

Technical Memorandum

Date: October 14, 2021, 2021
To: Kris Pinero, Royal Investors Group, LLC
From: Sarah Brandenberg, Biling Liu
Subject: Lancaster TTM 62484 and 62485 VMT Analysis Study

LA21-3277

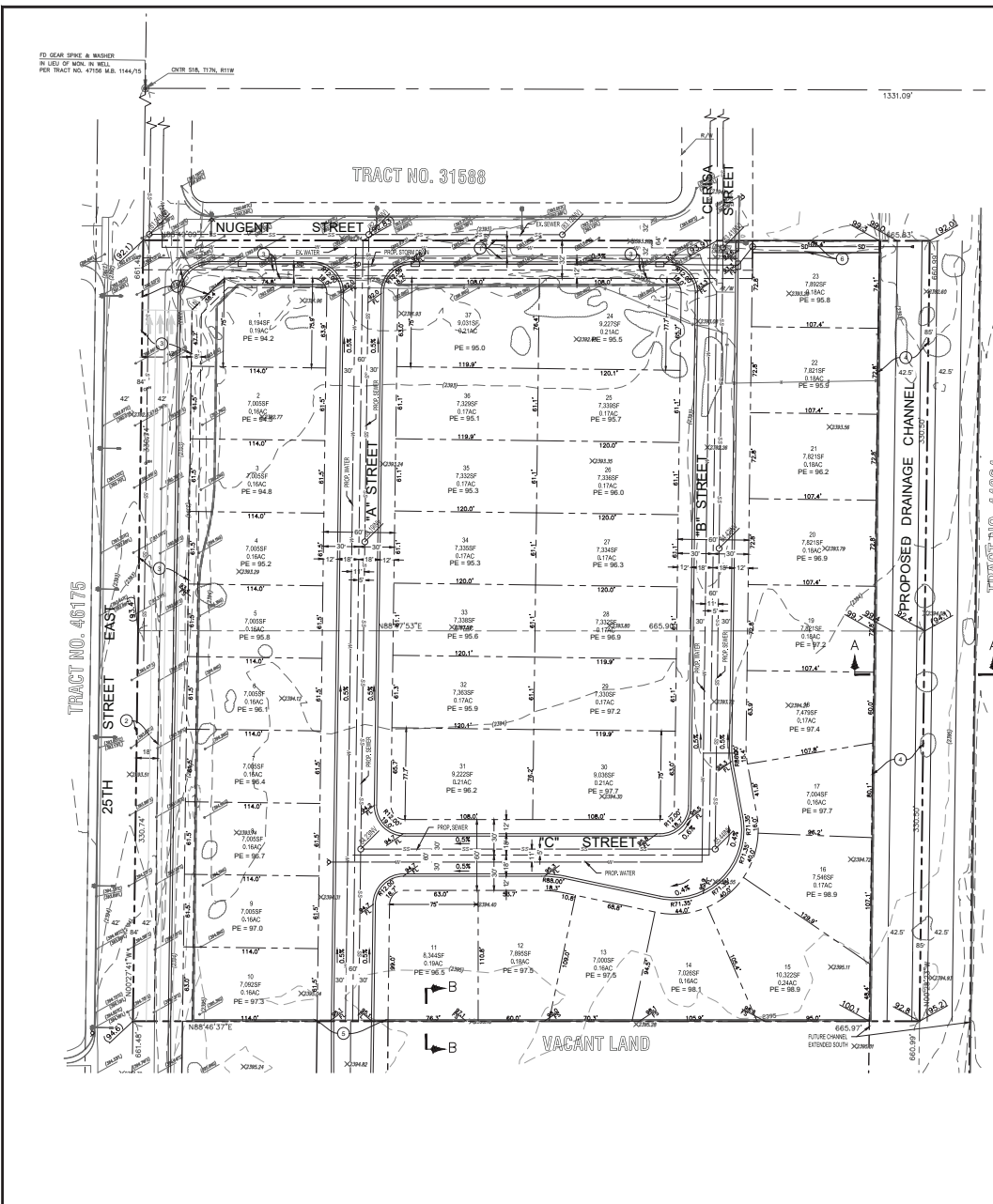
Fehr & Peers has completed quantifying Vehicle Miles Traveled (VMT) for the Tentative Tract Map No. 062484 (TTM 62484) and No. 062485 (TTM 62485) housing project (the Project) in the City of Lancaster. The developments are proposing a total of 76 single family residential units on two vacant land areas within the area bounded by Nugent Street to the north, 25th Street East to the west, 30th Street East to the east, and Avenue J to the south. This VMT analysis compares Home-based VMT per capita generated by the Project to the City's adopted threshold of 15% below Baseline VMT of the Antelope Valley. This VMT analysis is consistent with requirements of Senate Bill 743 (SB 743), the Office of Planning and Research's (OPR's) *Technical Advisory*, and the *City of Lancaster Department of Public Works Traffic Study Guidelines* (October 2020).

