January 4, 2019 Via E-mail

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Re: AC by Marriott - West San Jose Project (January 8, 2019, City Council Hearing of Appeal, Agenda Item 10.3; Project File No. HI7-023)

Dear Mayor Liccardo, City Council Members, Director Hughey, Deputy Director Do, Mr. Rivera, and Ms. Mathur:

Please accept the following additional comments submitted on behalf of Laborers International Union of North America, Local Union 270 and its members ("LIUNA") regarding the Initial Study and Mitigated Negative Declaration ("IS/MND") prepared for the AC by Marriott - West San Jose Project ("Project") (Project File No. HI7-023) and in support of LIUNA's appeal of the Project now pending before the City Council. This additional comment focuses the Council's attention on the expert evidence submitted by LIUNA that establishes fair arguments that (1) the Project's construction and operation may have significant health risks on nearby sensitive receptors living feet from the proposed site and (2) the Project's operation may have significant health risks from exposing future employees of the hotel to formaldehyde emissions from the Project.

Under the "fair argument" standard, the City must prepare an EIR if any substantial evidence in the record indicates that a project may have an adverse environmental effect—even if contrary evidence exists to support the agency's decision. 14 CCR § 15064(f)(1); *Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 931. The "fair argument" standard creates a "low threshold" favoring environmental review through an EIR rather than through issuance of negative declarations or notices of exemption from CEQA. *Pocket Protectors,* 124 Cal.App.4th at 928. As a matter of law, "substantial evidence includes . . . expert opinion." Pub. Resources Code, § 21080(e)(1); 14 CCR § 15064(f)(5).) CEQA Guidelines demand that where experts have presented conflicting evidence on the extent of the environmental effects of a project, the agency must consider the environmental effects to be significant and prepare an EIR. 14 CCR § 15064(f)(5); Pub. Res. Code § 21080(e)(1). Where, as here, there is no conflicting expert evidence disputing the Project's health risks and only a flawed health risk assessment for the construction phase of the Project, substantial evidence of a fair argument exists that the Project may have significant health risk impacts requiring the preparation of an EIR.

A. Substantial Expert Evidence Establishes a Fair Argument That the Project's Emissions of Diesel Particulate Matter May Have Significant Impacts on Adjacent Residents.

Our expert consultants at SWAPE, including Paul E. Rosenfeld, Ph.D., a recognized expert on Chemical Fate and Transport & Air Dispersion Modeling and a Risk Assessment & Remediation Specialist, have had an opportunity to review staff's responses to comments and a health risk assessment ("HRA") of the Project's construction phase prepared by the applicant's consultant Illingworth & Rodkin, Inc. and distributed by staff just prior to the Planning Director hearing on October 30, 2018. As is presented in the attached comments prepared by SWAPE (attached as Exhibit 1), Dr. Rosenfeld's and SWAPE's review of the HRA reveals that the construction health risk modeling assumed a construction period of only 13 months rather than the 18-month period identified by the applicant and staff. SWAPE Jan. 3, 2019 Comment, p. 3. As a result, emissions of toxic air contaminants, in particular diesel particulate matter emitted by construction equipment and trucks for five months of the Project's construction are omitted from the consultant's health risk assessment. *Id*. By reducing the emission period by almost 30 percent, it is likely that the projected cancer risk to infants of 7.1 cancers in a million has been significantly underestimated.

In addition, SWAPE's review reveals that the applicant's construction HRA also does not address a requisite class of sensitive receptors – the third trimester receptor. SWAPE Jan. 3, 2019 Comment, p. 3. BAAQMD's Health Risk Assessment Guidelines expressly provide that "[f]or residential exposures, the cancer risk calculations should include the most sensitive age groups: from third trimester of pregnancy to 3 years of age for a 30 year exposure duration." BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines, p. 4 (January 2016) (attached as Exhibit 2). As SWAPE observes:

> failing to assess the health risk posed to the 3rd trimester receptor presents a significant issue as the BAAQMD requires this receptor be evaluated. By only evaluating the health risk posed to the infantile sensitive receptor, the Project Applicant leaves a large gap in their analysis. Prior to Project Approval, the health risk posed to the nearest sensitive receptor starting at the third trimester stage of life should be quantified and compared to BAAQMD thresholds.

SWAPE Jan. 3, 2019 Comment, p. 3. As a result, by omitting 5 months of construction from the analysis as well as any consideration of the 3rd trimester receptors, the applicant's construction HRA does not amount to substantial evidence supporting the MND's assertion of no significant health impacts and a fair argument exists that health risks from the Project's construction may be significant.

