URBAN CROSSROADS

June 15, 2021

Ms. Deirdre McCollister
MIG, Inc.
1500 Iowa Avenue, Suite 110
Riverside, California 92507

SUBJECT: ALESSANDRO WAREHOUSE VEHICLE MILES TRAVELLED (VMT) ANALYSIS

Dear Ms. Deirdre McCollister:

The following Vehicle Miles Travelled (VMT) Analysis has been prepared for the proposed Alessandro Warehouse (**Project**), which is located south of Alessandro Boulevard on either side of Chagall Court in the City of Moreno Valley.

PROJECT OVERVIEW

The Project is proposed to consist of up to 396,488 square feet (sf) of warehouse use. Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. (1) The proposed Project is anticipated to generate a total of 742 vehicle trip-ends per day (expressed in actual vehicles). (2) The site is currently designated as Commercial in the City's General Plan, which would require a land use and zoning change to Light Industrial use.

BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which requires all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**). (3) Based on OPR's Technical Advisory, the City of Moreno Valley has prepared their Transportation Impact Analysis Preparation Guide for Vehicle Miles Traveled and Lovel of Service Assessment (**City Guidelines**). (4) This analysis has been prepared based on the City Guidelines.

PROJECT SCREENING

Consistent with City Guidelines, projects that meet certain screening criteria based on their location and project type may be presumed to result in a less than significant transportation impact. Consistent with

the screening criteria recommended in City Guidelines, the City of Moreno Valley will utilize the following project screening thresholds that may be applicable to the Project:

- Transit Priority Area (TPA) Screening
- Low VMT Area Screening
- Project Type Screening

A land use project need only meet one of the above screening criteria to result in a less than significant impact.

TPA SCREENING

Consistent with guidance identified in the City Guidelines, projects located within a Transit Priority Area (TPA) (i.e., within ½ mile of an existing "major transit stop"[1] or an existing stop along a "high-quality transit corridor"[2]) may be presumed to have a less than significant impact absent substantial evidence to the contrary. However, the presumption may not be appropriate if a project:

- Has a Floor Area Ratio (FAR) of less than 0.75;
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

The Project is not located within ½ mile of an existing major transit stop, or along a high-quality transit corridor.

The TPA screening threshold is not met.

LOW VMT AREA SCREENING

The City Guidelines also states that, "residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area."[3]

[1] Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").
[2] Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").
[3] City Guidelines; page 23.

Based on the Screening Tool results provided in Attachment A, the Project is located within a low VMT generating zone. The Project resides within TAZ 3712 and was shown to generate 10.64 VMT per worker whereas the City's impact threshold is 11.01 VMT per worker. As stated previously, the site is currently designated as Commercial in the City's General Plan, which would require a land use/zoning change to Light Industrial use. After further research into the TAZ, the socioeconomic area for TAZ 3712 consists primarily of retail employment and not industrial use.

The Low VMT Area screening threshold is not met.

PROJECT TYPE SCREENING

The City Guidelines identify that local serving retail with buildings less than 50,000 square feet or other local serving essential services (e.g., day care centers, public schools, medical/dental office buildings, etc.) are presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, small projects anticipated to generate low traffic volumes and by association low greenhouse gas (GHG) emissions are also assumed to cause a less than significant impact. The City's small project threshold of 285,700 square feet of high cube transload and short-term storage warehouse land use would be exceeded by the proposed Project's total building square footage.

The Project Type screening threshold is not met.

PROJECT GENERATED VMT

Projects that do not meet one or more of the above described VMT screening criteria should prepare a project level VMT analysis. RIVTAM is a useful tool to estimate VMT as it considers interaction between different land uses based on socio-economic data such as population, households, and employment. RIVTAM is a travel forecasting model that represents a sub-area (Riverside County) of the Southern California Association of Governments (SCAG) regional traffic model. RIVTAM was designed to provide a greater level of detail and sensitivity in the Riverside County area as compared to the regional SCAG model. City Guidelines identifies RIVTAM as the appropriate tool for conducting VMT modeling for land use projects within the County of Riverside.

