North Texas Street and as far as 1,000 feet from the shoulder near Lagoon Valley Road.

Paradise Valley Golf Course and residential development is also located adjacent to the freeway at the southern end of this segment. The edge of the development is located approximately 100 feet from the existing shoulder of the freeway. There is a bicycle path between the golf course and the freeway, which connects the North Texas Street intersection to the end of Nelson Road.

Freeway Ramp Mitigations

Cumulative mitigations for the Year 2025 with Project scenario (Scenario 8):

- None.

Freeway Merge-Diverge Mitigations

Cumulative mitigations for the Year 2025 with Project scenario (Scenario 8):

- None.

TECHNICAL APPENDIX E

Air Quality Data Sheets

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

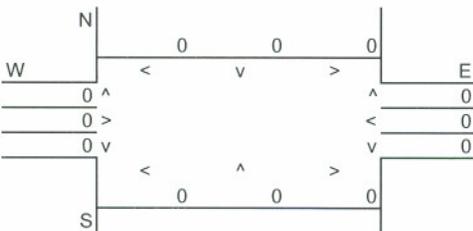
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2003

Roadway Data

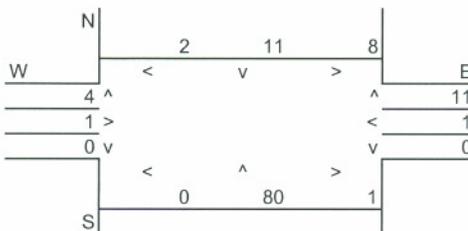
Intersection: Lagoon Valley Rd./Nelson Rd.
 Analysis Condition: Existing Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|--------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Nelson Road | 2 | 10 | 10 |
| East-West Roadway: | Lagoon Valley Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|---|-----------|-----|
| N-S Road: | 0 | N-S Road: | 116 |
| E-W Road: | 0 | E-W Road: | 22 |

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000¹

| Roadway | A ₁ A ₂ A ₃ Reference CO Concentrations | | | B Traffic Volume | C Emission Factors ¹ | Estimated CO Concentrations | | |
|-------------------------------|---|---------|----------|---------------------|------------------------------------|-----------------------------|---------|----------|
| | 25 Feet | 50 Feet | 100 Feet | | | 25 Feet | 50 Feet | 100 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| East-West Road | 2.7 | 2.2 | 1.7 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 116 | 16.86 | 0.15 | 0.11 | 0.08 |
| East-West Road | 2.7 | 2.2 | 1.7 | 22 | 16.86 | 0.01 | 0.01 | 0.01 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration²

8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration²

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.0 | 3.2 | 3.1 |
| 50 Feet from Roadway Edge | 3.0 | 3.1 | 3.1 |
| 100 Feet from Roadway Edge | 3.0 | 3.1 | 3.1 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

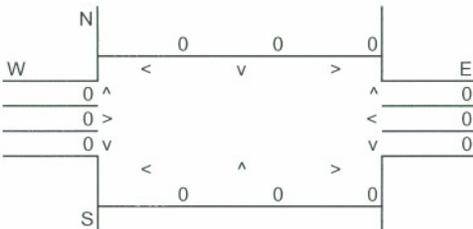
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2003

Roadway Data

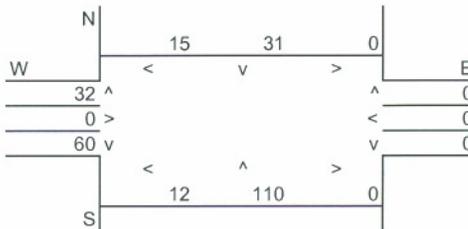
Intersection: Cherry Glen Rd./Lyon Rd.
 Analysis Condition: Existing Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Lyon Road | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|---|-----------|-----|
| N-S Road: | 0 | N-S Road: | 213 |
| E-W Road: | 0 | E-W Road: | 119 |

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000¹

| Roadway | Reference CO Concentrations | | | Traffic Volume | Emission Factors ¹ | Estimated CO Concentrations | | |
|-------------------------------|-----------------------------|---------------------------|----------------------------|----------------|-------------------------------|-----------------------------|---------|----------|
| | A ₁ 25 Feet | A ₂ 50 Feet | A ₃ 100 Feet | | | 25 Feet | 50 Feet | 100 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| East-West Road | 2.7 | 2.2 | 1.7 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 213 | 16.86 | 0.27 | 0.20 | 0.14 |
| East-West Road | 2.7 | 2.2 | 1.7 | 119 | 16.86 | 0.05 | 0.04 | 0.03 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration²

8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration²

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.0 | 3.3 | 3.2 |
| 50 Feet from Roadway Edge | 3.0 | 3.2 | 3.1 |
| 100 Feet from Roadway Edge | 3.0 | 3.2 | 3.1 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

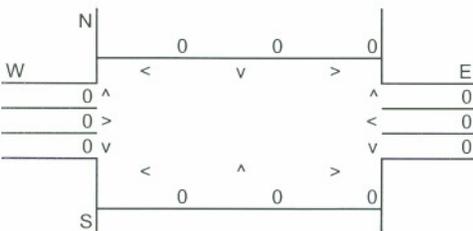
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2003

Roadway Data

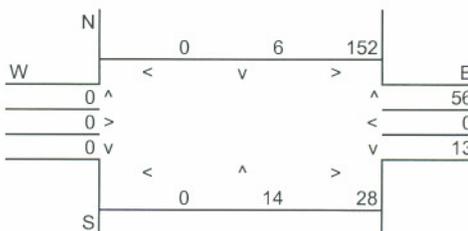
Intersection: Cherry Glen Rd./Pleasant Valley Rd.
 Analysis Condition: Existing Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | | |
|----------------------|----------------------|--------------|---------------|------|----|
| | | | A.M. | P.M. | |
| North-South Roadway: | Pleasant Valley Road | At Grade | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | At Grade | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|---|-----------|-----|
| N-S Road: | 0 | N-S Road: | 228 |
| E-W Road: | 0 | E-W Road: | 249 |

