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February 2, 2021

Mr. Brian Hardy  
Richland Communities  
3161 Michelson Drive, Suite 425  
Irvine, CA 92612

**SUBJECT: RENAISSANCE RANCH SPECIFIC PLAN (SP00333A01) VEHICLE MILES TRAVELLED (VMT) ANALYSIS**

Dear Mr. Brian Hardy:

The following Vehicle Miles Travelled (VMT) Analysis has been prepared for the proposed Renaissance Ranch Specific Plan development (**Project**), which is located east of Horsethief Canyon Road and south of the I-15 Freeway in the County of Riverside.

## **PROJECT OVERVIEW**

The Project is proposing to amend the Specific Plan with a mix of industrial and business park uses, as described below:

- 423,403 square feet of high-cube cold storage warehousing use within the Light Industrial area (20% of the light industrial square footage, calculated assuming 0.5 floor-to-area ratio)
- 740,956 square feet of high-cube fulfillment center warehousing use within the Light Industrial area (35% of the light industrial square footage, calculated assuming 0.5 floor-to-area ratio)
- 740,956 square feet of high-cube transload/short-term storage warehousing use within the Light Industrial area (35% of the light industrial square footage, calculated assuming 0.5 floor-to-area ratio)
- 211,702 square feet of manufacturing use within the Light Industrial area (10% of the light industrial square footage, calculated assuming 0.5 floor-to-area ratio)
- 156,816 square feet of warehousing use within the Business Park area (40% of the Business Park square footage, calculated assuming 0.5 floor-to-area ratio)
- 235,224 square feet of industrial park use within the Business Park area (60% of the Business Park square footage, calculated assuming 0.5 floor-to-area ratio)

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](#), 10<sup>th</sup> Edition, 2017. (1) The proposed Project is anticipated to generate a total of 5,422 vehicle trip-ends per day (see Attachment A).

## 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**). (2) Based on OPR’s Technical Advisory, the County of Riverside has adopted their Transportation Analysis Preparation Guide (County Guidelines). (3) This analysis has been prepared based on the County’s Guidelines.

## VMT THRESHOLDS

As outlined in the County Guidelines, office or industrial projects should be evaluated on an efficiency metric. Thresholds of significance based on the adopted County Guidelines are as follows:

**TABLE 1: VMT THRESHOLDS OF SIGNIFICANCE**

Land Use	VMT Threshold	Basis
Office or industrial	14.24 VMT per employee	Existing county-wide average Work VMT per employee

## ANALYSIS SCENARIOS

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. County Guidelines identifies RIVTAM as the appropriate tool for conducting VMT modeling for land use projects within the County of Riverside.

Project VMT has been calculated using the most current version of RIVTAM. Adjustments in socio-economic data (SED) (i.e., population, households, and employment) have been made to a separate traffic analysis zones (TAZs) within the RIVTAM model to reflect the Project’s proposed land uses (i.e., residential and retail). Consistent with County Guidelines, VMT analysis was conducted for existing and cumulative scenarios that include the following:

- **Existing Conditions** – RIVTAM base year (2012) traffic model conditions.
- **Existing Plus Project Conditions** – RIVTAM base year (2012) traffic model plus the proposed Project land uses.

- **Cumulative No Project Conditions** – RIVTAM cumulative model (2040) without the proposed Project land use changes (i.e., adopted land use assumptions).
- **Cumulative Plus Project Conditions** - RIVTAM cumulative model (2040) plus the proposed Project land use changes.

## PROJECT LAND USE CONVERSION

For light industrial land uses, the conversion of land use to socio-economic data (SED) was based on conversion factors used for the County of Riverside’s General Plan Update, which are contained in *Appendix E-2: Socioeconomic Build-Out Assumptions and Methodology* of the County’s General Plan. For non-residential uses such as the light industrial land use component, a conversion of estimated building square footage was developed based on specific floor area ratios (FAR) that are allowed under the specific plan. The ratio of the number of employees per building square footage as identified in the County’s General Plan was then used to estimate Project employees for the industrial land use component. Table 2 summarizes the employment estimates for the Project. As shown, the Project is estimated to generate 2,436 employees.

**TABLE 2: EMPLOYMENT DENSITY FACTORS**

	<b>Project</b>
Building Square Footage	2,509,057
Employment Density Factor <sup>1</sup>	1 employee/1,030 SF
Employment	2,436

## VMT ASSESSMENT

Adjustments to employment for the Project’s TAZ were made to the RIVTAM base year model. Project-generated home-based work VMT was then calculated following the VMT calculation procedures identified in Appendix E of the County 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.