Project generated VMT has been calculated using the most current version of RIVTAM. Adjustments in socio-economic data (SED) (i.e., employment) for the Project have been made to a separate TAZ within the model to reflect the Project's industrial warehouse land use. A separate TAZ has been utilized to isolate vehicle trips to/from the Project. Table 1 summarizes the employment factors and employment estimates for the Project. As shown, the Project is estimated to generate 385 employees.

TABLE 1: EMPLOYMENT DENSITY FACTORS

	Project
Building Square Footage	396,488
Employment Density Factor[4]	1 employee/1,030 SF
Employment	385

Adjustments to employment for the Project's TAZ were made to both the base year model (2012) and the cumulative year model (2040). The base year model and cumulative year model were both run inclusive of the Project's employment. Project-generated home-based work VMT was then calculated following the VMT calculation procedures identified in Exhibit C of the City Guidelines and includes home-based work trips that are both internal and external to the RIVTAM model boundaries. The home-based work VMT value is then normalized by dividing by the number of Project employees. Finally, the base year and cumulative VMT results were interpolated to derive the existing VMT. As shown in Table 2, the existing (2020) Project generated VMT per employee is 12.35.

TABLE 2: PROJECT VMT PER EMPLOYEE

	Base Year (2012)	Cumulative (2040)	Existing (2020)
Home-based Work VMT	4,754	5,234	4,891
Employment	385	385	385
VMT per Employee	12.35	13.59	12.71

Western Riverside Council of Governments (WRCOG) publishes VMT data for each of its member agencies as derived from the RIVTAM model for both the base year (2012) model and the cumulative year (2040) model. Urban Crossroads has obtained these published results and similar to the project generated VMT calculation used linear interpolation to determine the City's existing (2020) VMT per employee.

The adopted City Guidelines state that the City of Moreno Valley has selected a threshold based on the existing VMT performance in the City. More specifically, the City Guidelines state that a project would have a significant VMT impact if, in the Existing Plus Project scenario, its net VMT per capita (for residential projects) or per employee (for office and industrial projects) exceeds the per capita VMT for Moreno Valley. For all other uses, a net increase in VMT would be considered a significant impact.[5]

Table 3 illustrates a comparison between the baseline (2020) project generated VMT per employee to the existing (2020) City of Moreno Valley VMT per employee. As shown, project generated VMT per employee would be 11.69 percent above the existing City of Moreno Valley VMT per employee. As such, the Project's impact based on project generated VMT is potentially significant.

[4] Employee Density Factor was obtained from the County of Riverside General Plan Appendix E-2: Socioeconomic Build-Out Assumptions and Methodology (see Table E-5, Commercial Employment Factors, Page 3).
[5] City Guidelines; page 26.

TABLE 3: PROJECT VMT PER EMPLOYEE COMPARISON

	Existing (2020) City of Moreno Valley	Baseline (2020) Project
VMT per employee	11.38	12.71
Percent Change	+11.69%	
Potential Impact?	Yes	

PROJECT'S CUMULATIVE IMPACT ON VMT

The General Plan land use designations and zoning for the Project site are Commercial. The proposed Project results in jobs within the total number of jobs projected by the current Southern California Association of Governments (SCAG) Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS). However, the proposed Project is not consistent with the underlying employment assumptions upon which the current RTP/SCS was based. The adopted City Guidelines state that "if it is not consistent with the RTP/SCS, then it would have a significant VMT impact if for office and industrial projects its net VMT per employee exceeds the average VMT per employee for Moreno Valley in the RTP/SCS horizon year." [6]

As presented in Table 4, the cumulative VMT per employee within the City of Moreno Valley does increase under the plus project condition. As such, the Project's contribution to cumulative impacts for VMT is considered potentially significant.