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000¹

| Roadway | A ₁ | A ₂ | A ₃ | B | C | Estimated CO Concentrations | | |
|-------------------------------|----------------------|------------------------------|----------------|-------------------|----------------------------------|-----------------------------|---------|----------|
| | Reference 25 Feet | CO Concentrations 50 Feet | 100 Feet | Traffic Volume | Emission Factors ¹ | 25 Feet | 50 Feet | 100 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| East-West Road | 2.7 | 2.2 | 1.7 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 2.7 | 2.2 | 1.7 | 228 | 16.86 | 0.10 | 0.08 | 0.07 |
| East-West Road | 7.6 | 5.7 | 4.0 | 249 | 16.86 | 0.32 | 0.24 | 0.17 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration²

8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration²

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.0 | 3.4 | 3.3 |
| 50 Feet from Roadway Edge | 3.0 | 3.3 | 3.2 |
| 100 Feet from Roadway Edge | 3.0 | 3.2 | 3.1 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

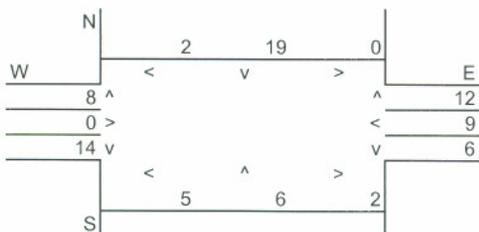
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2003

Roadway Data

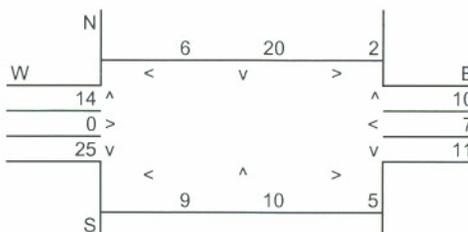
Intersection: Cherry Glen Rd./Pleasant Valley Rd.
 Analysis Condition: Existing Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|-------------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Little Cherry Glen Road | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|----|-----------|----|
| N-S Road: | 52 | N-S Road: | 80 |
| E-W Road: | 38 | E-W Road: | 61 |

Roadway CO Contributions and Concentrations

$$\text{Emissions} = (A \times B \times C) / 100,000^1$$

| Roadway | A ₁ Reference CO Concentrations | | | B Traffic Volume | C Emission Factors ¹ | Estimated CO Concentrations | | |
|-------------------------------|--|---------|----------|------------------|---------------------------------|-----------------------------|---------|----------|
| | 25 Feet | 50 Feet | 100 Feet | | | 25 Feet | 50 Feet | 100 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 52 | 16.86 | 0.07 | 0.05 | 0.04 |
| East-West Road | 2.7 | 2.2 | 1.7 | 38 | 16.86 | 0.02 | 0.01 | 0.01 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 80 | 16.86 | 0.10 | 0.08 | 0.05 |
| East-West Road | 2.7 | 2.2 | 1.7 | 61 | 16.86 | 0.03 | 0.02 | 0.02 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

$$\text{Peak Hour Emissions} = \text{North-South Concentration} + \text{East-West Concentration} + \text{Background 1-hour Concentration}^2$$

$$\text{8-Hour Emissions} = ((\text{Highest Peak Hour Concentration} - \text{Background 1-hour Concentration}) \times \text{Persistence Factor}) + \text{Background 8-hour Concentration}^2$$

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|----------------|----------------|--------|
| 25 Feet from Roadway Edge | 3.1 | 3.1 | 3.1 |
| 50 Feet from Roadway Edge | 3.1 | 3.1 | 3.1 |
| 100 Feet from Roadway Edge | 3.0 | 3.1 | 3.0 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

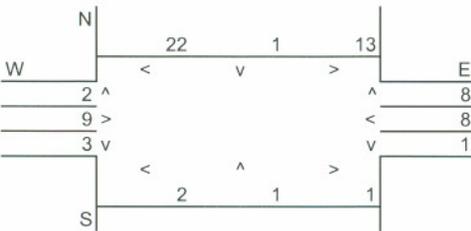
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2003

Roadway Data

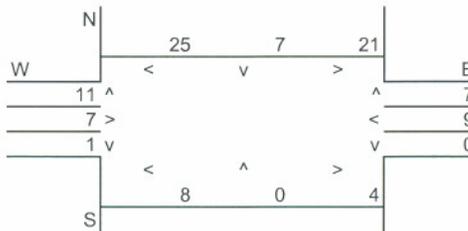
Intersection: Rivera Rd./Cherry Glen Rd.
 Analysis Condition: Existing Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Rivera Road | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|----|-----------|----|
| N-S Road: | 47 | N-S Road: | 71 |
| E-W Road: | 46 | E-W Road: | 61 |

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000¹

| Roadway | A ₁ A ₂ A ₃ | | | B | C | Estimated CO Concentrations | | |
|-------------------------------|--|------------------------------|----------|----|-------|-----------------------------|----------------------------------|---------|
| | Reference 25 Feet | CO Concentrations 50 Feet | 100 Feet | | | Traffic Volume | Emission Factors ¹ | 25 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 47 | 16.86 | 0.06 | 0.05 | 0.03 |
| East-West Road | 2.7 | 2.2 | 1.7 | 46 | 16.86 | 0.02 | 0.02 | 0.01 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 71 | 16.86 | 0.09 | 0.07 | 0.05 |
| East-West Road | 2.7 | 2.2 | 1.7 | 61 | 16.86 | 0.03 | 0.02 | 0.02 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration²

8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration²

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.1 | 3.1 | 3.1 |
| 50 Feet from Roadway Edge | 3.1 | 3.1 | 3.1 |
| 100 Feet from Roadway Edge | 3.0 | 3.1 | 3.0 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

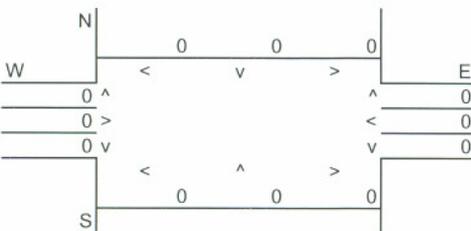
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2003