As noted in the County Guidelines, the Project may result in a significant project generated VMT impact if the base model year project generated VMT per employee exceeds the existing county-wide average VMT per employee (i.e., County threshold). The existing county-wide average VMT per employee is 14.24 for office and industrial uses.<sup>2</sup> Table 3 provides a comparison of the VMT analysis conducted for existing and cumulative scenarios.

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<sup>1</sup> 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).

<sup>2</sup> County Guidelines: Figure 7 – VMT Threshold of Significance.

As shown in Table 3, the Existing Plus Project generated VMT per employee is 22.76 which would exceed the County’s adopted threshold by approximately 60 percent. The transportation impact based on the assessment of Project generated VMT as compared to the County’s adopted threshold is potentially significant.

**TABLE 3: PROJECT VMT PER EMPLOYEE**

	VMT per Employee	Percent Change
County Threshold	14.24	
<b>Existing (2012)</b>		
Renaissance Ranch Specific Plan	Not Applicable <sup>3</sup>	
Riverside County	14.24	0.00%
<b>E+P</b>		
Renaissance Ranch Specific Plan	22.76	59.81%
Riverside County	14.67	3.04%
<b>Cumulative No Project</b>		
Renaissance Ranch Specific Plan	Not Applicable	
Riverside County	16.35	14.83%
<b>Cumulative Plus Project</b>		
Renaissance Ranch Specific Plan	22.97	61.33%
Riverside County	16.44	15.48%

Appendix E of the County Guidelines states the following, “for Specific Plans and Community Plans, Riverside County requires that Cumulative analysis be completed irrespective of the findings of Baseline Plus Project conditions. Additionally, No Project and Plus Project conditions under both the Baseline and Cumulative must provide total Regional VMT values. Note that the Regional VMT values are for informational purposes and are not used as the basis for the determination of a significant impact.” Table 3 provides a comparison of VMT per employee for cumulative no project and plus project scenarios. The adopted land use assumptions for the Cumulative No Project Conditions consist primarily of residential uses. As such, the Work VMT per employee is anticipated to increase as the adopted residential uses are proposed to change to employment uses.

Total link-level VMT was also extracted from the for the “No Project” and “Plus Project” base year (2012) and cumulative year (2040) models (see Table 4).

<sup>3</sup> The adopted Specific Plan consists entirely of residential and other non-employment land uses. The efficiency metric of VMT per employee is not applicable for the No Project condition.

**TABLE 4: RIVERSIDE COUNTY TOTAL VMT**

	Riverside County
Base Year (2012) No Project	53,661,883
Base Year (2012) With Project	53,686,366
Cumulative Year (2040) No Project	92,508,071
Cumulative Year (2040) With Project	92,545,074

## POTENTIAL VMT REDUCTION STRATEGIES

Projects that exceed VMT threshold(s) are required to mitigate to the extent feasible its transportation impact. VMT reduction strategies for large projects and specific plans may include altering a project's density, land use mix, site design, and availability of transit, bicycle, and pedestrian facilities. For smaller individual development projects, VMT may be reduced through the use of transportation demand management (TDM) strategies.<sup>4</sup>

The Project's VMT reduction strategies as the specific plan level should include the following:

- Provide pedestrian and bicycle network improvements within the development connecting to existing off-site facilities at Horsethief Canyon Road, Bolo Court and Hostettler Road.
- Where applicable ensure design of key intersections and roadways encourage the use of walking, biking and transit.
- Collaborate with the Riverside Transit Authority (RTA) to determine the feasibility of providing new or re-route existing transit services to the site.

In addition, TDM strategies that may be applicable at the implementing project level may include:

- Commute trip reduction (CTR) programs offered by individual building tenants that would encourage the use of vanpools, carpooling, public transit, and biking.
- CTR programs may also provide for alternative work or compressed work schedules to reduce the number of days an employee commutes to work.
- Provision of on-site facilities to provide end of trip services for bicycling such as secure bike parking, storage lockers and showering facilities.

## CONCLUSION

In summary, project generated VMT per employee was found to exceed the existing county-wide average VMT per employee threshold by 59.8%. The Project will provide feasible VMT reduction measures at the specific plan level such as those described above, however, inclusion of such VMT reduction measures in areas that are characteristically suburban<sup>5</sup> in context are limited to a maximum

<sup>4</sup> County Guidelines; page 25.

