October 12, 2021

Mr. Nick Pappani
Raney Planning and Management Inc.
1501 Sports Drive, Suite A
Sacramento, CA 95834

SUBJECT: LINCOLN SQUARE VEHICLE MILES TRAVELED (VMT) ANALYSIS

Dear Mr. Nick Pappani:

The following VMT Analysis has been prepared for the proposed Lincoln Square development (**Project**), which is located on the intersection of N. Lincoln Street (Vaughn Road) and Lincoln Highway (California State Highway 113) in the City of Dixon.

PROJECT OVERVIEW

The Project is to consist of a fueling station and convenience store along with 101 small lot, with small setback, single-family detached dwelling units. As designed, the proposed Project has a density at 12 units per acre. The density range identified in the City of Dixon's 2040 General Plan for the single-family land use designation is up to 9 units per acre. The density range identified for medium density residential is 10 to 22 units per acre. The density range for the proposed Project's Corridor Mixed Use designation is 12 to 28 dwelling units per acre. The Project's density is more consistent with medium density designation and will be considered as such for the purposes of this analysis.

BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the 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) At the time of this analysis the City of Dixon has not formally adopted its own thresholds and guidelines. Through consultation of City staff the VMT analysis presented in this report has been developed based on the Technical Advisory.

PROJECT SCREENING

Consistent with the Technical Advisory, projects that meet certain screening thresholds based on their location and project type may be presumed to result in a less than significant transportation impact. The following screening criteria are described within the Technical Advisory:

- Small Project Screening
- Map Based Screening
- Transit Priority Area (TPA) Screening
- Affordable Residential Development Screening
- Local Community Serving Project Type Screening

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

SMALL PROJECT SCREENING

The Technical Advisory indicates that projects generating fewer than 110 daily vehicle trips may be presumed to have a less than significant impact. 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 vehicle trip-ends per day above the 110 vehicle trips per day threshold. (See Attachment A)

Small Project screening criteria is not met.

MAP BASED SCREENING

As noted in the Technical Advisory, "residential and office projects that locate in areas with low VMT and that incorporate similar features (density, mix of uses, and transit accessibility) will tend to exhibit similarly low VMT." (1) It is our understanding that the City of Dixon has not established screening maps to depict areas of low VMT within the City.

Map Based screening criteria is not met.

TPA SCREENING

The Technical Advisory states that projects located within a TPA, ½ mile of an existing "major transit stop,"[1] or an existing stop along a "high-quality transit corridor"[2] will have a less than significant impact on VMT. According to the Screening Tool results, the proposed Project is within a TPA.

Once a project is determined to be within a TPA, the Technical Advisory also recommends consideration of secondary screening checks. For example, a proposed land use project is **not** eligible for TPA screening if the project meets any of the following sub-criteria:

[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.").

1) Has a Floor Area Ratio (FAR) of less than 0.75;
2) 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);
3) Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
4) Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

The proposed Project is located within a TPA.

TPA screening criteria is not met.

LOCAL COMMUNITY SERVING RETAIL SCREENING

The Technical Advisory identifies local serving retail uses are presumed to have a less than significant impact absent substantial evidence to the contrary. By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. The Project, as designed includes a fueling station and convenience store to serve the residential component of the Project as well as the nearby local community. The retail component of the project would therefore shorten trips for the Project residents and the local community that would have traveled otherwise for the services provided by the Project's retail component.

Local Community Serving Project Type screening criteria met for retail component only.

As none of the aforementioned screening criteria has been met for the residential component of the Project. A project level VMT analysis shall be prepared.

PROJECT LEVEL VMT

Technical Advisory identifies the correct tool to perform a VMT analysis should be consistent with the tool that was used to generate the jurisdictional averages for which a project resides, for an apples-to-apples comparison. The City of Dixon has developed their own Dixon Travel Demand Model **(City Model)** with the assistance of DKS Associates. In an effort to provide a project level VMT analysis consistent with the City's baseline VMT data; Urban Crossroads has coordinated with DKS Associates, to obtain project level VMT calculations for Baseline conditions, project level model runs, and calculations of project generated VMT by the Project's traffic analysis zones (TAZ) (see Attachment A).

The City model is a three-step model maintained by the City of Dixon to forecast local vehicular traffic flows. The model's baseline scenario was calibrated to land use as of late 2018 and spring 2019 traffic counts. Model inputs include housing units, and employment by type. The model outputs include average weekday trip generation and distribution, as well as traffic assignments by time period.

The model study area includes the land within the Dixon city limits as well as a few adjacent Sphere of Influence zones in unincorporated Solano County. The model network links at the gateway zones include a distance adjustment to estimate the true trip length of trips entering and leaving the model study area.