Roadway Data

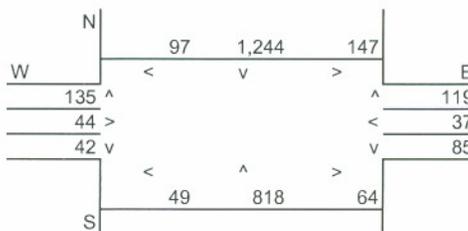
Intersection: Marshall Rd./Alamo Dr.
 Analysis Condition: Existing Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|---------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Marshall Road | 2 | 10 | 10 |
| East-West Roadway: | Alamo Drive | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|---|-----------|-------|
| N-S Road: | 0 | N-S Road: | 2,560 |
| E-W Road: | 0 | E-W Road: | 496 |

Roadway CO Contributions and Concentrations

$$\text{Emissions} = (A \times B \times C) / 100,000^1$$

| Roadway | A ₁ | A ₂ | A ₃ | B | C | Estimated CO Concentrations | | |
|-------------------------------|----------------------|------------------------------|----------------|-------------------|----------------------------------|-----------------------------|---------|----------|
| | Reference 25 Feet | CO Concentrations 50 Feet | 100 Feet | Traffic Volume | Emission Factors ¹ | 25 Feet | 50 Feet | 100 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| East-West Road | 2.7 | 2.2 | 1.7 | 0 | 16.86 | 0.00 | 0.00 | 0.00 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 2,560 | 16.86 | 3.28 | 2.46 | 1.73 |
| East-West Road | 2.7 | 2.2 | 1.7 | 496 | 16.86 | 0.23 | 0.18 | 0.14 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

$$\text{Peak Hour Emissions} = \text{North-South Concentration} + \text{East-West Concentration} + \text{Background 1-hour Concentration}^2$$

$$\text{8-Hour Emissions} = ((\text{Highest Peak Hour Concentration} - \text{Background 1-hour Concentration}) \times \text{Persistence Factor}) + \text{Background 8-hour Concentration}^2$$

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.0 | 6.5 | 5.1 |
| 50 Feet from Roadway Edge | 3.0 | 5.6 | 4.6 |
| 100 Feet from Roadway Edge | 3.0 | 4.9 | 4.1 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Lower Lagoon - Construction.urb
 Project Name: 10794-00 Lower Lagoon Valley - Construction
 Project Location: Lower Sacramento Valley Air Basin
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
 (Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 TOTAL | PM10 EXHAUST | PM10 DUST |
|------------------------------|--------|--------|--------|------|---------------|-----------------|--------------|
| *** 2004 *** | | | | | | | |
| TOTALS (lbs/day,unmitigated) | 114.89 | 274.94 | 276.05 | 0.01 | 168.05 | 13.02 | 155.03 |
| *** 2005 *** | | | | | | | |
| TOTALS (lbs/day,unmitigated) | 114.50 | 263.07 | 280.06 | 0.01 | 12.96 | 12.04 | 0.92 |
| *** 2006 *** | | | | | | | |
| TOTALS (lbs/day,unmitigated) | 114.26 | 252.15 | 284.88 | 0.01 | 12.27 | 11.35 | 0.92 |

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Lower Lagoon - Construction.urb
 Project Name: 10794-00 Lower Lagoon Valley - Construction
 Project Location: Lower Sacramento Valley Air Basin
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
 (Pounds/Day - Summer)

Construction Start Month and Year: June, 2004
 Construction Duration: 24
 Total Land Use Area to be Developed: 62 acres
 Maximum Acreage Disturbed Per Day: 15.5 acres
 Single Family Units: 243 Multi-Family Units: 0
 Retail/Office/Institutional/Industrial Square Footage: 291300

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

| Source | ROG | NOx | CO | SO2 | PM10 TOTAL | PM10 EXHAUST | PM10 DUST |
|----------------------------------|--------|--------|--------|------|---------------|-----------------|--------------|
| *** 2004*** | | | | | | | |
| Phase 1 - Demolition Emissions | | | | | | | |
| Fugitive Dust | - | - | - | - | 0.00 | - | 0.00 |
| Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| On-Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Phase 2 - Site Grading Emissions | | | | | | | |
| Fugitive Dust | - | - | - | - | 155.00 | - | 155.00 |
| Off-Road Diesel | 25.53 | 199.67 | 187.02 | - | 9.44 | 9.44 | 0.00 |
| On-Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Worker Trips | 0.51 | 0.85 | 11.53 | 0.01 | 0.05 | 0.02 | 0.03 |
| Maximum lbs/day | 26.04 | 200.52 | 198.55 | 0.01 | 164.49 | 9.46 | 155.03 |
| Phase 3 - Building Construction | | | | | | | |
| Bldg Const Off-Road Diesel | 32.23 | 271.59 | 220.06 | - | 12.96 | 12.96 | 0.00 |
| Bldg Const Worker Trips | 2.23 | 1.30 | 27.92 | 0.00 | 0.48 | 0.02 | 0.46 |
| Arch Coatings Off-Gas | 78.05 | - | - | - | - | - | - |
| Arch Coatings Worker Trips | 2.23 | 1.30 | 27.92 | 0.00 | 0.48 | 0.02 | 0.46 |
| Asphalt Off-Gas | 0.10 | - | - | - | - | - | - |
| Asphalt Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| Asphalt On-Road Diesel | 0.04 | 0.75 | 0.14 | 0.01 | 0.02 | 0.02 | 0.00 |
| Asphalt Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 114.89 | 274.94 | 276.05 | 0.01 | 13.94 | 13.02 | 0.92 |
| Max lbs/day all phases | 114.89 | 274.94 | 276.05 | 0.01 | 168.05 | 13.02 | 155.03 |
| *** 2005*** | | | | | | | |
| Phase 1 - Demolition Emissions | | | | | | | |
| Fugitive Dust | - | - | - | - | 0.00 | - | 0.00 |
| Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| On-Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Phase 2 - Site Grading Emissions | | | | | | | |
| Fugitive Dust | - | - | - | - | 0.00 | - | 0.00 |
| Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| On-Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Phase 3 - Building Construction | | | | | | | |
| Bldg Const Off-Road Diesel | 32.23 | 259.95 | 228.56 | - | 11.98 | 11.98 | 0.00 |
| Bldg Const Worker Trips | 2.04 | 1.21 | 25.68 | 0.00 | 0.48 | 0.02 | 0.46 |
| Arch Coatings Off-Gas | 78.05 | - | - | - | - | - | - |
| Arch Coatings Worker Trips | 2.04 | 1.21 | 25.68 | 0.00 | 0.48 | 0.02 | 0.46 |
| Asphalt Off-Gas | 0.10 | - | - | - | - | - | - |
| Asphalt Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| Asphalt On-Road Diesel | 0.04 | 0.70 | 0.13 | 0.01 | 0.02 | 0.02 | 0.00 |
| Asphalt Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 114.50 | 263.07 | 280.06 | 0.01 | 12.96 | 12.04 | 0.92 |
| Max lbs/day all phases | 114.50 | 263.07 | 280.06 | 0.01 | 12.96 | 12.04 | 0.92 |

