



621 CHAPALA STREET
SANTA BARBARA, CALIFORNIA 93101
T 805.963.0651 F 805.963.2074

MEMORANDUM

To: Jack Licari
From: Matthew Morales and Jennifer Reed, Dudek
Subject: Screening Health Risk Assessment for Proposed General Plan Amendment –
246 Bennett Way, Templeton, CA
Date: August 25, 2017
cc: Amber Davis, Kirk Consulting

Dudek is pleased to submit this Screening Health Risk Assessment (HRA) to assist with environmental planning requirements for the proposed General Plan Amendment to change the land use designation at 246 Bennett Way, Templeton, San Luis Obispo County, from Office and Professional to Multi-Family Residential (“project”). This memorandum assesses potential cancer risks from diesel particulate matter (DPM) associated with siting sensitive land uses near U.S. Highway 101, a high-traffic-volume roadway.

In the *California Building Industry Association v. Bay Area Air Quality Management District* (CBIA v. BAAQMD) case decided in 2015, the California Supreme Court held that the California Environmental Quality Act (CEQA) does not generally require lead agencies to consider how existing environmental conditions might impact a project’s occupants, except where the project would significantly exacerbate an existing environmental condition. Accordingly, the CEQA significance criteria related to exposure of sensitive receptors to substantial pollutant concentrations is relevant only to the extent that the project exacerbates air quality conditions. However, this assessment is provided to satisfy the County General Plan Open Space and Conservation Element Implementation Strategy AQ.3.6.1, which states:

Implementation Strategy AQ 3.6.1 Identify Health Risks to Sensitive Receptors – Provide an analysis of potential health risks and identify mitigation measures to reduce risk to acceptable levels for projects involving sensitive receptors proposed within 500 feet of freeways and high-speed highways, consistent with Air Pollution Control District criteria (San Luis Obispo County 2010).

The San Luis Obispo County Air Pollution Control District’s (SLOCAPCD’s) *CEQA Air Quality Handbook* recommends a screening HRA for new land use projects that will place sensitive receptors such as residential units close to existing toxics sources. Since there have been no

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updates to the SLOCAPCD guidance and recommendations post-CBIA v. BAAQMD, this approach has been followed herein. As defined by the SLOCAPCD, sensitive receptors include:

[P]eople that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling unit(s) (SLOCAPCD 2012).

1.0 PROJECT DESCRIPTION AND BACKGROUND

The proposed project is located in the community of Templeton in San Luis Obispo County, California, within an existing 2.95-acre parcel (APN: 040-289-020). In 1981, the County of San Luis Obispo Board of Supervisors approved a General Plan Amendment to change the zoning from Residential Multi-Family to Office & Professional. In April 2017, Kirk Consulting conducted a pre-application meeting with San Luis Obispo County Planning to discuss processing a General Plan Amendment to change the zoning of the subject parcel from Office & Professional back to Residential Multi-Family. Highway 101 and Bennett Way are located to the east of the project site, multi-family residences to the west, office uses to the north, and the Templeton Hills Seventh Day Adventist Church to the south. The proposed multi-family development on the project site has not yet been designed; however, based on the site location, the property line could be as close as 135 feet from the edge of Highway 101.

2.0 SCREENING METHODOLOGY AND CRITERIA

Diesel Particulate Matter

DPM is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of particulate matter that is 2.5 microns or less in diameter (PM_{2.5}) (CARB 2016). DPM is typically composed of carbon particles (“soot,” also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2016). The CARB classified “particulate emissions from diesel-fueled engines” (i.e., DPM; 17 CCR 93000) as a toxic air contaminant in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in

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California is associated with DPM (CARB 2000). Because it is part of PM_{2.5}, DPM also contributes to the same non-cancer health effects as PM_{2.5} exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2016). Those most vulnerable to non-cancer health effects are children whose lungs are still developing and the elderly who often have chronic health problems.

