ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
1 Willowbrook Court, Suite 120
Petaluma, California 94954
Tel: 707-794-0400 *Fax: 707-794-0405*
www.illingworthrodkin.com *illro@illingworthrodkin.com*

March 16, 2015

Akoni Danielsen
Principal Project Manager
David J. Powers & Associates, Inc.
1871 The Alameda, Suite 200
San Jose, CA 95126

SUBJECT: Morgan Hill Baseball Fields Complex Project – TAC Assessment

Dear Akoni:

This letter presents an analysis of toxic air contaminant effects on the proposed Morgan Hill Baseball Fields Complex project. The project proposes to construct a total of six baseball and softball fields along with supporting facilities and surface parking on a 22.6 acre lot adjacent to the northbound side of U.S. Highway 101. It is our understanding that a program EIR was recently certified for a specific plan covering project site and the EIR identified the need to evaluate air pollutants affecting recreational uses and noise attributable to project operations at nearby receptors. The following mitigation measure is addressed:

> *MM AIR-4b: SEQ Area. Prior to the final discretionary approval for any recreational use that is proposed pursuant to the Morgan Hill SEQ General Plan Amendments, the City of Morgan Hill shall determine the area of impact from toxic emissions from US 101 and existing stationary sources that may potentially exceed the BAAQMD significance criteria for cancer or non-cancer toxic air contaminant exposure. Emissions from US 101 shall be estimated using the BAAQMD roadway screening tool. In addition, distance to stationary sources near the project shall be compared with the distance threshold recommended by California Air Resources Board's Land Use Handbook distance guidance. If recreational projects are proposed within an area exceeding the screening threshold, the City shall require a Health Risk Assessment to determine the potential health risk level and to identify design features that shall be installed to reduce the impact to less than significant levels. No construction of any sensitive receptor land use within the area of impact of US 101 or stationary source as described above shall be allowed unless the risk is first determined to be less than the BAAQMD's significance criteria for toxic air contaminant exposure.*

Discussion of TACs

The primary air pollutant concern associated with this project is exposure to toxic air contaminants (TACs) from U.S. Highway 101 traffic. TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer or serious illness) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by motor vehicle and equipment fuel combustion, industry, agriculture, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a highway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level. The identification, regulation, and monitoring of TACs is relatively new compared to that for criteria air pollutants that have established ambient air quality standards. TACs are regulated or evaluated on the basis of risk to human health rather than comparison to an ambient air quality standard or emission-based threshold.

Diesel exhaust, in the form of diesel particulate matter (DPM), is the predominant TAC in urban air with the potential to cause cancer.[1] It is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the federal Hazardous Air Pollutants programs. California has adopted a comprehensive diesel risk reduction program. The U.S. Environmental Protection Agency (EPA) and the CARB have adopted low-sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially. The CARB recently adopted new regulations requiring the retrofit and/or replacement of construction equipment, on-highway diesel trucks and diesel buses in order to lower fine particulate matter ($PM_{2.5}$) emissions, and reduce statewide cancer risk from diesel exhaust.

Particulate matter in excess of state and federal standards represents another challenge for the Bay Area. Elevated concentrations of $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities,

[1] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

elementary schools, and parks. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs.

Health Risks Associated with TACs

Emissions of TACs from U.S. Highway 101 traffic were estimated by Bay Area Air Quality Management District (BAAQMD) using various emissions models and results are reported using the District's *Highway Screening Analysis Tool*. This is a Google Earth map tool that identifies estimated risk and hazard impacts from highways throughout the Bay Area. Health risks potentially associated with the estimated concentrations of pollutants in the air are characterized in terms of excess lifetime cancer risks (for carcinogenic substances), or comparison with reference exposure levels (RELs) for non-cancer health effects (for non-carcinogenic substances). This tool also provides annual $PM_{2.5}$ concentrations. The screening level risks from U.S. Highway 101 at near ground level (i.e., 6 feet above ground) are as follows:

Distance from Freeway Edge	Cancer Risk (per Million)	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)	Chronic Risk (Hazard Index)	Acute Risk (Hazard Index)
200 feet	66.044	0.459	0.061	0.034
300 feet	52.289	0.362	0.048	0.030
400 feet	43.815	0.303	0.040	0.026
500 feet	38.049	0.262	0.035	0.023

BAAQMD considers a project that results in excess lifetime cancer risk greater than 10 chances per million to be significant. Cancer risk risk for users of the project would not be a significant issue due to the relatively short exposure periods that they would experience. The excess lifetime cancer risk for a pollutant is estimated as the product of a lifetime dose and the cancer potency factor derived by the California Office of Environmental Health Hazard Assessment (OEHHA). In other words, it represents the increased cancer risk associated with an almost continuous exposure to concentrations of TACs in the air over a 70-year lifetime. The BAAQMD screening data represent almost continuous lifetime exposure (i.e., 24 hours per day, 350 days per year, and 70 years). In addition, the cancer risk computations incorporate age-sensitivity factors that account for the much greater sensitivity of infants and small children to TACs. Given that healthy individuals would spend a small fraction of their life at the field, their cancer risk associated with this exposure would be well below 10 in one million. For example, a ball field user that spends 10 hours a week and40 weeks a year at the project site for 40 years would have a cancer risk of 3 percent of that that a lifetime resident would have that is shown above. As a result, cancer risk would be less than 2 in one million for a hypothetical worst-case exposure.

$PM_{2.5}$ exposure would exceed BAAQMD's recommended threshold of 0.3 $\mu g/m^3$ for annual concentrations for the western portion of the project site. Again, users would spend only a small portion of their time at the site. Therefore, exposure to $PM_{2.5}$ from U.S. Highway 101 would not be significant.

Evaluation of potential non-cancer health effects from exposure to short-term in the air is performed by comparing modeled concentrations in air with the RELs. A REL is a concentration in the air at or below which no adverse health effects are anticipated. RELs are based on the most sensitive adverse effects reported in the medical and toxicological literature. Potential non cancer effects are evaluated by calculating a ratio of the modeled concentration in the air and the REL. This ratio is referred to as a hazard index. The significance threshold for non-cancer hazards was recommended by BAAQMD as a hazard index of 1.0. The BAAQMD screening data include a prediction of chronic- and acute non-cancer hazards. The evaluation against chronic non-cancer hazards is not appropriate, since users would only have short-term (or acute) exposures. The BAAQMD screening data reported above show that acute non-cancer hazards at the western portion of the site closest to U.S. Highway 101 would be well below the significance threshold.

* * *

This concludes our assessment of TAC impacts to users of the proposed Baseball Fields Complex Project. Please contact us if you have any questions or require additional information.

Sincerely,

James A. Reyff
Principal, Senior Consultant
Illingworth & Rodkin, Inc.

(I&R# 15-024)