The remainder of this memorandum is divided into five sections: Project Introduction, Modeling Methodology, VMT Analysis, Mitigation Measures, and Conclusions.

1. Project Introduction

The Project consists of TTM 62484 and TTM 62485. TTM 62484 is located in the eastern area of Lancaster on a site within the area bounded by Nugent Street to the north, 25th Street East to the west, 26th Street East to the east, and Avenue J to the south. It proposes 37 single-family dwelling units on vacant land. TTM 62485 is located nearby within the area bounded by Nugent Street to the north, 27th Street East to the west, 30th Street East to the east, and Avenue J to the south and proposes 39 single-family dwelling units on vacant land. **Figure 1 and Figure 2** present the Project site plans.

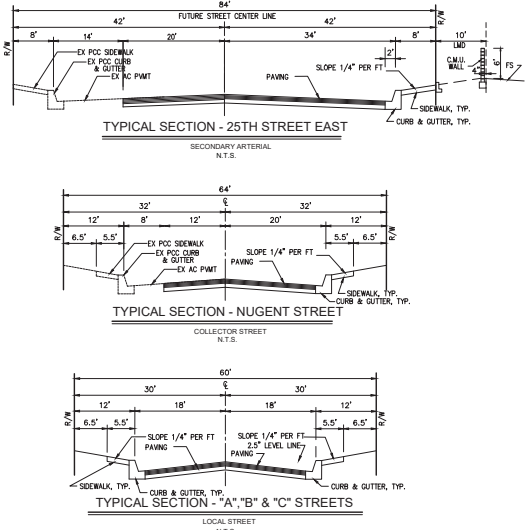
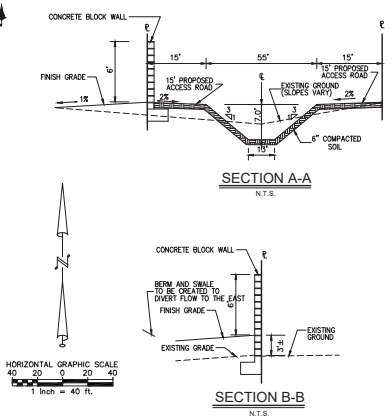
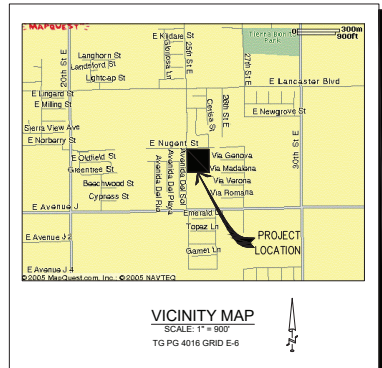
TENTATIVE TRACT MAP NO. 062484



- LEGEND**
- ① 10' WIDE PUBLIC ROAD AND HIGHWAY PURPOSES EASEMENT TO THE CITY OF LANCASTER RECORDED FEBRUARY 8, 1989 AS INSTRUMENT NO. 1989-113389 of O.R.
 - ② 18' WIDE PUBLIC ROAD AND HIGHWAY PURPOSES EASEMENT TO THE CITY OF LANCASTER RECORDED OCTOBER 5, 1988 AS INSTRUMENT NO. 88-160807 of O.R.
 - ③ PUBLIC ROAD, HIGHWAY AND UTILITY PURPOSES EASEMENT TO THE CITY OF LANCASTER RECORDED DECEMBER 9, 2010 AS INSTRUMENT NO. 2010-1821068 of O.R.
 - ④ 42.0' DRAINAGE EASEMENT
 - ⑤ 4" HIGH TEMPORARY BLOCK WALL REQUIRED
 - ⑥ 10' STORM DRAIN EASEMENT