To reduce diesel emissions, CARB approved a *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk by 2020 compared to the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment Program. All of these regulations and programs have timetables for when manufacturers must comply and existing operators must upgrade their diesel-powered equipment (CARB 2000). Several Airborne Toxic Control Measures aim to reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

Screening Approach

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has published a *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways* (Protocol) (SMAQMD 2011), which provides a methodology for the assessment and disclosure of potential cancer risk from DPM attributable to siting sensitive land uses adjacent to freeways and major roadways. The Protocol was developed to provide further guidance on implementing the California Air Resources Board's (CARB) *Land Use and Air Quality Handbook: A Community Perspective* (CARB 2005), which offers guidance on siting sensitive land uses in proximity to sources of air toxics; however, the Protocol is intended to assist in assessing the potential cancer risk of siting sensitive land uses adjacent to major roadways for DPM only.

While the Protocol was developed to assess proposed land use projects in Sacramento County, the SLOCAPCD has previously advised using the SMAQMD Protocol as a screening method to determine if development on a project site would have the potential to expose future sensitive receptors to unacceptable cancer risks and if a site-specific, refined HRA would be required.

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The first step of the project screening approach is to determine if the nearest proposed sensitive receptor affected by the project is at least 500 feet from the nearest lane of a high-traffic-volume roadway (defined as a freeway, urban roadway with greater than 100,000 vehicles per day, or rural roadway with 50,000 vehicles per day). As the proposed project site is within the 500-foot distance of Highway 101, which is a high-traffic-volume roadway, then the Protocol's screening process (step 2) would be required to determine if the nearest sensitive receptor's increase in individual cancer risk is lower than the evaluation criterion. If lower than the evaluation criterion, then no further roadway-related air quality evaluation is recommended under the Protocol, and the projected cancer risk value and screening table used should be disclosed in the environmental documentation. If higher than the evaluation criterion, a site-specific, refined HRA would be required.

SLOCAPCD CEQA Health Risk Threshold

To provide uniform direction on how to assess the health risk impacts from and to proposed land use projects, the California Air Pollution Control Officers Associations (CAPCOA) adopted a guidance document titled *Health Risk Assessment for Proposed Land Use Projects* (CAPCOA 2009). As discussed in the SLOCAPCD's *CEQA Air Quality Handbook*, the CAPCOA guidance document focuses on how to identify and quantify the potential acute, chronic, and cancer health impacts of sources under CEQA review. As defined in the CAPCOA guidance document, there are two types of land use projects that have the potential to cause long-term public health impacts:

Type A Projects: New proposed land use projects that generate toxic air contaminants (such as gasoline stations, distribution facilities, or asphalt batch plants) that could adversely impact sensitive receptors. Air districts across California are uniform in their recommendation to use the significance thresholds that have been established under each district's Air Toxics "Hot Spots" and permitting programs. The SLOCAPCD has defined the excess cancer risk significance threshold at 10 in 1 million for Type A projects in San Luis Obispo County (SLOCAPCD 2012).

Type B Projects: New land use projects that will place sensitive receptors (e.g., residential units) near existing sources of toxic air contaminants (e.g., freeway). The SLOCAPCD has established a CEQA health risk threshold of 89 in 1 million for the analysis of projects involving sensitive receptors proposed near air toxics sources (SLOCAPCD 2012). This value represents the population-weighted average cancer risk caused by ambient background concentrations of toxic air contaminants in San Luis Obispo County. The SLOCAPCD

recommends health risk screening and, if necessary, a site-specific, refined HRA for any residential or sensitive receptor development proposed in proximity to air toxics sources.

The proposed multi-family development is a Type B project; therefore, the CEQA cancer risk threshold of 89 in 1 million is applied in this screening assessment.