<sup>5</sup> Suburban: A project characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually

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VMT reduction of 15%.<sup>6</sup> Therefore, even with the implementation of all feasible VMT reduction measures, project generated VMT cannot be reduced to a level of less than significant.

If you have any questions, please contact me directly at [aevatt@urbanxroads.com](mailto:aevatt@urbanxroads.com).

Respectfully submitted,

URBAN CROSSROADS, INC.



Aric Evatt, PTP  
President



Robert Vu, PE  
Transportation Engineer

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outside of the central city (a suburb).

<sup>6</sup> California Air Pollution Control Officers Association: "Quantifying Greenhouse Gas Mitigation Measures" August 2010; page 55.

## REFERENCES

1. **Institute of Transportation Engineers.** *Trip Generation Manual.* 10th Edition. 2017.
2. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
3. **County of Riverside.** *Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled.* County of Riverside : s.n., December 2020.

**ATTACHMENT A**  
**PROJECT TRIP GENERATION**

**Project Trip Generation Rates**

Land Use <sup>1</sup>	Units <sup>2</sup>	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
<b>Actual Vehicle Trip Generation Rates</b>									
Manufacturing <sup>3</sup>	TSF	140	0.477	0.143	0.620	0.208	0.462	0.670	3.930
Passenger Cars (AM-92.0%; PM-93.0%; Daily-90.0%)			0.439	0.131	0.570	0.193	0.430	0.623	3.537
2-Axle Trucks (AM-1.34%; PM-1.17%; Daily-1.67%)			0.006	0.002	0.008	0.002	0.005	0.008	0.066
3-Axle Trucks (AM-1.66%; PM-1.45%; Daily-2.07%)			0.008	0.002	0.010	0.003	0.007	0.010	0.081
4-Axle+ Trucks (AM-5.01%; PM-4.38%; Daily-6.26%)			0.024	0.007	0.031	0.009	0.020	0.029	0.246
Warehousing <sup>3</sup>	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (AM-87.0%; PM-85.0%; Daily-73.0%)			0.114	0.034	0.148	0.044	0.118	0.162	1.270
2-Axle Trucks (AM-2.17%; PM-2.51%; Daily-4.51%)			0.003	0.001	0.004	0.001	0.003	0.005	0.078
3-Axle Trucks (AM-2.69%; PM-3.11%; Daily-5.59%)			0.004	0.001	0.005	0.002	0.004	0.006	0.097
4-Axle+ Trucks (AM-8.14%; PM-9.39%; Daily-16.90%)			0.011	0.003	0.014	0.005	0.013	0.018	0.294
High-Cube Transload and Short-Term Storage Warehouse (Without Cold Storage) <sup>3</sup>	TSF	154	0.062	0.018	0.080	0.028	0.072	0.100	1.400
Passenger Cars (AM-80.0%; PM-84.0%; Daily-84.0%)			0.049	0.015	0.064	0.024	0.060	0.084	1.176
2-Axle Trucks (AM-3.34%; PM-2.67%; Daily-2.67%)			0.002	0.001	0.003	0.001	0.002	0.003	0.037
3-Axle Trucks (AM-4.14%; PM-3.31%; Daily-3.31%)			0.003	0.001	0.003	0.001	0.002	0.003	0.046
4-Axle+ Trucks (AM-12.52%; PM-10.02%; Daily-10.02%)			0.008	0.002	0.010	0.003	0.007	0.010	0.140
High-Cube Cold Storage Warehouse (With Cold Storage) <sup>3</sup>	TSF	157	0.085	0.025	0.110	0.032	0.088	0.120	2.120
Passenger Cars (AM-73.0%; PM-77.0%; Daily-65.0%)			0.062	0.018	0.080	0.025	0.067	0.092	1.378
2-Axle Trucks (AM-9.37%; PM-7.98%; Daily-12.15%)			0.008	0.002	0.010	0.003	0.007	0.010	0.257
3-Axle Trucks (AM-2.97%; PM-2.53%; Daily-3.85%)			0.003	0.001	0.003	0.001	0.002	0.003	0.082
4-Axle+ Trucks (AM-14.66%; PM-12.49%; Daily-19.01%)			0.012	0.004	0.016	0.004	0.011	0.015	0.403
High-Cube Fulfillment Center Warehouse <sup>4</sup>	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks			0.006	0.002	0.008	0.003	0.008	0.011	0.162
5+ Axle Trucks			0.008	0.003	0.011	0.003	0.007	0.010	0.217
Industrial Park <sup>3</sup>	TSF	130	0.324	0.076	0.400	0.084	0.316	0.400	3.370
Passenger Cars (AM-88.0%; PM-90.0%; Daily-85.0%)			0.285	0.067	0.348	0.076	0.284	0.348	2.865
2-Axle Trucks (AM-2.00%; PM-1.67%; Daily-2.51%)			0.006	0.002	0.009	0.001	0.005	0.009	0.084
3-Axle Trucks (AM-2.48%; PM-2.07%; Daily-3.11%)			0.008	0.002	0.011	0.002	0.007	0.011	0.105
4-Axle+ Trucks (AM-7.51%; PM-6.26%; Daily-9.39%)			0.024	0.006	0.032	0.005	0.020	0.033	0.316