- ABBREVIATIONS**
- REF REFERENCE
 - CON CONCRETE
 - ASPH ASPHALT
 - GRA GRAVEL
 - DIR DRAINAGE
 - ST STREET
 - TR TRAIL
 - TP TYPICAL
 - W WEST
 - W 90.00 WEST 90.00



UTILITY PURVEYORS

WATER	LA COUNTY WATER WORKS 40 WEST AVENUE J LANCASTER, CA 93535 801/940-157	GAS	SOUTHERN CALIFORNIA GAS COMPANY 4401 N. DUNDAS STREET LANCASTER, CA 93506 801/940-234
SEWER	LA COUNTY SOUTHERN DRAINAGE 338 30TH STREET EAST LANCASTER, CA 93508 801/940-480	TELEPHONE	VERIZON P.O. BOX 100 LANCASTER, CA 93508 801/710-204
ELECTRIC	SOUTHERN CALIFORNIA Edison 3000A 10TH STREET WEST LANCASTER, CA 93508 801/940-901	CABLE	4200-A GABLE 4101 11TH STREET WEST LANCASTER, CA 93508 801/940-887

- GENERAL NOTES**
1. ASSessor'S PARCELS NO. 190-040-02 & 03
 2. GROSS AREA = 40.82 AC @ 50 FT X 161 FT ACRES
 3. NET AREA = 30.82 AC @ 50 FT X 161 FT ACRES
 4. ZONING: R-10
 5. THE PROPERTY SHOWN HEREIN CONTAINS THE ENTIRE CONTIGUOUS OWNERSHIP
 6. TOTAL AREA OF LOT 10 IS 1.00 AC
 7. 15' WIDE 12" X 12" AND 18" X 18" ARE STREETS FOR PUBLIC ROAD DESIGNATION
 8. COUNTY OF LANCASTER - 11/20/12
 9. 10' REGULATED TREE SET BACK ON SITE, UNLESS NOTED
 10. THE LOCATION OF ALL UTILITIES SHOWN ON THIS MAP ARE APPROXIMATE
 11. FLOOD ZONE - ZONE 1
 12. ADJACENT TRACT MAP NO. 062484
 13. NORTH = NORTH (DEVELOPER)
 14. EAST = EAST (DEVELOPER)
 15. WEST = WEST (DEVELOPER)

NO.	REVISIONS	DATE

ENGINEER'S STATEMENT
THIS TENTATIVE MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, AND ALL EASEMENTS OF RECORD ARE SHOWN PER THE TITLE REPORT.

ZH PLOTNIK DATE _____
R.C.E. NO. 29604

LEGAL DESCRIPTION:
PARCEL 1: THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 10, TOWNSHIP 11 NORTH, RANGE 13 WEST, SAN JOAQUIN COUNTY OF LOS ANGELES STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND.

PARCEL 2: THE NORTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 10, TOWNSHIP 11 NORTH, RANGE 13 WEST, SAN JOAQUIN COUNTY OF LOS ANGELES STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND, APPROVED BY THE GOVERNOR GENERAL, JUNE 18, 1896.

NOTES:

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www.plotnik.com

ZH PLOTNIK, R.C.E. NO. 29604 EXP. 3/31/27 DATE

TENTATIVE TRACT NO. 062484

SCALE: 1" = 40'
DRAWN: DH
CHECKED: PC
DATE: 10/25/20
SHEET NO. 1/1



2. Modeling Methodology

The Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) trip-based model is a travel demand forecasting model with socioeconomic and transportation network inputs, such as population, employment, and the regional and local roadway network, that estimates current travel behavior and forecasts future changes in travel demand. The current SCAG model has 2012 as the base year and 2040 as the forecast year and can be used to estimate VMT for current year 2021 conditions. The 2040 model contains the planned transportation improvements in the RTP and the growth projections in the SCS.