The likelihood of a significant health risk impact from the Project to sensitive receptors living adjacent to the site is made more obvious by the continuing refusal of the applicant and staff to perform a health risk assessment that includes the Project's operation. This is despite SWAPE's earlier comments applying the U.S. Environmental Protection Agency's AERSCREEN model, as recommended by OEHHA and the California Air Pollution Control Officers Association, to calculate that construction and operation of the Project will result in cancer risks to infants, children, adults, third trimester receptors, and nearby residents over the course of a 30-year residential lifetime of, respectively, 310 in one million, 170 in one million, 26 in one million, 16 in one million, and 510 in one million, well in excess of BAAQMD's threshold. *See* SWAPE Oct. 24, 2018 Comment, pp. 4-8. Based on this substantial screening evidence, a fair argument is present that the Project may have significant health risk impacts on nearby residents.

Despite SWAPE's earlier comments, staff's response assumes the operational health risks of the Project are insignificant, even when combined with the construction emission health risks. As staff's response states:

> The project is not a significant generator of toxic air contaminants (TAC) from operation as it is a hotel with no manufacturing, generators, or significant numbers of truck trips (such as a warehouse distribution facility). In fact, as stated in the Health Risk Assessment prepared for the proposed project, the project would replace the Stevens Creek Shell gasoline station which is an existing sources of TAC emissions.

Staff Responses, p. 15. This conclusory assertion is not supported by any quantitative analysis. Hence, the MND has failed to calculate the Project's overall health risk to the immediately adjacent neighbors, there being no modeled cancer risk that can be added to the construction health risk which, even though flawed, still calculates a cancer risk to infants of 7.1 cancers in a million. Correcting the construction HRA's incorrect inputs and adding in the Project's operational TAC emissions may exceed BAAQMD's significance threshold of 10 in a million cancers.

In the absence of any quantitative analysis by the applicant or staff, SWAPE has prepared a health risk assessment that includes the Project's construction and operational TAC emissions, consistent with guidance provided by OEHHA. SWAPE Jan. 3, 2019 Comment, pp. 4-7. Applying the CalEEMod inputs used by the applicant, SWAPE prepared an updated health risk screening assessment using the AERSCREEN model, a screening level air quality dispersion model included in the OEHHA and the California Air Pollution Control Officers Associated (CAPCOA) guidance as the appropriate air dispersion model for Level 2 health risk screening assessments ("HRSAs"). *Id*., p. 5. SWAPE's analysis does not correct the significant flaw in the applicant's construction emission inputs that construction will be five months shorter than stated in the IS/MND. Nevertheless, even with that flawed input, cancer risks for most of the receptor groups are well in excess of BAAQMD's significance threshold. As SWAPE summarizes:

> The excess cancer risk posed to adults, children, infants, and during the third trimester of pregnancy at the MEIR located approximately 1 meter away, over the course of Project construction and operation are approximately 16, 100, 24, and .69 in one million, respectively. Furthermore, the net excess cancer risk over the course of a residential lifetime (30 years) at the MEIR is approximately 142 in one million. Consistent with OEHHA guidance, exposure was assumed to begin in the third trimester of pregnancy to provide the most conservative estimates of air quality hazards. The adult, child, infant, and net lifetime cancer risks exceed the BAAQMD threshold of 10 in one million.

SWAPE Jan. 3, 2019 Comment, pp. 4-7. Although SWAPE's analysis is a screening-level HRA, it signals the need for the applicant to perform a more refined HRA for not only the construction phase of the Project but its operational phase as well. Absent an HRA addressing the operational phase and, for the construction phase, using correct input parameters, SWAPE's updated screening-level HRA is substantial evidence of a fair argument that the Project may have significant health risk impacts on immediately adjacent neighbors.

Likewise, as noted in our October 24, 2018 comment, by adding TAC emissions to the immediate area, the Project must evaluate the cumulative impacts of the Project including the adjacent Stevens Creek Boulevard's existing TAC emissions on the Project's nearby sensitive receptors. Given the potential health risks identified above and the fact that the Project itself may increase cancer risks by more than 100 in a million, the addition of TACs from the Project's construction and operation is considerable and may significantly contribute to the Project's cumulative adverse health risk impact including the existing impacts from traffic on Steven's Creek Boulevard and perhaps other adjacent TAC sources. Hence, the IS/MND's conclusion that the Project will not have cumulative health risk impact is not supported by substantial evidence and a fair argument exists that the Project will result in cumulative health risks.