Project Trip Generation Summary (Actual Vehicles)

Land Use	Quantity	Units <sup>1</sup>	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
High-Cube Cold Storage (20% - LI)	423.403	TSF							
Passenger Cars:			26	8	34	11	29	40	584
Truck Trips:									
2-axle:			3	1	4	1	3	4	110
3-axle:			1	0	1	0	1	1	36
4+-axle:			5	2	7	2	5	7	172
- Truck Trips			9	3	12	3	9	12	318
<b><i>SUBTOTAL TRIPS (Actual)<sup>2</sup></i></b>			<b>35</b>	<b>11</b>	<b>46</b>	<b>14</b>	<b>38</b>	<b>52</b>	<b>902</b>
High-Cube Fulfillment (35% - LI)	740.956	TSF							
Passenger Cars:			59	18	77	30	77	107	1,298
Truck Trips:									
2-4 axle:			5	1	6	2	6	8	120
5+-axle:			6	2	8	2	5	7	162
- Truck Trips			11	3	14	4	11	15	282
<b><i>TOTAL TRIPS (Actual)<sup>2</sup></i></b>			<b>70</b>	<b>21</b>	<b>91</b>	<b>34</b>	<b>88</b>	<b>122</b>	<b>1,580</b>
High-Cube Warehouse (35% - LI)	740.956	TSF							
Passenger Cars:			37	11	48	17	45	62	872
Truck Trips:									
2-axle:			2	0	2	1	1	2	28
3-axle:			2	1	3	1	2	3	34
4+-axle:			6	2	8	2	5	7	104
- Truck Trips			10	3	13	4	8	12	166
<b><i>SUBTOTAL TRIPS (Actual)<sup>2</sup></i></b>			<b>47</b>	<b>14</b>	<b>61</b>	<b>21</b>	<b>53</b>	<b>74</b>	<b>1,038</b>
Manufacturing (10% - LI)	211.702	TSF							
Passenger Cars:			93	28	121	41	91	132	750
Truck Trips:									
2-axle:			1	0	1	1	1	2	14
3-axle:			2	0	2	1	1	2	18
4+-axle:			5	2	7	2	4	6	52
- Truck Trips			8	2	10	4	6	10	84
<b><i>SUBTOTAL TRIPS (Actual)<sup>2</sup></i></b>			<b>101</b>	<b>30</b>	<b>131</b>	<b>45</b>	<b>97</b>	<b>142</b>	<b>834</b>
Warehouse (40% - BP)	156.816	TSF							
Passenger Cars:			18	5	23	7	18	25	200
Truck Trips:									
2-axle:			0	0	0	0	1	1	12
3-axle:			1	0	1	0	1	1	16
4+-axle:			2	0	2	1	2	3	46
- Truck Trips			3	0	3	1	4	5	74
<b><i>SUBTOTAL TRIPS (Actual)<sup>2</sup></i></b>			<b>21</b>	<b>5</b>	<b>26</b>	<b>8</b>	<b>22</b>	<b>30</b>	<b>274</b>
Industrial Park (60% - BP)	235.224	TSF							
Passenger Cars:			67	16	83	18	67	85	674
Truck Trips:									
2-axle:			2	0	2	0	1	1	20
3-axle:			2	0	2	0	2	2	26
4+-axle:			6	1	7	1	5	6	74
- Truck Trips			10	1	11	1	8	9	120
<b><i>SUBTOTAL TRIPS (Actual)<sup>2</sup></i></b>			<b>77</b>	<b>17</b>	<b>94</b>	<b>19</b>	<b>75</b>	<b>94</b>	<b>794</b>
<b><i>Passenger Cars (Industrial)</i></b>			<b>300</b>	<b>86</b>	<b>386</b>	<b>124</b>	<b>327</b>	<b>451</b>	<b>4,378</b>
<b><i>Trucks (Industrial)</i></b>			<b>51</b>	<b>12</b>	<b>63</b>	<b>17</b>	<b>46</b>	<b>63</b>	<b>1,044</b>
<b><i>TOTAL TRIPS (Actual)<sup>2</sup></i></b>			<b>351</b>	<b>98</b>	<b>449</b>	<b>141</b>	<b>373</b>	<b>514</b>	<b>5,422</b>