TABLE 4: CUMULATIVE VMT PER EMPLOYEE

	Moreno Valley	Project
VMT		5,234
Employee		385
VMT per Employee	12.31[7]	13.59
Change in VMT	+1.28	
Percent Change	+10.40%	
Potential Impact?	Yes	

POTENTIAL VMT REDUCTION MEASURES

Transportation demand management (TDM) strategies have been evaluated for reducing VMT impacts determined to be potentially significant. The effectiveness of TDM strategies to reduce VMT has been

[6] City Guidelines; page 26.
[7] Obtained from WRCOG

determined based on the SB 743 Implementation TDM Strategy Assessment (November 11, 2019 Fehr & Peers) (**WRCOG Report**) prepared for WRCOG and the Quantifying Greenhouse Gas Mitigation Measures (CAPCOA, 2010). The WRCOG Report indicates that of the 50 transportation measures presented by CAPCOA, only 41 are applicable at a building and site level. The remaining 9 measures are functions of, or depend on, site location and/or actions by local and regional agencies or funders.

The WRCOG Report goes on to provide a review of the 41 transportation measures identified by CAPCOA and determines that for areas within the WRCOG region only 7 of those measures may be effective at an individual project level. Evaluation of potentially applicable TDM strategies in the context of the proposed Project is summarized below.

- *Measure 1: Increase Diversity of Land Uses (LUT-3).* Having different types of land uses near one another can decrease VMT since trips between land use types are shorter and may be accommodated by non-auto modes of transportation. For example, when residential areas are in the same neighborhood as retail and office buildings, a resident does not need to travel outside of the neighborhood to meet his/her trip needs.

  Remarks: The Project consists of the development of warehouse use with a combined building area of approximately 396,488 sf. In order for the above measure to apply, at least three of the following will be located within ¼ mile of the Project: Residential Development, Retail Development, Park, Open Space, or Office (or institutional uses). There is residential, retail, and office/institutional developments located off-site within ¼ mile of the Project. As noted by CAPCOA (Quantifying Greenhouse Gas Mitigation Measures, p. 162), the diversity of uses within close proximity of the Project can result in a VMT reduction between 9.0 and 30.0%. As the proposed Project does not include a mix of land uses within the development site, but is instead located within a sphere of influence to high density residential, retail, and office/institutional uses (i.e., walking distance), this particular TDM measure may be evaluated further as a means of providing a reduction in Project VMT. It should be noted that RIVTAM is a sub-regional travel demand model and is not designed to accurately capture all potential project-level interactions with local land uses and alternative transportation modes (i.e., walking and biking). Based on a review of the land uses withing ¼ mile of the Project (walking distance), there is single family and multi-family residential, local serving retail, and other employment uses. As noted by CAPCOA, the proximity of these complementary land uses helps to further reduce VMT. Based on the calculations conducted for the ¼-mile area around the Project site (see Attachment B), the VMT reduction is estimated to be 37% or up to a maximum of 30%. As such, the diverse mix of land uses has the potential to reduce VMT by as much as 30%.

- *Measure 2: Provide Pedestrian Network Improvements (SDT-1).* Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive assuming that desirable destinations are within walking distance of the Project. This mode shift results in people driving less and a reduction in VMT.

  Remarks: Limited pedestrian access exists along the Project's frontage. The Project's implementation of this measure through the construction of on-site connections to the existing sidewalks off-site could provide for a nominal reduction in Project VMT. As noted by CAPCOA (Quantifying Greenhouse Gas Mitigation Measures, p. 187), the provision of sidewalks on-site that connect to off-site pedestrian walkways linking to other complementary land uses within a suburban center context can result in a VMT reduction between 0 and 2.0%. Given the complementary land uses within walking distance of the Project site, this particular TDM measure may be evaluated further as a means of providing a reduction in Project VMT. As the Project is to

provide pedestrian accommodations along the Project's frontage, the improvement is estimated to provide a 1% VMT reduction. Supporting calculations are provided in Attachment B.

- *Measure 3: Provide Traffic Calming Measure (SDT-2).* Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift will result in a decrease in VMT. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.

  Remarks: There is limited opportunity for the Project to implement meaningful enhanced traffic calming measures in the area that would encourage a shift in travel mode to walking or biking. This measure is therefore not evaluated further as means of providing a reduction in Project VMT.