3.0 SCREENING ANALYSIS

The SMAQMD Protocol requires the analyst to determine the relevant cancer risk value in screening tables that reflect local conditions. The appropriate value is determined by referencing the general direction of the roadway (East-West or North-South), project orientation (upwind or downwind from the roadway), and traffic volume (Caltrans peak-hour traffic volume) in the tables. The increased cancer risk is shown in the table cell that corresponds to the proposed distance from the nearest lane of the roadway to the nearest affected sensitive receptor. Since the potential location of housing units is unknown at this time, a receptor at the edge of the property boundary was assumed to conservatively calculate the health risk. The SMAQMD Protocol indicates to round up to the most conservative table values. The project site is located west (upwind) of Highway 101, which is a North-South roadway. DPM cancer risk for this roadway alignment and project orientation is shown in Table 1, Diesel Particulate Matter Cancer Risk.

Values from the Caltrans 2015 Traffic Volumes on the California State Highways publication (Caltrans 2015) were used to estimate DPM cancer risk in the screening table. The project site is located north of the intersection of Vineyard Drive and Highway 101, and south of the intersection of Las Tablas Road and Highway 101. The “ahead” (north of the intersection) peak-hour traffic volume for Vineyard Drive is 5,800 vehicles per hour, which is the same as the “back” (south of the intersection) peak-hour traffic volume for Las Tablas Road.

Reported Highway 101 traffic volume of 5,800 vehicles per hour near the project site falls between the 4,000 and 8,000 peak-hour traffic volume rows in Table 1. Because the DPM ambient concentrations and associated cancer risks are directly proportional to the emission rate (corresponding to the hourly traffic volume), the cancer risk values at 5,800 vehicles per hour were interpolated between the values for 4,000 and 8,000 from the SMAQMD Protocol. Additionally, based on the site boundary distance from the edge of Highway 101, cancer risk values at 130 feet were calculated by interpolating the SMAQMD Protocol values for 100 and 200 feet. Per the screening table interpolated values, the DPM cancer risk for 5,800 vehicles per hour drops below the SLOCAPCD Type B project health risk threshold of 89 in 1 million between 50 feet and 100 feet from the edge of the nearest travel lane of the highway. As shown

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in Table 1, the cancer risk threshold would not be exceeded at a 130-foot property line distance from the highway.

Table 1
Diesel Particulate Matter Cancer Risk
Projects West (Upwind) of a North-South Roadway
(Potential Incremental Cancer Chances per Million People)

Peak-Hour Traffic (vehicle/hour)	Receptor Distance from Edge of Nearest Travel Lane (feet)								
	10	25	50	100	130*	200	300	400	500
4,000	140	108	83	54	48	35	25	19	16
5,800 ^a	203	160	119	80	71	51	37	29	23
8,000	280	223	162	111	99	70	51	41	32
12,000	429	340	248	169	150	105	76	60	51
16,000	572	452	331	226	201	143	105	83	67
20,000	719	566	417	283	252	178	130	102	83
24,000	859	677	499	340	302	213	156	124	102

Source: SMAQMD 2011.

^a Cancer risk values at 5,800 vehicles per peak hour were calculated by interpolating the SMAQMD Protocol values for 4,000 and 8,000 peak-hour traffic. Risk values at 130 feet were calculated by interpolating the SMAQMD Protocol values for 100 and 200 feet.

Based on interpolated values for peak-hour traffic volume on Highway 101 near the project site, a parcel boundary located 130 feet from the edge of the nearest travel lane of the highway would pass the screening test (step 2), and would not require a site-specific, refined HRA (step 3). Accordingly, the multi-family unit development on the proposed project site would not exceed the SLOCAPCD health risk threshold of 89 in 1 million.

4.0 REFERENCES

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SMAQMD (Sacramento Metropolitan Air Quality Management District). 2011. *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways*. Version 2.4. March.

If you have any questions regarding this assessment, please feel free to contact Matthew Morales at 916.847.9780 or mmorales@dudek.com or Jennifer Reed at 949.373.8333 or jreed@dudek.com.