These distance adjustments were derived from average trip lengths for trips crossing these gateways in the California Statewide Travel Demand Model. Thus, the Dixon travel model can be used to estimate total daily VMT for both internal-internal trips and internal-external trips. While the City of Dixon has not officially adopted VMT baselines and thresholds of significance, a reference baseline was calculated for the purposes of this analysis. Most steps are carried out within the travel demand model with final processing in a spreadsheet as follows:

1. Sum daily trip matrices in production-attraction format for all home-based trip purposes (home based work, home based local shopping, home-based regional shopping, home-based school, and the home-based other).
2. Multiply home-based trip matrices by distance skim matrix for the midday period to calculate a home-based VMT matrix
3. Multiply home-based work matrix by distance skim matrix for the a.m. peak period to calculate a home-based work VMT matrix
4. Export row and column sums of the VMT matrices to a table that includes trips and VMT for every Transportation Analysis Zone (TAZ) as the production (residential location) and attraction (employment location) zone.
5. Combine the tabular VMT outputs with population and jobs by TAZ to calculate the relevant VMT metrics.

Note that the model does not use population as a direct input. For this purpose, population by TAZ as developed for the Dixon General Plan 2040 land use analyses was combined with travel model inputs. Baseline study area VMT metrics reflect the 2018 model calibration scenario. As shown in Table 1, the daily VMT per capita for the City of Dixon is 21.78.

TABLE 1: CITY OF DIXON DAILY VMT PER CAPITA

	Baseline
City of Dixon VMT per Capita	21.78

Table 2 summarizes the residential density factor for the Project based on information derived from the California Department of Finance of 3.11 persons per household[3].

TABLE 2: SED DENSITY FACTORS ESTIMATES

	Project
Households	101
Density Factor	3.11 persons per household
Population	314

[3] California Department of Finance; Table E-5

To prepare a project level VMT analysis, the Project's residential land use program was entered into City Model. The VMT calculation steps described above to capture citywide VMT were repeated to observe how the VMT at the TAZ level has changed with the addition of the Project's land use characteristics as provided in Table 3.

TABLE 3: PROJECT VMT PER CAPITA

	Baseline
VMT per capita	17.26

Table 4 illustrates a comparison between the Project's Baseline VMT per capita to the City of Dixon's citywide VMT per capita. As noted in the Technical Advisory "residential projects exceeding a level of 15% below existing VMT per capita may indicate a significant transportation impact."[4] The Project's VMT per capita is 20.75% below the City's VMT per capita. Therefore, the Project's VMT impact is presumed to be less than significant.

TABLE 4: PROJECT GENERATED VMT PER CAPITA COMPARISON

	Baseline
City of Dixon VMT per capita	21.78
Project VMT per SP	17.26
Percent Change	-20.75%
Potentially Significant?	No

CONCLUSION

The Project's retail component was found to meet the Technical Advisory's local community retail screening criteria for the Project's retail component. However, the remaining residential land use component of the Project did not meet any of the screening criteria and a project level VMT analysis was performed. Results from the VMT analysis finds that the Project has a less than significant VMT impact for project generated VMT per capita as compared to the Citywide VMT per capita.

[4] Technical Advisory Page 15

If you have any questions, please contact me directly at 949-660-1994.

Respectfully submitted,

URBAN CROSSROADS, INC.

Alex So
Senior Analyst

REFERENCES

1. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.

2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 10th Edition. 2017.

ATTACHMENT A

PROJECT TRIP GENERATION SUMMARY

Project Trip Generation Summary

Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:									
Single Family Detached Residential	210	DU	0.19	0.55	0.74	0.62	0.37	0.99	9.44
Super Convenience Market/Gas Station	960	VFP	14.04	14.04	28.08	11.48	11.48	22.96	230.52

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units; VFP = Vehicle Fueling Positions

Project	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary:									
Single Family Detached Residential	101	DU	19	56	75	63	37	100	954
Residential to Retail Internal Capture Reduction[2]			0	-1	-1	-29	-16	-45	-430
Residential Subtotal			**19**	**55**	**74**	**34**	**21**	**55**	**524**
Super Convenience Market/Gas Station	16	VFP	225	225	450	184	184	368	3,688
Retail to Residential Internal Capture Reduction[2]			-1	0	-1	-16	-29	-45	-430
Pass-by Reduction (AM = 62%; PM/Daily = 56%)			-139	-140	-279	-99	-96	-195	-1,964
Retail Subtotal			**85**	**86**	**171**	**69**	**59**	**128**	**1,294**
Project Total			**104**	**141**	**245**	**103**	**80**	**183**	**1,818**