*** 2006***

Phase 1 - Demolition Emissions

| | | | | | | | |
|-----------------|------|------|------|------|------|------|------|
| Fugitive Dust | - | - | - | - | 0.00 | - | 0.00 |
| Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| On-Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Phase 2 - Site Grading Emissions

| | | | | | | | |
|-----------------|------|------|------|------|------|------|------|
| Fugitive Dust | - | - | - | - | 0.00 | - | 0.00 |
| Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| On-Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Phase 3 - Building Construction

| | | | | | | | |
|----------------------------|--------|--------|--------|------|-------|-------|------|
| Bldg Const Off-Road Diesel | 32.23 | 249.19 | 236.00 | - | 11.30 | 11.30 | 0.00 |
| Bldg Const Worker Trips | 1.92 | 1.15 | 24.38 | 0.00 | 0.48 | 0.02 | 0.46 |
| Arch Coatings Off-Gas | 78.05 | - | - | - | - | - | - |
| Arch Coatings Worker Trips | 1.92 | 1.15 | 24.38 | 0.00 | 0.48 | 0.02 | 0.46 |
| Asphalt Off-Gas | 0.10 | - | - | - | - | - | - |
| Asphalt Off-Road Diesel | 0.00 | 0.00 | 0.00 | - | 0.00 | 0.00 | 0.00 |
| Asphalt On-Road Diesel | 0.03 | 0.66 | 0.12 | 0.01 | 0.01 | 0.01 | 0.00 |
| Asphalt Worker Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum lbs/day | 114.26 | 252.15 | 284.88 | 0.01 | 12.27 | 11.35 | 0.92 |
| Max lbs/day all phases | 114.26 | 252.15 | 284.88 | 0.01 | 12.27 | 11.35 | 0.92 |

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions

Start Month/Year for Phase 2: Jun '04

Phase 2 Duration: 3 months

On-Road Truck Travel (VMT): 0

Off-Road Equipment

| No. | Type | Horsepower | Load Factor | Hours/Day |
|-----|--------------------------|------------|-------------|-----------|
| 2 | Graders | 174 | 0.575 | 6.0 |
| 2 | Off Highway Trucks | 417 | 0.490 | 2.0 |
| 3 | Rubber Tired Dozers | 352 | 0.590 | 6.0 |
| 3 | Rubber Tired Loaders | 165 | 0.465 | 6.0 |
| 3 | Scrapers | 313 | 0.660 | 6.0 |
| 4 | Tractor/Loaders/Backhoes | 79 | 0.465 | 5.0 |

Phase 3 - Building Construction Assumptions

Start Month/Year for Phase 3: Sep '04

Phase 3 Duration: 21 months

Start Month/Year for SubPhase Building: Sep '04

SubPhase Building Duration: 21 months

Off-Road Equipment

| No. | Type | Horsepower | Load Factor | Hours/Day |
|-----|--------------------------|------------|-------------|-----------|
| 17 | Concrete/Industrial saws | 84 | 0.730 | 5.0 |
| 1 | Cranes | 190 | 0.430 | 3.0 |
| 2 | Off Highway Trucks | 417 | 0.490 | 2.0 |
| 10 | Other Equipment | 190 | 0.620 | 6.0 |
| 6 | Rough Terrain Forklifts | 94 | 0.475 | 4.0 |
| 2 | Tractor/Loaders/Backhoes | 79 | 0.465 | 3.0 |

Start Month/Year for SubPhase Architectural Coatings: Nov '04

SubPhase Architectural Coatings Duration: 19 months

Start Month/Year for SubPhase Asphalt: Dec '04

SubPhase Asphalt Duration: 18 months

Acres to be Paved: 15.5

Off-Road Equipment

| No. | Type | Horsepower | Load Factor | Hours/Day |
|-----|------|------------|-------------|-----------|
|-----|------|------------|-------------|-----------|

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths

EXPLANATION OF CHANGES MADE TO DEFAULT SETTINGS IN URBEMIS 2002

Project Number: 10794-00
 Project Name: Lower Lagoon Valley

The following pages include the printed results of the air pollutant emissions modeling for one of the land use components of the proposed project. The air emissions modeling was conducted using the URBEMIS 2002 for Windows computer program developed for the Yolo-Solano Air Quality Management District in May 2003. URBEMIS 2002 is programmed with EMFAC 2002 emission factors developed by the California Air Resources Board.

As part of this analysis, changes have been made to several of the default values programmed into URBEMIS 2002. These changes were made to more accurately reflect the nature of the proposed land use. Each of these changes are discussed below.

Vehicle Trip Rates

The default vehicle trip rate values were changed to be consistent with the traffic impact analysis prepared for the project.