TTM 62484 and TTM 62485 are located within the same Transportation Analysis Zone (TAZ) in SCAG model. **Table 1** presents the socioeconomic inputs for both development sites. The Project population was estimated by referring to population per household ratio of the Project TAZ in SCAG 2012 base year model.

Table 1: SCAG Model Land Uses Inputs

Project TAZ SED	Households	Population
Proposed Project	76	287

When calculating VMT for a project site, the VMT methodology should match the methodology used to establish the Baseline VMT metrics and impact thresholds. For residential projects in the City of Lancaster, Baseline VMT is defined as a measurement of Home-Based VMT per capita, which reflects all trips that begin or end at a residential unit within the Los Angeles County Antelope Valley Planning Area (Antelope Valley). All home-based auto vehicle trips are traced back to the residence of the trip-maker (non-home-based trips are excluded) and then divided by the population within the geographic area to get the efficiency metric of home-based VMT per capita.

Following the VMT analysis, the Home-Based VMT per capita of the Project was then compared to the Antelope Valley Baseline VMT to determine if it exceeds the City's impact threshold.

3. VMT Assessment

The Home-Based VMT per capita of the Project was calculated for existing year (2021) using the SCAG travel demand model. While the project will be built over time, the Year 2021 analysis shows how the VMT generated by the Project compares to current travel and VMT characteristics in the area. **Table 2** shows the Home-Based VMT per capita of the Project.



Table 2: Project VMT and VMT Threshold for Residential Projects in Lancaster

VMT Metrics for Housing Projects	Home-Based VMT per capita
Project VMT Estimates (2021)	17.7
Antelope Valley Planning Area (AVPA) Baseline VMT (2021)	20.1
Threshold: 15% Below AVPA Baseline VMT	17.1
Percent Higher than VMT Threshold	3.5%
VMT Exceeds Threshold?	Yes

As shown above, the Project generates 17.7 Home-based VMT per capita. The Project’s VMT is lower than the Baseline VMT for the Antelope Valley. However, in comparison to the City’s threshold of 15% below Baseline VMT, the Project is 0.6 Home-based VMT per capita higher and would result in a potential VMT impact without mitigation. Therefore, mitigation measures were explored to determine improvements that would achieve the City’s threshold of 15% below Baseline VMT.

4. Mitigation Measures

To mitigate the Project’s Home-based VMT per capita impact, Home-based VMT per capita needs to be reduced by 3.5%. This VMT reduction equates to 172 total VMT as shown in **Table 3**.

Table 3: VMT Reduction Required

Home-Based VMT for Residential	Project VMT Estimate	VMT Threshold (15% below Baseline)	VMT Reduction Required
VMT / capita	17.7	17.1	0.6
Total VMT	5,080	4,908	172

VMT reduction guidance provided by the California Air Pollution Control Officers Association (CAPCOA)¹ can be used to quantify improvements that would achieve a VMT reduction of at least 172 VMT to mitigate the Project impacts. Due to the size of each development site (37 units and 39 units), the improvements that could be implemented on-site would have a negligible benefit on VMT reduction. Therefore, nearby improvements that would benefit Project residents as well as other nearby residents were explored in further detail to determine the VMT reduction. The following mitigation measures (**Table 4**) would provide more connectivity for bicyclists traveling in the project area. **Figure 3** presents the locations of the proposed bicycle network improvements.

¹ Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Access Emission Reductions from Greenhouse Gas Mitigation Measures (CAPCOA, 2010)



- Project Location - TTM 62484
- Proposed Bike Lane - TTM 62484
- Project Location - TTM 62485
- Proposed Bike Lane - TTM 62485



Figure 3

Proposed Bicycle Network Improvements



Table 4: Mitigation Measures

Mitigation Measures	Approximate Distance (ft.)
TTM 62484	
Install a bike lane along the east side of 25 th Street East from Lancaster Blvd to the project's south boundary	1,750
Install a bike lane along the west side of 25 th Street East from Nugent Avenue to Avenue J	1,300
Install a bike lane along the north side of Avenue J from 25 th Street East to 22 nd Street East	1,300
Total Bike Lanes (feet)	4,350
TTM 62485	
Install a bike lane along the west side of 30 th Street East from Kettering Street to project's south boundary	3,200
Install a bike lane along the east side of 30 th Street East from Lancaster Blvd to Nugent Avenue	1,300
Total Bike Lanes (feet)	4,500
Total Bike Lanes for both Sites (feet)	8,850