- *Measure 4: Implement Car-Sharing Program (TRT-9).* Implementing a car-sharing program would allow individuals to have on-demand access to a shared fleet of vehicles on an as-needed basis. User costs are typically determined through mileage or hourly rates, with deposits and/or annual membership fees.

  Remarks: This particular TDM measure would be solely dependent on a future building tenant and may be considered as infeasible due to lack of available service providers in the area. For these reasons, the measure is not evaluated further as means of providing a reduction in Project VMT.

- *Measure 5: Implement Transit Access Improvements (TST-2).* This measure improves access to transit facilities through sidewalk/crosswalk safety enhancements and bus shelter improvements.

  Remarks: The Riverside Transit Agency (RTA), a public transit agency serving various jurisdictions within Riverside County currently provides service in the area. RTA Routes 11 and 20 directly serves the study area with existing nearby bus stops located east of the intersection of Fredrick Street at Alessandro Boulevard and another located just east of the Graham Street at Alessandro Boulevard intersection. Although providing improved pedestrian access to these existing bus stops will help to increase usage by future Project employees, CAPCOA does not identify specific VMT reduction percentages based on this measure alone. As such, no additional VMT reduction amount is taken.

- *Measure 6: Encourage Telecommuting and Alternative Work Schedule (TRT-6).* Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks.

  Remarks: The effectiveness of this measure is dependent on the ultimate building tenant(s) which are unknown currently. As such, this measure is therefore not evaluated further as means of providing a reduction in Project VMT.

- *Measure 7: Provide Ride-Sharing Programs (TRT-3).* This strategy focuses on encouraging carpooling and vanpooling but its ultimate implementation is limited as Measure 6 above.

  Remarks: The effectiveness of this measure is dependent on the ultimate building tenant(s) which are unknown currently. As such, this measure is therefore not evaluated further as means of providing a reduction in Project VMT.

In total, the combined VMT reduction may be 31% between Mitigation Measures 1 and 2. As noted by CAPCOA, the maximum cross-category reduction for any combination of land use, neighborhood enhancements, parking and transit strategies for projects located within a suburban center context is

15.0%.[8] The suburban center serves the population of the suburb with office, retail and housing which is denser than the surrounding suburb. Table 5 provides justification for the suburban center classification:

TABLE 5: SUBURBAN CENTER CLASSIFICATION

Characteristic	Justification
Ratio or relationship between jobs and housing	The area includes multiple land uses which serves the population with office, retail, and housing. The suburban setting has a characteristic of having a poor job-to-housing ratio whereas the suburban center is classified as having a balanced ratio. CAPCOA defines a balanced job-to-population ratio as a ratio ranging from 0.9 to 1.2. In the RivTAM base model, it is estimated that the housing within 1 to 1 ½ miles is 3,893, the population within 1 to 1 ½ miles is 15,740, and the employment within 1 to 1 ½ miles is 14,426. The resulting job-to-housing ratio is 0.92. This would suggest that the ratio between jobs and housing are balanced and the location setting is a suburban center. Suburban settings have a poor job-to-housing ratio.
Transit availability	The City of Moreno Valley and nearby jurisdiction of City of Riverside operate in a typical grid street pattern. A commuter rail station exists within two miles to the west (i.e., Moreno Valley/March Field Metrolink Station) and the existing RTA Route 20 includes a direct route/bus stops from the study area to the Metrolink Station. The bus stop is located along Alessandro Boulevard 400 feet west of the Project frontage. Suburban settings have no immediate access to commuter rail stations.

Therefore, for the purposes of this evaluation, the VMT reduction strategies described previously (i.e., Measures 1 and 2) would combine for a maximum VMT reduction of 15.0%.

CONCLUSION

Project generated VMT per employee was found to exceed citywide baseline VMT per employee threshold by 11.69% and citywide cumulative VMT per employee threshold by 10.40%. With implementation of the aforementioned TDM measures (Measures 1 and 2), a maximum reduction in VMT of 15.0% could be achieved, which would reduce the Project's impact to less than significant.