B. Substantial Expert Evidence Establishes a Fair Argument That the Project's Emissions of Formaldehyde May Have Significant Impacts on Future Employees.

In addition to the potentially significant health risks the Project will pose to adjacent neighbors, the Project also may pose significant health risks to workers at the hotel. LIUNA previously submitted expert comments prepared by Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH evaluating the Project's likely emissions of formaldehyde to indoor air. Indoor Envt'l Engineering Comments (Oct. 29, 2018). Mr. Offermann's expert resume is attached as Exhibit 3. Based on his calculations, Mr. Offermann states that there is a fair argument that full-time workers at the AC by Marriott project will be exposed to a cancer risk from formaldehyde of approximately 18.4 cancers per million. *Id*., p. 4. As LIUNA noted earlier to the Planning Director and staff, this is almost double the Bay Area Air Quality Management District (BAAQMD) CEQA significance threshold for airborne cancer risk of 10 per million. *Id*. Dr. Offermann's calculation assumes that the Project will only use interior finishing products that comply with California Air Resources Board's Air Toxic Control Measures limiting the amount of formaldehyde in products sold within California. *Id*.

Despite this expert evidence of a significant potential impact, staff, with no expertise of its own, attempt to refute Mr. Offermann's concerns rather than evaluate the likely impact and address it. Thus, staff asserts that Mr. Offermann's calculations are wrong because "the project will need to comply with the 2016 CalGreen Building Code, which specifies that composite wood products (such as hardwood plywood and particleboard) meet the requirements for formaldehyde as specified in the California Air Resources Board's Air Toxic Control Measures." Staff Responses, p. 9. This, of course, does not respond at all because Mr. Offermann assumes such compliance in his calculations. Indoor Envt'l Engineering Comments, p. 4. Indeed, Mr. Offermann is one of the preeminent indoor air pollution experts whose investigatory work in the early 2000s was one of the primary bases of CARB's ATSM standards. Offermann CV, p. 1. His extensive experience measuring and studying formaldehyde and other contaminants in every variety of indoor environment makes him more than qualified to provide his expert opinion on the likely formaldehyde emissions in a new building. Offermann CV.

In their zeal to refute Mr. Offermann's expert comments rather than learn from them and disclose potential impacts, staff asserts incorrectly that "[]he 2016 CalGreen Building Code does not allow [no] added formaldehyde-based resins or ultra-low emitting formaldehyde resins, and requires documentation of compliance with the California Air Resources Board's Air Toxic Control Measures." Staff Responses, p. 9. Why would the building code not allow products that do not emit carcinogenic formaldehyde? The code says no such thing. Indeed, CARB expressly promotes the use of no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins in its regulatory program, allowing exemptions from testing for manufacturers using such resins. *See* https://www.arb.ca.gov/toxics/compwood/naf_ulef/naf_ulef.htm. A developer is free to utilize these safer materials that do not rely on formaldehyde resins or go well beyond the ATCM limits. Likewise, the City is free to formulate a mitigation requirement that conditions a project on utilizing interior finishing materials that are made from these NAF and ULEF resins.

Merely stating a project will comply with another agency's regulations is not sufficient to satisfy CEQA's disclosure and analysis requirements. *See Kings Co v. Hanford* (1990)221 CA3d 692, 712-718 (agency erred by "wrongly assuming that, simply because the smokestack emissions would comply with applicable regulations from other agencies regulating air quality, the overall project would not cause significant effects to air quality."); *Citizens for Non-Toxic Pest Control v. Dept. Food & Agr.* (1986) 187 CA3d 1575, 1587-88 (state agency may not rely on registration status of pesticide to avoid CEQA review); *Sundstrom v. Cty. of Mendocino* (1988) 202 Cal.App.3d 296, 309 ("Having no 'relevant data' pointing to a solution of the sludge disposal problem, the County evaded its duty to engage in a comprehensive environmental review by approving the use permit subject to a condition requiring future regulatory compliance"); *See Citizens for Quality Growth v. City of Mount Shasta* (1988) 198 Cal.App.3d 433, 442 n. 8 (lead agency cannot refrain from considering means of exercising its own regulatory power simply because another agency has general authority over the impacted natural resource). Especially where as here an expert comment indicates that significant health risks may be posed even if a Project's materials comply with the CARB regulations, the City is obligated to address these potential impacts in an EIR.