As shown in **Table 4**, the improvements adjacent to TTM 62484 and on Avenue J would provide a connection to the south for bikes on 25th Street East. 25th Street East has a 25-foot southbound lane adjacent to developed parcels which provides sufficient right-of-way for the bike lane. A bike lane would also be striped adjacent to TTM 62484 in the northbound direction with planned frontage improvements and continue north to Lancaster Boulevard. The new bike connection on 30th Street East can be used to travel to Tierra Bonita Elementary School. Both sides of 30th Street East have sufficient right-of-way for striped bike lanes. The combination of the above improvements would reduce VMT for both project sites and nearby uses.

According to CAPCOA's research, the expected VMT reduction for bicycle network improvements is up to 1%. To quantify the VMT reduction from the proposed mitigation, the VMT generated within a ½-mile influence area of the proposed improvements was estimated using the Home-based VMT estimates from the SCAG model for the applicable TAZs. **Table 5** presents the VMT reduction estimation. The detailed VMT results are included in Appendix A.



Table 5: VMT Reduction Estimation for Proposed Mitigation

½-Mile Influence Area	VMT Reduction Estimate			VMT Reduction Required
	0.1% Reduction	0.5% Reduction	1% Reduction	
Bicycle Network Improvements	202	1,009	2,017	172

As shown in the table above, applying a 0.5% or 1% VMT reduction for the proposed mitigation measures would far exceed the VMT reduction requirement for the Project to meet the City's threshold of 15% below Baseline VMT. Therefore, a 0.1% VMT reduction for the proposed mitigation was also included in the table to illustrate that even a minor reduction in VMT with the bicycle lane improvements would exceed the VMT reduction required by the Project. As shown, applying a minimal VMT reduction benefit would reduce VMT by 202 which is more than the VMT reduction requirement of 172 needed to fully mitigate the Project VMT impact.