If you have any questions, please contact me directly at aevatt@urbanxroads.com.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
President

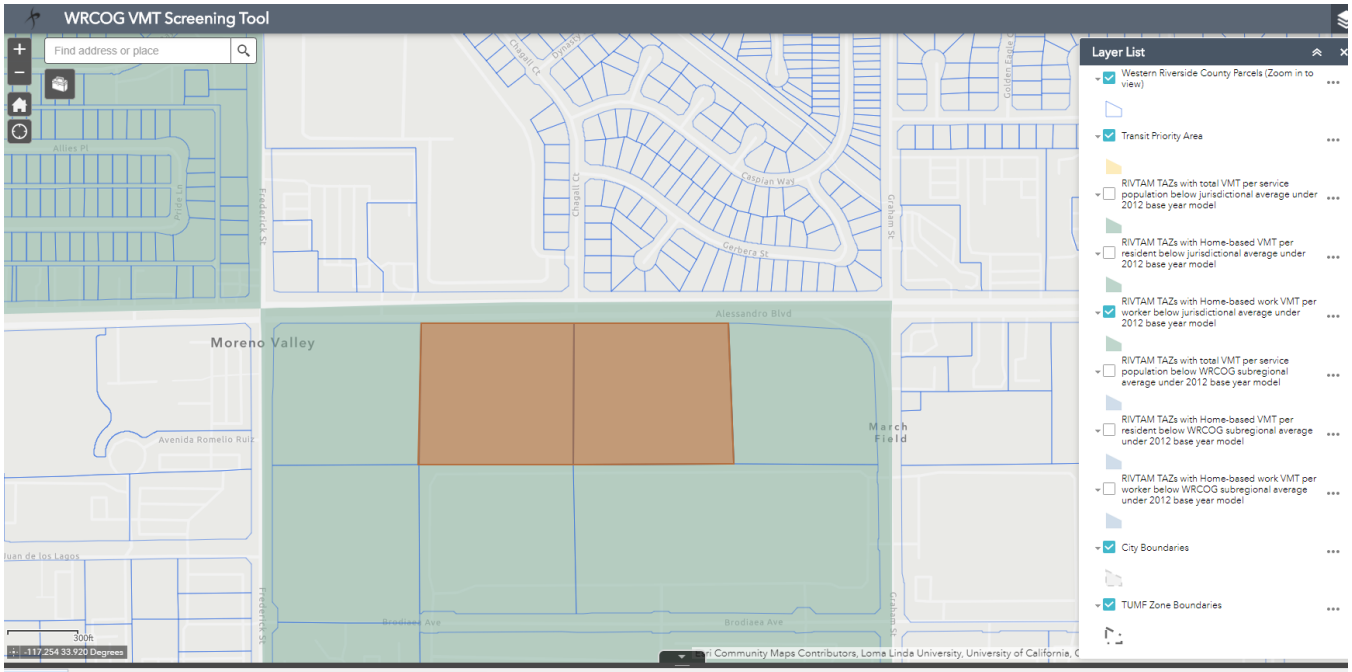
Robert Vu, PE
Transportation Engineer

[8] Quantifying Greenhouse Gas Mitigation Measures (CAPCOA, 2010); Page 58

REFERENCES

1. **Institute of Transportation Engineers.** *Trip Generation Manual.* 10th Edition. 2017.
2. **Urban Crossroads, Inc.** *Alessandro Warehouse.* City of Moreno Valley : s.n., September 2020.
3. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
4. **City of Moreno Valley.** *Transportation Impact Analysis Preparation Guide for Vehicle Miles Traveled and Lovel of Service Assessment.* City of Moreno Valley : s.n., June 2020.