After stating that the hotel would use materials that merely comply with the CARB ATSM levels, and rejecting the NAF and ULEF based materials as not allowed, staff then reverses course and argues that Mr. Offermann "is speculating in the assertion that composite wood materials would be used in the interior of the building." Staff Responses, p. 9. First, staff asserts that NAF and ULEF options are not allowed, guaranteeing that materials merely complying with the CARB ASTM requirements will be used in the Project. Those are the very materials that Mr. Offermann reasonably expects will be present and upon which he based his health risk calculations.

Second, any inability of the public to understand the elements of a project, including the types of formaldehyde-emitting materials that will be used on the interior of the project, is equally applicable to staff. If staff does not know what formaldehyde emitting materials will be used, it certainly cannot claim to have based its responses to Mr. Offermann's comments on any substantial evidence. Just like traffic, NOx emissions, noise and other impacts, staff must obtain from the applicant the information necessary to evaluate those impacts. "[U]nder CEQA, the lead agency bears a burden to investigate potential environmental impacts. 'If the local agency has failed to study an area of possible environmental impact, a fair argument may be based on the limited facts in the record. Deficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences.'" *County*

Sanitation Dist. No. 2 v. County of Kern (2005) 127 Cal. App. 4th 1544, 1597, quoting *Sundstrom v. County of Mendocino* (1988) 202 Cal. App. 3d 296, 311. Staff has not met its burden to investigate this significant worker health issue.

Mr. Offermann's analysis is the only substantial evidence in the record discussing the Project's formaldehyde emissions and resulting health risks. That expert evidence is substantial evidence that the Project may have a significant health impact on workers at the facility.

For the above reasons as well as those presented in earlier comments, the IS/MND for the Project should be withdrawn, an EIR should be prepared, and the draft EIR should be circulated for public review and comment in accordance with CEQA. Thank you for considering these comments.

Sincerely,

Michael R. Lozeau
Lozeau | Drury LLP

Attachments

EXHIBIT 1

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

January 3, 2019

Michael Lozeau
Lozeau | Drury LLP

Subject: **Response to Comments on the AC by Marriott – West San Jose Project**

Dear Mr. Lozeau,

We have reviewed the November 2018 Responses to the Public Comments to the Revised Initial Study and Mitigated Negative Declaration ("Responses"), which addressed comments we made in a September 24, 2018 comment letter on the August 2018 Initial Study and Mitigated Negative Declaration (IS/MND) for the AC by Marriott – West San Jose Project ("Project") located in the City of San Jose ("City"). After our review, we find the Responses provided to be insufficient in addressing the Project's potential health risk impacts. As we asserted in our September 2018 letter, a Draft Environmental Impact Report ("DEIR") should be prepared for the Project in order to adequately evaluate the Project's potential impacts.

Air Quality

Diesel Particulate Matter Inadequately Evaluated

Our September 2018 comment letter found that the IS/MND failed to evaluate the health risk posed to nearby sensitive receptors as a result of Project construction and operation. We provided a supplemental analysis in order to demonstrate that the Project will create a significant health risk to nearby sensitive receptors. In our comment letter, we prepared a screening level health risk assessment (HRA) to evaluate the health risk posed to residences near the Project site. We concluded that a residential receptor over a 30-year period, starting at the 3rd trimester stage of life would have an excess cancer risk of 510 in one million.[1] This risk significantly exceeds Bay Area Air Quality Management District's (BAAQMD) significance threshold of 10 in one million. In response to our letter, the Project Applicant prepared a construction HRA, conducted by Illingworth & Rodkin, Inc., found in Attachment C of the Responses. Furthermore, the Project Applicant provided responses asserting that Project operations would not generate high levels of toxic air contaminants (TAC) (Responses, p. 15). As discussed in the following sections, we find the Responses to be inadequate and maintain that the risk

[1] See SWAPE's September 24, 2018 comment letter on the AC by Marriot – West San Jose Project

impact conclusions made within the IS/MND and the Responses' construction HRA should not be relied upon to determine the significance of the cancer risk posed to nearby sensitive receptors as a result of Project implementation. Therefore, the Project should not be approved until a DEIR is prepared that includes a proper assessment of health risks to nearby sensitive receptors resulting from Project construction *and* operation.

Incorrect Evaluation of Construction-Related Health Risk

In response to our September 24, 2018 comment letter discussing the City's lack of a proper HRA, the City responded by stating,

> "A Health Risk Assessment was prepared for the proposed project by Illingworth & Rodkin, dated November 5, 2018 (Appendix C). This health risk assessment evaluated potential health effects of sensitive receptors at these nearby residences from construction emissions of diesel particulate matter (DPM) and particulate matter (PM2.5)" (Responses, p. 13).