Vehicle Fleet Mix

URBEMIS 2002 is programmed with the following state-wide average vehicle fleet mix:

| State-Wide Vehicle Type | Total | |
|---|-------|-----------------------|
| Automobiles | 54.7% | |
| Light-Duty Trucks <3,750 pounds | 15.2% | |
| Light-Duty Trucks 3,751-5,750 pounds | 16.2% | |
| Medium-Duty Trucks 5,751-8,500 pounds | 7.3% | } 10.60% Total Truck: |
| Light-Heavy-Duty Trucks 8,501-10,000 pounds | 1.1% | |
| Light-Heavy-Duty Trucks 10,001-14,000 pounds | 0.3% | |
| Medium-Heavy-Duty Trucks 14,001-33,000 pounds | 1.0% | |
| Heavy-Heavy-Duty Trucks 33,001-60,000 pounds | 0.9% | |
| Line-Haul Vehicles | 0.0% | |
| Urban Buses | 0.2% | |
| Motorcycles | 1.6% | |
| School Buses | 0.1% | |
| Motor Homes | 1.4% | |

However, this state-wide average fleet mix is not appropriate for the majority of land use analyses. The project land use assessed in this analysis is identified below along with the total percentage of trucks (medium and heavy) that are expected for this land use. The following vehicle mix was calculated based on the percentage of trucks associated with this land use. The percentage of trucks for each land use were determined from the 3rd, 4th, 5th, and 6th Editions of the ITE Trip Generation manual.

| ITE Code | Project Land Use: | Truck % | ADT | Truck # |
|------------------|----------------------------|---------|--------|---------|
| 210 | Single Family | 0.44% | 7,388 | 33 |
| 210 | Medium Density Residential | 0.44% | 1,596 | 7 |
| 520 | Elementary School | 0.44% | 180 | 1 |
| 820 | Commercial | 2.10% | 6,909 | 145 |
| 770 | Business Park | 1.84% | 14,839 | 273 |
| 430 | Golf Course | 0.44% | 488 | 2 |
| 0 | | | 0 | 0 |
| 0 | | | 0 | 0 |
| 0 | | | 0 | 0 |
| 0 | | | 0 | 0 |
| 0 | | | 0 | 0 |
| 0 | | | 0 | 0 |
| Project Totals: | | | 31,400 | 461 |
| Project Truck %: | | | 1.47% | |

| Vehicle Type | Total | |
|---|--------|----------------------|
| Automobiles | 60.29% | |
| Light-Duty Trucks <3,750 pounds | 16.75% | |
| Light-Duty Trucks 3,751-5,750 pounds | 17.85% | |
| Medium-Duty Trucks 5,751-8,500 pounds | 1.01% | } 1.47% Total Truck: |
| Light-Heavy-Duty Trucks 8,501-10,000 pounds | 0.15% | |
| Light-Heavy-Duty Trucks 10,001-14,000 pounds | 0.04% | |
| Medium-Heavy-Duty Trucks 14,001-33,000 pounds | 0.14% | |
| Heavy-Heavy-Duty Trucks 33,001-60,000 pounds | 0.12% | |
| Line-Haul Vehicles | 0.00% | |
| Urban Buses | 0.22% | |
| Motorcycles | 1.76% | |
| School Buses | 0.11% | |
| Motor Homes | 1.54% | |

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Lower Lagoon - Project.urb
Project Name: 10794-00 Lower Lagoon Valley - Proposed Project
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 |
|------------------------------|-------|-------|-------|------|------|
| TOTALS (lbs/day,unmitigated) | 67.19 | 22.51 | 16.26 | 0.20 | 0.05 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 |
|------------------------------|--------|--------|----------|------|--------|
| TOTALS (lbs/day,unmitigated) | 220.92 | 245.04 | 2,533.42 | 1.90 | 361.79 |

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 |
|------------------------------|--------|--------|----------|------|--------|
| TOTALS (lbs/day,unmitigated) | 288.11 | 267.55 | 2,549.67 | 2.11 | 361.83 |

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Lower Lagoon - Project.urb
 Project Name: 10794-00 Lower Lagoon Valley - Proposed Project
 Project Location: Lower Sacramento Valley Air Basin
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
 (Pounds/Day - Summer)

| AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated) | | | | | |
|---|-------|-------|-------|------|------|
| Source | ROG | NOx | CO | SO2 | PM10 |
| Natural Gas | 1.69 | 22.35 | 9.32 | - | 0.04 |
| Wood Stoves - No summer emissions | | | | | |
| Fireplaces - No summer emissions | | | | | |
| Landscaping | 0.67 | 0.16 | 6.93 | 0.20 | 0.01 |
| Consumer Prdcts | 64.82 | - | - | - | - |
| TOTALS(lbs/day,unmitigated) | 67.19 | 22.51 | 16.26 | 0.20 | 0.05 |

UNMITIGATED OPERATIONAL EMISSIONS

| | ROG | NOx | CO | SO2 | PM10 |
|---------------------------|--------|--------|----------|------|--------|
| Single family housing | 59.11 | 66.03 | 687.66 | 0.52 | 99.18 |
| Condo/townhouse general | 13.45 | 14.27 | 148.59 | 0.11 | 21.43 |
| Elementary school | 3.12 | 1.06 | 10.83 | 0.01 | 1.48 |
| Golf course | 3.92 | 2.80 | 28.11 | 0.02 | 3.93 |
| Commercial | 29.89 | 29.87 | 301.16 | 0.21 | 38.93 |
| Office park | 111.43 | 131.03 | 1,357.06 | 1.03 | 196.83 |
| TOTAL EMISSIONS (lbs/day) | 220.92 | 245.04 | 2,533.42 | 1.90 | 361.79 |

Includes correction for passby trips.
Includes a double counting reduction for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 75 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

| Unit Type | Trip Rate | Size | Total Trips |
|-------------------------|-----------------------------|----------|-------------|
| Single family housing | 7.30 trips / dwelling units | 1,012.00 | 7,387.60 |
| Condo/townhouse general | 5.10 trips / dwelling units | 313.00 | 1,596.30 |
| Elementary school | 0.60 trips / students | 300.00 | 180.00 |
| Golf course | 2.30 trips / acres | 212.00 | 487.60 |
| Commercial | 153.53 trips / 1000 sq. ft. | 45.00 | 6,908.85 |
| Office park | 14.84 trips / 1000 sq. ft. | 1,000.00 | 14,839.00 |

Vehicle Assumptions:

Fleet Mix:

| Vehicle Type | Percent Type | Non-Catalyst | Catalyst | Diesel |
|---------------------------|--------------|--------------|----------|--------|
| Light Auto | 60.29 | 1.10 | 98.70 | 0.20 |
| Light Truck < 3,750 lbs | 16.75 | 2.00 | 96.00 | 2.00 |
| Light Truck 3,751- 5,750 | 17.85 | 1.20 | 98.10 | 0.70 |
| Med Truck 5,751- 8,500 | 1.01 | 1.40 | 95.90 | 2.70 |
| Lite-Heavy 8,501-10,000 | 0.15 | 0.00 | 81.80 | 18.20 |
| Lite-Heavy 10,001-14,000 | 0.04 | 0.00 | 66.70 | 33.30 |
| Med-Heavy 14,001-33,000 | 0.14 | 0.00 | 20.00 | 80.00 |
| Heavy-Heavy 33,001-60,000 | 0.12 | 0.00 | 11.10 | 88.90 |
| Line Haul > 60,000 lbs | 0.00 | 0.00 | 0.00 | 100.00 |
| Urban Bus | 0.22 | 0.00 | 50.00 | 50.00 |
| Motorcycle | 1.76 | 68.80 | 31.20 | 0.00 |
| School Bus | 0.13 | 0.00 | 0.00 | 100.00 |
| Motor Home | 1.54 | 7.10 | 85.70 | 7.20 |

Travel Conditions

| | Residential | | | Commercial | | |
|---------------------------|-------------|-----------|------------|------------|----------|----------|
| | Home-Work | Home-Shop | Home-Other | Commute | Non-Work | Customer |
| Urban Trip Length (miles) | 9.7 | 3.8 | 4.6 | 7.8 | 4.5 | 4.5 |
| Rural Trip Length (miles) | 16.8 | 7.1 | 7.9 | 14.7 | 6.6 | 6.6 |
| Trip Speeds (mph) | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 |
| % of Trips - Residential | 27.3 | 21.2 | 51.5 | | | |

% of Trips - Commercial (by land use)

| | | | |
|-------------------|------|------|------|
| Elementary school | 20.0 | 10.0 | 70.0 |
| Golf course | 5.0 | 2.5 | 92.5 |
| Commercial | 2.0 | 1.0 | 97.0 |
| Office park | 48.0 | 24.0 | 28.0 |

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The wood stove option switch changed from on to off.
The fireplcase option switch changed from on to off.
The landscape year changed from 2004 to 2010.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.
The light auto percentage changed from 54.7 to 60.29.
The light truck < 3750 lbs percentage changed from 15.2 to 16.75.
The light truck 3751-5750 percentage changed from 16.2 to 17.85.
The med truck 5751-8500 percentage changed from 7.3 to 1.01.
The lite-heavy truck 8501-10000 percentage changed from 1.1 to 0.15.
The lite-heavy truck 10001-14000 percentage changed from 0.3 to 0.04.
The med-heavy truck 14001-33000 percentage changed from 1.0 to 0.14.
The heavy-heavy truck 33001-60000 percentage changed from 0.9 to 0.12.
The urban bus percentage changed from 0.2 to 0.22.
The motorcycle percentage changed from 1.6 to 1.76.
The school bus percentage changed from 0.1 to 0.13.
The motorhome percentage changed from 1.4 to 1.54.
The operational emission year changed from 2004 to 2010.
The operational winter selection item changed from 2 to 1.
The operational summer temperature changed from 85 to 75.
The operational summer selection item changed from 7 to 5.
The double counting internal work trip limit changed from to 2452.6047.
The double counting shopping trip limit changed from to 1904.5868.
The double counting other trip limit changed from to 4626.7085.
The travel mode environment settings changed from both to: none
The default/noddefault travel setting changed from nodefault to: nodefault
Side Walks/Paths: No Sidewalks
changed to: Side Walks/Paths: Most Destinations Covered
Street Trees Provide Shade: No Coverage
changed to: Street Trees Provide Shade: Some Coverage
Pedestrian Circulation Access: No Destinations
changed to: Pedestrian Circulation Access: Most Destinations
Visually Interesting Uses: No Uses Within Walking Distance
changed to: Visually Interesting Uses: Some Uses within Walking Distance
Street System Enhances Safety: No Streets
changed to: Street System Enhances Safety: Some Streets
Pedestrian Safety from Crime: No Degree of Safety
changed to: Pedestrian Safety from Crime: Moderate Degree of Safety
Visually Interesting Walking Routes: No Visual Interest
changed to: Visually Interesting Walking Routes: High Level
Interconnected Bikeways: No Bikeway Coverage
changed to: Interconnected Bikeways: Low Coverage
Bike Routes Provide Paved Shoulders: No Routes
changed to: Bike Routes Provide Paved Shoulders: Some Routes
Safe Vehicle Speed Limits: No Routes Provided
changed to: Safe Vehicle Speed Limits: Few Destinations
Safe School Routes: No Schools
changed to: Safe School Routes: One School
Uses w/in Cycling Distance: No Uses w/in Cycling Distance
changed to: Uses w/in Cycling Distance: Some Uses
Bike Parking Ordinance: No Ordinance or Unenforceable
changed to: Bike Parking Ordinance: Requires Unprotected Bike Racks
Mitigation measure Provide Wide Sidewalks and Onsite Pedestrian Facilities:1
has been changed from off to on.
Mitigation measure Provide Street Lighting:0.5
has been changed from off to on.
Mitigation measure Project Provides Shade Trees to Shade Sidewalks:0.5
has been changed from off to on.
Mitigation measure Provide Pedestrian Safety Designs/Infrastructure at Crossings:0.5
has been changed from off to on.
Mitigation measuremitop5: Park and Ride Lots
has been changed from on to off.