ATTACHMENT A
MAP-BASED VMT SCREENING RESULTS



Output Layer | Western Riverside County Parcels (Zoom in to view) | City Boundaries | TUMF Zone Boundaries

Options | Filter by map extent | Zoom to | Clear selection | Refresh

OBJECTID_12_13	Within a Transit Priority Area (TPA)?	Within a low VMT generating TAZ based on Total VMT?	Within a low VMT generating TAZ based on Residential Home-Based VMT?	Within a low VMT generating TAZ based on Home-Based Work VMT?	Additional Details	Shape_Length	Shape_Area
1	No (Fail)	No (Fail)	Yes (Pass)	Yes (Pass)	• TPA designation is based on October 2018 conditions. • Screening results are based on location of parcel centroids. If results are desired considering the full parcel, please refer to the associated map layers to visually review parcel and TAZ boundary relationship.	1391.587212115818	103965.39040314803

APN:297170002; TAZ:3,712

Within a Transit Priority Area (TPA)?
No (Fail)

Within a low VMT generating TAZ based on Total VMT?
No (Fail)
Jurisdictional average 2012 daily total VMT per service population = 24.49
Project TAZ 2012 daily total VMT per service population = 94.73

Within a low VMT generating TAZ based on Residential Home-Based VMT?
Yes (Pass)
Jurisdictional average 2012 daily residential home-based VMT per capita = 12.79
Project TAZ 2012 daily residential home-based VMT per capita = 0.00

Within a low VMT generating TAZ based on Home-Based Work VMT?
Yes (Pass)
Jurisdictional average 2012 daily home-based work VMT per worker = 11.01
Project TAZ 2012 daily home-based work VMT per worker = 10.64

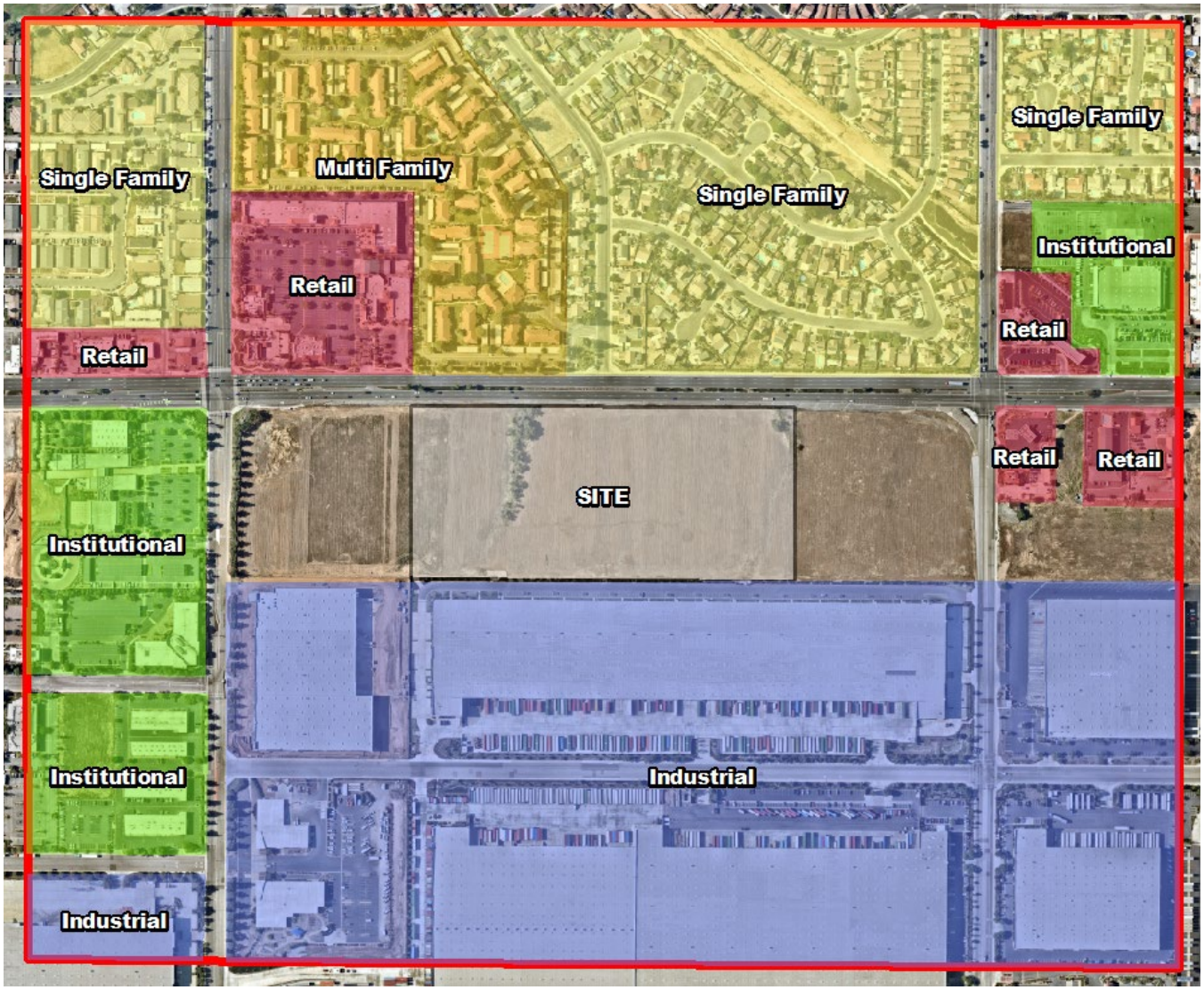
Notes:

- TPA designation is based on October 2018 conditions.
- Screening results are based on location of parcel centroids. If results are desired considering the full parcel, please refer to the associated map layers to visually review parcel and TAZ boundary relationship.
- If VMT screening is desired for current baseline conditions, contact WRCOG for 2012 and 2040 VMT data. Interpolated VMT results can be obtained using the complete data set.
- VMT results do not account for full length of trips that occur beyond the SCAG region.

ATTACHMENT B
VMT REDUCTION MEASURES

Mitigation Method 1: Increase Diversity of Land Uses (LUT-3) Calculations

EXHIBIT A: LAND USE AREA MAP



Land Use	Area	Ratio
Single Family Residential	2,866,522	0.26
Multifamily Residential	876,712	0.08
Commercial	772,444	0.07
Industrial	5,269,701	0.48
Institutional/Office	1,141,629	0.10
Park	0	0
Total	10,927,007	1.00

Mitigation Method:

% VMT Reduction = Land Use * B [not to exceed 30%]

Where

Land Use = Percentage increase in land use index versus single use development = (land use index – 0.15)/0.15 (see Appendix C for detail)

Land use index = -a / ln(6)

(from [2])

$$a = \sum_{i=1}^{6} a_i \times \ln(a_i)$$

a_i = building floor area of land use i / total square feet of area considered

- a_1 = single family residential
- a_2 = multifamily residential
- a_3 = commercial
- a_4 = industrial
- a_5 = institutional
- a_6 = park

if land use is not present and a_i is equal to 0, set a_i equal to 0.01

B = elasticity of VMT with respect to land use index (0.09 from [1])

not to exceed 500% increase

Mitigation Method 1 Calculation for the Project (based Exhibit A: Land Use Area Map):

a1 = single family residential = 0.26

a2 = multifamily residential = 0.08

a3 = commercial = 0.07

a4 = industrial = 0.48

a5 = institutional/office = 0.10

a6 = park = 0.01

Land Use Index = -[0.26*ln(0.26) + 0.08*ln(0.08) + 0.07*ln(0.07) + 0.48*ln(0.48) + 0.10*ln(0.10) + 0.01*ln(0.01)] / ln(6) = 0.76

Low Range % VMT Reduction = (0.76 – 0.15)/0.15 *0.09 = 37%

Mitigation Method 2: Provide Pedestrian Network Improvements (SDT-1) Mitigation Method Calculation for the Project:

Mitigation Method:

Estimated VMT Reduction	Extent of Pedestrian Accommodations	Context
2%	Within Project Site and Connecting Off-Site	Urban/Suburban
1%	Within Project Site	Urban/Suburban
< 1%	Within Project Site and Connecting Off-Site	Rural

The proposed Project is responsible for constructing Alessandro Boulevard at its ultimate half-section width. The site-adjacent improvement includes constructing pedestrian facilities along the Project's frontage. As such, the VMT reduction is estimated to be 1%.