<sup>1</sup> TSF = thousand square feet

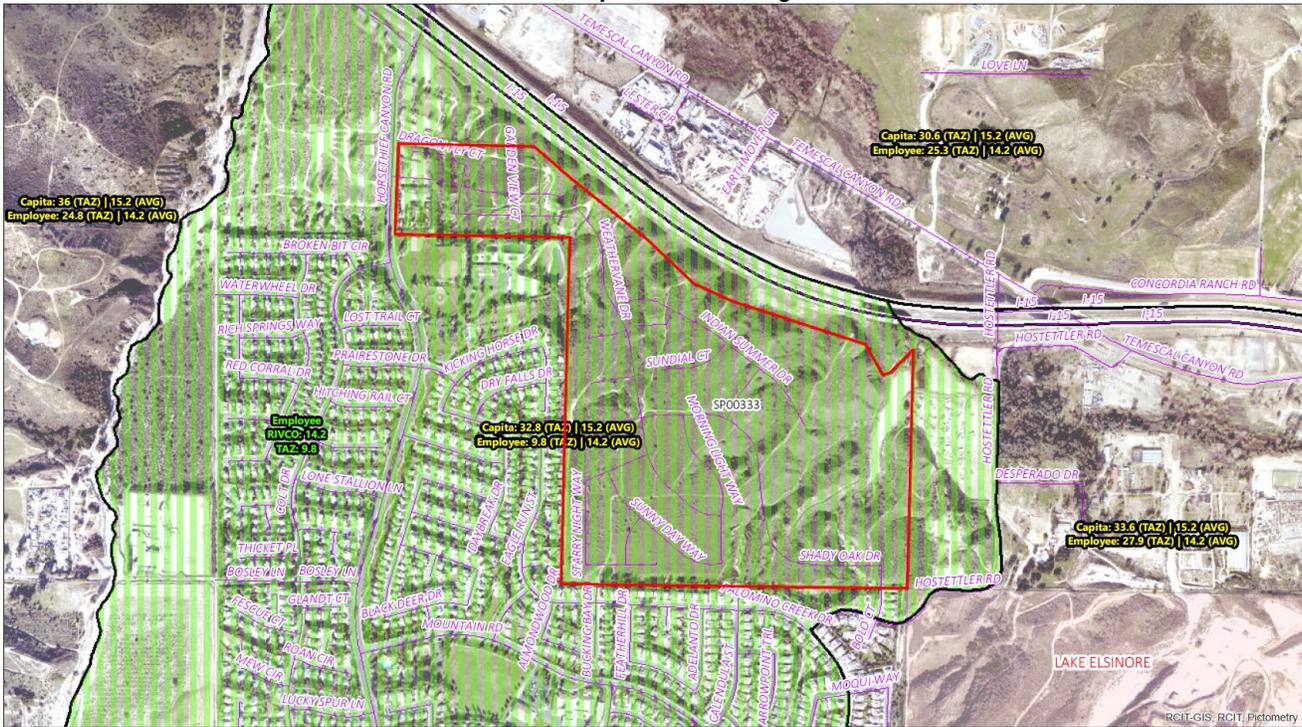
<sup>2</sup> TOTAL TRIPS = Passenger Cars + Truck Trips.

**ATTACHMENT B**  
**MAP-BASED VMT SCREENING RESULTS**

0 370 740 1,480 Feet  
 1 inch = 738 feet  
 Orthophoto: Town 2016  
 Printed by klsang on 10/15/2020

**SP00333**  
**VMT Map-Based Screening**

The County of Riverside assumes no warranty or legal responsibility for the information contained on this map. Data and information represented on the map is subject to update, modification and may not be complete or appropriate for all purposes. County GIS and other agencies should be queried for the most current information. Do not copy or reuse this map.



NOTE: This map indicates VMT generated by land use assumptions contained within individual traffic analysis zones (TAZs) in the RIVTAM base year model as compared to the applicable County threshold.