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

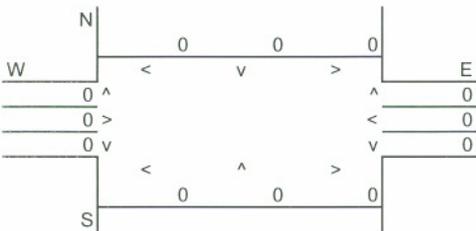
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2010

Roadway Data

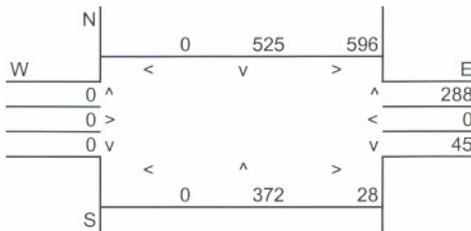
Intersection: Lagoon Valley Rd./Nelson Rd.
 Analysis Condition: Existing Plus Project Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|--------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Nelson Road | 2 | 10 | 10 |
| East-West Roadway: | Lagoon Valley Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|---|-----------|-------|
| N-S Road: | 0 | N-S Road: | 1,781 |
| E-W Road: | 0 | E-W Road: | 957 |

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000¹

| Roadway | A ₁ A ₂ A ₃ | | | B | C | Estimated CO Concentrations | | |
|-------------------------------|--|------------------------------|----------|-------|-------|-----------------------------|----------------------------------|---------|
| | Reference 25 Feet | CO Concentrations 50 Feet | 100 Feet | | | Traffic Volume | Emission Factors ¹ | 25 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 0 | 10.78 | 0.00 | 0.00 | 0.00 |
| East-West Road | 2.7 | 2.2 | 1.7 | 0 | 10.78 | 0.00 | 0.00 | 0.00 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 1,781 | 10.78 | 1.46 | 1.09 | 0.77 |
| East-West Road | 2.7 | 2.2 | 1.7 | 957 | 10.78 | 0.28 | 0.23 | 0.18 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration²

8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration²

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.0 | 4.7 | 4.0 |
| 50 Feet from Roadway Edge | 3.0 | 4.3 | 3.8 |
| 100 Feet from Roadway Edge | 3.0 | 3.9 | 3.6 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

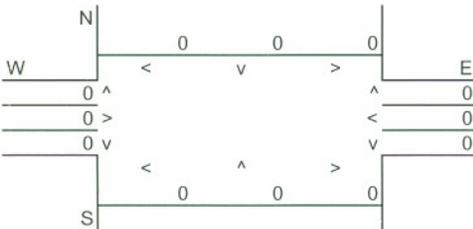
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2010

Roadway Data

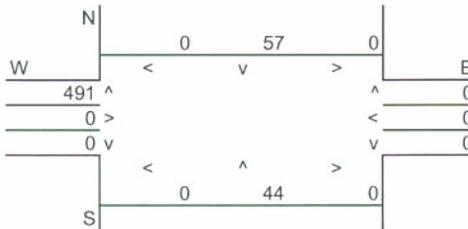
Intersection: Cherry Glen Rd./Lyon Rd.
 Analysis Condition: Existing Plus Project Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Lyon Road | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|---|-----------|-----|
| N-S Road: | 0 | N-S Road: | 592 |
| E-W Road: | 0 | E-W Road: | 491 |

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000¹

| Roadway | A ₁ A ₂ A ₃ | | | B | C | Estimated CO Concentrations | | |
|-------------------------------|--|-------------------|----------|--------|----------------------|-----------------------------|----------|---------|
| | Reference | CO Concentrations | | | | Traffic | Emission | 25 Feet |
| | 25 Feet | 50 Feet | 100 Feet | Volume | Factors ¹ | | | |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 0 | 10.78 | 0.00 | 0.00 | 0.00 |
| East-West Road | 2.7 | 2.2 | 1.7 | 0 | 10.78 | 0.00 | 0.00 | 0.00 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 592 | 10.78 | 0.49 | 0.36 | 0.26 |
| East-West Road | 2.7 | 2.2 | 1.7 | 491 | 10.78 | 0.14 | 0.12 | 0.09 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration²

8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration²

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.0 | 3.6 | 3.4 |
| 50 Feet from Roadway Edge | 3.0 | 3.5 | 3.3 |
| 100 Feet from Roadway Edge | 3.0 | 3.3 | 3.2 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

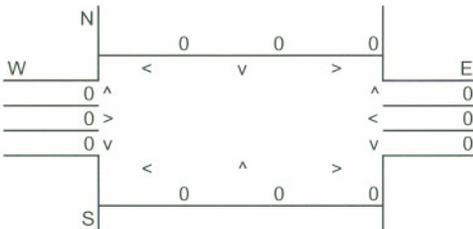
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2010

Roadway Data

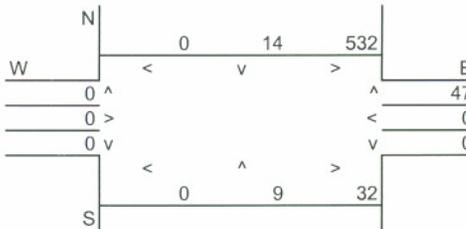
Intersection: Cherry Glen Rd./Pleasant Valley Rd.
 Analysis Condition: Existing Plus Project Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|----------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Pleasant Valley Road | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|---|-----------|-----|
| N-S Road: | 0 | N-S Road: | 602 |
| E-W Road: | 0 | E-W Road: | 611 |

Roadway CO Contributions and Concentrations

$$\text{Emissions} = (A \times B \times C) / 100,000^1$$

| Roadway | A ₁ A ₂ A ₃ | | | B | C | Estimated CO Concentrations | | |
|-------------------------------|--|-------------------|----------|--------|----------------------|-----------------------------|----------|---------|
| | Reference | CO Concentrations | | | | Traffic | Emission | 25 Feet |
| | 25 Feet | 50 Feet | 100 Feet | Volume | Factors ¹ | | | |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 0 | 10.78 | 0.00 | 0.00 | 0.00 |
| East-West Road | 2.7 | 2.2 | 1.7 | 0 | 10.78 | 0.00 | 0.00 | 0.00 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 2.7 | 2.2 | 1.7 | 602 | 10.78 | 0.18 | 0.14 | 0.11 |
| East-West Road | 7.6 | 5.7 | 4.0 | 611 | 10.78 | 0.50 | 0.38 | 0.26 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

$$\text{Peak Hour Emissions} = \text{North-South Concentration} + \text{East-West Concentration} + \text{Background 1-hour Concentration}^2$$

$$\text{8-Hour Emissions} = ((\text{Highest Peak Hour Concentration} - \text{Background 1-hour Concentration}) \times \text{Persistence Factor}) + \text{Background 8-hour Concentration}^2$$