[1] DU = Dwelling Units; VFP = Vehicle Fueling Positions

ATTACHMENT B
MODELING AND VMT CALCULATIONS FOR LEWIS DEVELOPMENT

DKS 1970 BROADWAY, SUITE 740, OAKLAND, CA 94612 • 510.763.2061 • DKSASSOCIATES.COM

MEMORANDUM

DATE: September 18, 2021

TO: Alex So | Urban Crossroads
Nick Pappani | Urban Crossroads

FROM: Erin Vaca | DKS Associates

SUBJECT: Modeling and VMT Calculations for Dixon Lewis Development Project #21171

BACKGROUND AND INTRODUCTION

The Project includes 101 residential units, a fueling station, convenience store, and car wash on the southwest corner of First Street and Vaughn Road in Dixon, California. The project approval process requires an examination of the VMT characteristics of the project for the purposes of CEQA. DKS has calculated baseline VMT metrics on a citywide basis we well as the VMT characteristics of the project site using the City of Dixon's travel demand model. This memorandum documents the methodology and presents summary results.

METHODOLOGY AND INPUTS

DIXON TRAVEL DEMAND MODEL

The Dixon travel demand model is a three-step model maintained by the City of Dixon to forecast local vehicular traffic flows. The model's baseline scenario was calibrated to land use as of late 2018 and spring 2019 traffic counts. Model inputs include housing units, and employment by type. The model outputs include average weekday trip generation and distribution, as well as traffic assignments by time period.

The model study area includes the land within the Dixon city limits as well as a few adjacent Sphere of Interest zones in unincorporated Solano County (**Figure 1**). The model network links at the gateway zones include a distance adjustment to estimate the true trip length of trips entering and leaving the model study area. These distance adjustments were derived from average trip lengths for trips crossing these gateways in the California Statewide Travel Demand Model. Thus, the Dixon travel model can be used to estimate total daily VMT for both internal-internal trips and internal-external trips.