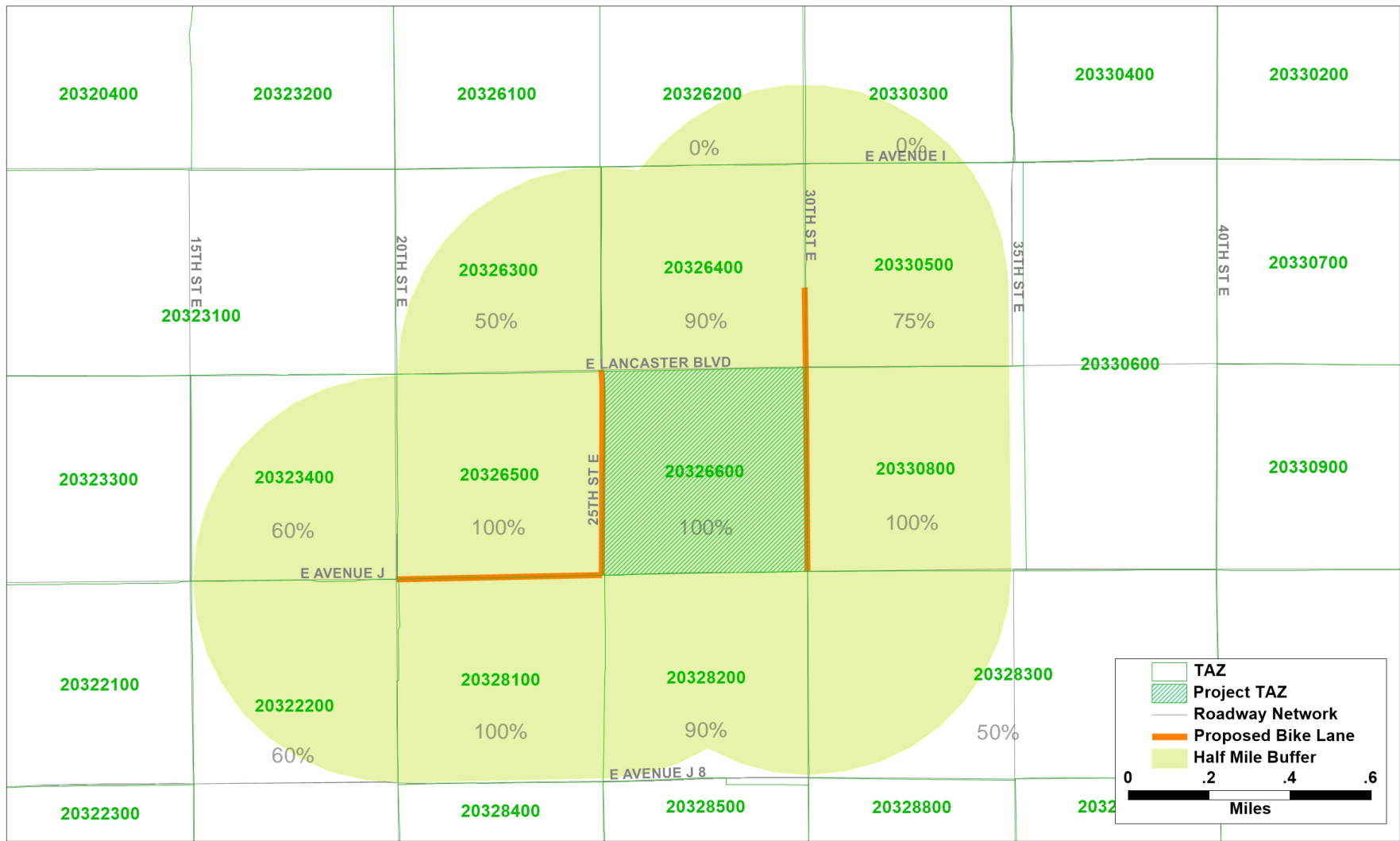
5. Conclusions

This technical memorandum documents the process to determine the potential VMT impacts of the proposed residential development sites in the City of Lancaster. The following summarizes the results of the VMT analysis:

- The VMT analysis for the Project is based on the City's new guidance for transportation impacts. The VMT analysis methodology for the Project is consistent with the methodology used to establish the Baseline VMT metrics and impact thresholds for projects in the City of Lancaster.
- For residential projects in the City of Lancaster, the Home-Based VMT per capita is analyzed to determine the VMT impact.
- The Home-Based VMT per capita generated by the Project under base year (2021) was compared to the Antelope Valley Baseline VMT.
- The Project generates 17.7 Home-based VMT per capita which is 3.5% higher than the City's threshold.
- To reduce VMT, bicycle network improvements are identified to provide more connectivity between the Project sites and nearby uses on 25th Street East, 30th Street East, and Avenue J.
- Implementing the bicycle improvements reduces VMT in the area immediately adjacent to the bicycle lanes (within ½ mile) and satisfies the VMT reduction that is required for the Project to meet the City's VMT threshold. Therefore, with mitigation, the Project does not have a VMT impact.

Appendix A: VMT Reduction with Proposed Bicycle Lanes

Table A: VMT Reduction Estimate with Proposed Bicycle Lane Improvements						
Traffic Analysis Zone (TAZ)	Home-Based VMT (Year 2021)	% of TAZ in Influence Area	Home-Based VMT in Influence Area	VMT Reduction with Bicycle Lane Improvements		
				0.1% Reduction	0.5% Reduction	1% Reduction
20326300	18,077	50%	9,038	9	45	90
20326400	9,340	90%	8,406	8	42	84
20330500	106	75%	79	0	0	1
20323400	28,068	60%	16,841	17	84	168
20326500	23,201	100%	23,201	23	116	232
20326600	31,548	100%	31,548	32	158	315
20330800	20,464	100%	20,464	20	102	204
20322200	86,819	60%	52,091	52	260	521
20328100	13,274	100%	13,274	13	66	133
20328200	26,862	90%	24,175	24	121	242
20328300	5,294	50%	2,647	3	13	26
Total	263,052	--	201,765	202	1,009	2,017



Note: % shown beneath TAZ number refers to the % of Home-Based VMT occurring in the bike lane influence area that was used to estimate VMT reduction benefits.



Figure A
Half Mile Influence Area of Proposed Bike Lane Improvements