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 3.0 | 3.7 | 3.4 |
| 50 Feet from Roadway Edge | 3.0 | 3.5 | 3.3 |
| 100 Feet from Roadway Edge | 3.0 | 3.4 | 3.2 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

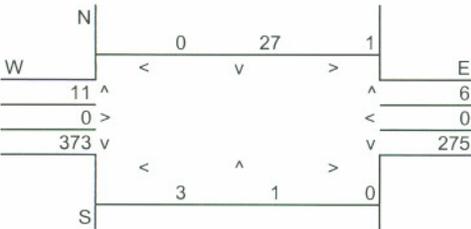
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2010

Roadway Data

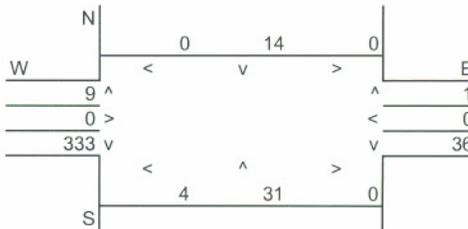
Intersection: Cherry Glen Rd./Pleasant Valley Rd.
 Analysis Condition: Existing Plus Project Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|-------------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Little Cherry Glen Road | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|-----|-----------|-----|
| N-S Road: | 679 | N-S Road: | 418 |
| E-W Road: | 387 | E-W Road: | 346 |

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000¹

| Roadway | A ₁ A ₂ A ₃ | | | B | C | Estimated CO Concentrations | | |
|-------------------------------|--|---------------------------|----------|-----|-------|-----------------------------|-------------------------------|---------|
| | Reference 25 Feet | CO Concentrations 50 Feet | 100 Feet | | | Traffic Volume | Emission Factors ¹ | 25 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 679 | 10.78 | 0.56 | 0.42 | 0.29 |
| East-West Road | 2.7 | 2.2 | 1.7 | 387 | 10.78 | 0.11 | 0.09 | 0.07 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 418 | 10.78 | 0.34 | 0.26 | 0.18 |
| East-West Road | 2.7 | 2.2 | 1.7 | 346 | 10.78 | 0.10 | 0.08 | 0.06 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration²

8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration²

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|----------------|----------------|--------|
| 25 Feet from Roadway Edge | 3.7 | 3.4 | 3.4 |
| 50 Feet from Roadway Edge | 3.5 | 3.3 | 3.3 |
| 100 Feet from Roadway Edge | 3.4 | 3.2 | 3.2 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Number: Lower Lagoon Valley
Project Title: 10794-00

Background Information

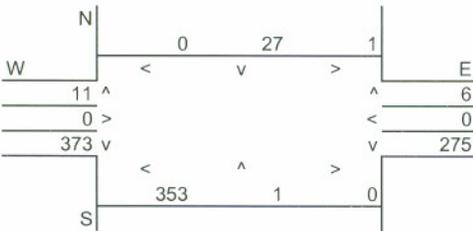
Nearest Air Monitoring Station measuring CO: 0
 Background 1-hour CO Concentration (ppm): 3.0
 Background 8-hour CO Concentration (ppm): 3.0
 Persistence Factor: 0.6
 Analysis Year: 2010

Roadway Data

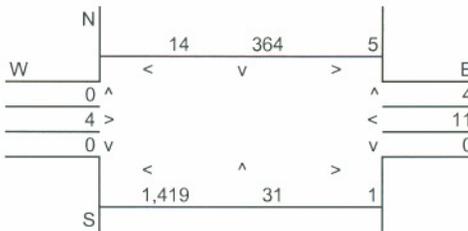
Intersection: Rivera Rd./Cherry Glen Rd.
 Analysis Condition: Existing Plus Project Traffic Volumes

| | Roadway Type | No. of Lanes | Average Speed | |
|----------------------|------------------|--------------|---------------|------|
| | | | A.M. | P.M. |
| North-South Roadway: | Rivera Road | 2 | 10 | 10 |
| East-West Roadway: | Cherry Glen Road | 2 | 10 | 10 |

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

| | | | |
|-----------|-------|-----------|-------|
| N-S Road: | 1,029 | N-S Road: | 1,815 |
| E-W Road: | 737 | E-W Road: | 1,448 |

Roadway CO Contributions and Concentrations

$$\text{Emissions} = (A \times B \times C) / 100,000^1$$

| Roadway | A ₁ | A ₂ | A ₃ | B | C | Estimated CO Concentrations | | |
|-------------------------------|----------------------|------------------------------|----------------|-------------------|----------------------------------|-----------------------------|---------|----------|
| | Reference 25 Feet | CO Concentrations 50 Feet | 100 Feet | Traffic Volume | Emission Factors ¹ | 25 Feet | 50 Feet | 100 Feet |
| A.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 1,029 | 10.78 | 0.84 | 0.63 | 0.44 |
| East-West Road | 2.7 | 2.2 | 1.7 | 737 | 10.78 | 0.21 | 0.17 | 0.14 |
| P.M. Peak Traffic Hour | | | | | | | | |
| North-South Road | 7.6 | 5.7 | 4.0 | 1,815 | 10.78 | 1.49 | 1.12 | 0.78 |
| East-West Road | 2.7 | 2.2 | 1.7 | 1,448 | 10.78 | 0.42 | 0.34 | 0.27 |

¹ Methodology and emission factors from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

Total Roadway CO Concentrations

$$\text{Peak Hour Emissions} = \text{North-South Concentration} + \text{East-West Concentration} + \text{Background 1-hour Concentration}^2$$

$$\text{8-Hour Emissions} = ((\text{Highest Peak Hour Concentration} - \text{Background 1-hour Concentration}) \times \text{Persistence Factor}) + \text{Background 8-hour Concentration}^2$$

| | A.M. Peak Hour | P.M. Peak Hour | 8-Hour |
|----------------------------|-------------------|-------------------|--------|
| 25 Feet from Roadway Edge | 4.1 | 4.9 | 4.1 |
| 50 Feet from Roadway Edge | 3.8 | 4.5 | 3.9 |
| 100 Feet from Roadway Edge | 3.6 | 4.0 | 3.6 |

² Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).