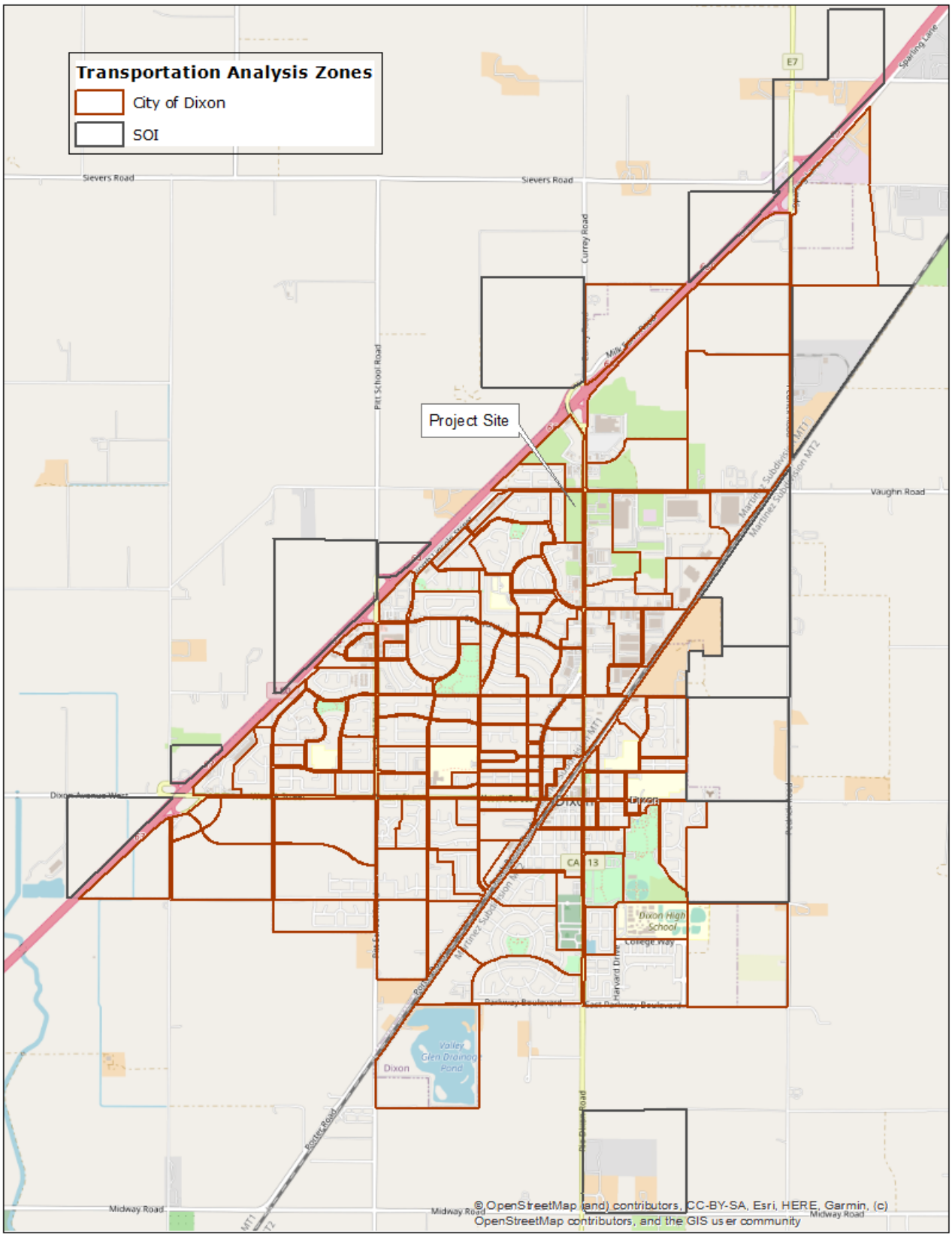

FIGURE 1. DIXON TRAVEL DEMAND MODEL STUDY AREA

More information on the model can be found in the model development report (*City of Dixon Travel Model Update*, October 2019).

BASELINE VMT CALCULATION

While the City of Dixon has not officially adopted VMT baselines and thresholds of significance, a reference baseline was calculated for the purposes of this analysis. Most steps are carried out within the travel demand model with final processing in a spreadsheet as follows:

1. Sum daily trip matrices in production-attraction format for all home-based trip purposes (home based work, home based local shopping, home-based regional shopping, home-based school, and the home-based other).
2. Multiply home-based trip matrices by distance skim matrix for the midday period to calculate a home-based VMT matrix
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4. Export row and column sums of the VMT matrices to a table that includes trips and VMT for every Transportation Analysis Zone (TAZ) as the production (residential location) and attraction (employment location) zone.
5. Combine the tabular VMT outputs with population and jobs by TAZ to calculate the relevant VMT metrics.

Note that the model does not use population as a direct input. For this purpose, population by TAZ as developed for the Dixon General Plan 2040 land use analyses was combined with travel model inputs. Baseline study area VMT metrics reflect the 2018 model calibration scenario.

WITH PROJECT VMT CALCULATIONS

To forecast its VMT characteristics, the proposed Project land use program was entered into the travel model's land use inputs. The Project site is currently undeveloped and corresponds to TAZ 109, as highlighted in **Figure 1**. The following land use was added to this TAZ:

- 101 dwelling units (both single family and multifamily options were tested)
- 11 retail jobs

For VMT metric calculations, the population of the Project site was estimated at 3.11 persons per dwelling unit, per the California Department of Finance Table E-5.

The VMT calculation steps described above were repeated in order to observe how VMT at the TAZ level changed with the addition of Project land use.

RESULTS

Baseline (existing condition) VMT metrics are reported in Table 1 for the City of Dixon and the model study area. Since the model does not take population as a direct input, the home-based VMT per dwelling unit is reported for informational purposes.

Table 2 summarizes VMT metrics for the Project site. The residential units are detached but planned at a much higher density than most single family. Note that single family residential units are assumed by the model to generate only about 70 percent of the daily trips generated by multifamily units. Also note that the same population per dwelling unit was assumed for both types of residential uses (3.11 persons per unit or a population of 314).

TABLE 1: BASELINE VMT METRICS
2018 MODEL CALIBRATION SCENARIO

GEOGRAPHIC AREA	HOME-BASED VMT/CAPITA	HOME-BASED VMT/DU	HBW VMT/JOB
CITY OF DIXON ONLY	21.78	66.95	14.75
CITY OF DIXON + SOI	21.80	66.99	14.66

Source: DKS Associates.

TABLE 2: PROJECT VMT METRICS
EXISTING PLUS PROJECT SCENARIO

GEOGRAPHIC AREA	HOME-BASED TRIPS [a]	HOME-BASED VMT/CAPITA	HOME-BASED VMT/DU	HBW TRIPS [b]	HBW VMT/ JOB
PROJECT SITE – WITH SFDU [c]	769	21.43	68.58	16	15.15
PROJECT SITE – WITH MFDU [c]	587	17.26	53.68	16	15.16

a. Daily trip ends at residential location

b. Daily trip ends at employment location

c. Proposed Project would occupy entirety of TAZ 109

Source: DKS Associates.