The City goes onto say,

> **"**Without mitigation, the project would have a less-than-significant impact with respect to community risk caused by project construction activities, since the maximum cancer risk, PM2.5 concentration, and HI do not exceed the single-source thresholds of 10.0 per million for cancer risk, 0.3 µg/m3 for PM2.5, and HI of 1.0, respectively" (Responses, p. 16).

The HRA utilizes the United States Environmental Protection Agency's (U.S. EPA) Regulatory Model AERMOD in order to determine that the net health risk posed to the nearest residential receptor from Project construction is approximately 7.1 in one million, which is less than the 10 in one million threshold set forth by the BAAQMD (see excerpt below) (Table 2, Attachment C, p. 7).

Table 2. Impacts from Combined Sources at Construction MEI

Source	Maximum Cancer Risk (per million)	$PM_{2.5}$ concentration ($\mu g/m^3$)	Hazard Index
Project Construction	9.7 (infant)	0.07	0.01
Removal of Shell Gas Station	2.5 (lifetime)	0.00	0.01
Project Increased Cancer Risk →	7.1 (infant)	0.07	0.00
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?	*No*	*No*	*No*
Interstate 280 (Link 289, 6ft) at 600 feet south	11.8	0.09	0.01
Stevens Creek Boulevard at 190 ft south ADT 28355	4.6	0.17	<0.03
Plant #2181 (Generator) at 640 feet	0.2	<0.01	<0.01
Plant #108709 (Gas Station) at 680 feet	0.7	-	<0.01
Plant #22425 (Generator) at 670 feet	0.9	<0.01	<0.01
Plant #22426 (Generator) at 850 feet	1.5	<0.01	<0.01
Combined Sources Total	26.8 (infant)	0.33	<0.09
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?	*No*	*No*	*No*

However, review of the HRA demonstrates that the Project Applicant incorrectly estimates the health risk posed to nearby sensitive receptors as a result of Project construction. Specifically, the HRA: (1) relies on a flawed CalEEMod model; and (2) fails to evaluate the health risk posed to the 3rd trimester receptor.

First, the HRA relies upon diesel particulate matter (DPM) emissions estimated from a flawed CalEEMod model that utilizes an incorrect construction duration. According to the IS/MND, "construction of the project is anticipated to take approximately eighteen (18) months, and will be developed in one (1) single phase" (IS/MND, p. 10). Furthermore, review of the Responses demonstrates that the Project Applicant confirms this construction duration and states, "development of the proposed project is anticipated to begin the first quarter of 2019, in one single phase and anticipated to take approximately eighteen months" (Responses, p. 18). However, review of the HRA's CalEEMod output files reveals that emissions were modeled assuming that construction would occur over a 13-month period (see excerpt below) (Attachment C, Responses, pp. 14).

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Grading	Grading	1/29/2019	4/22/2019	5	60	
3	Building Construction	Building Construction	4/24/2019	9/24/2019	5	110	
4	Architectural Coating	Architectural Coating	9/30/2019	1/3/2020	5	70	
5	Paving	Paving	1/14/2020	1/27/2020	5	10	

As you can see in the excerpt above, the air model assumed that Project construction activities would occur over an approximately 13-month period. As a result, the CalEEMod model fails to account for the emissions generated over five months of construction. Therefore, the CalEEMod model is incorrect and should not be used to determine Project significance.

Second, review of the HRA demonstrates that the Project Applicant failed to assess the health risk posed to the third trimester receptor (Attachment C, Responses, pp. 27). According to the BAAQMD,

> "For residential exposures, the cancer risk calculations should include the most sensitive age groups: from third trimester of pregnancy to 3 years of age for a 30 year exposure duration."[2]

Therefore, failing to assess the health risk posed to the 3rd trimester receptor presents a significant issue as the BAAQMD requires this receptor be evaluated. By only evaluating the health risk posed to the infantile sensitive receptor, the Project Applicant leaves a large gap in their analysis. Prior to Project Approval, the health risk posed to the nearest sensitive receptor starting at the third trimester stage of life should be quantified and compared to BAAQMD thresholds.

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[2] "Health Risk Assessment (HRA) Guidelines" BAAQMD, January 2016, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/rules-and-regs/workshops/2016/reg-2-5/hra-guidelines_clean_jan_2016-pdf.pdf?la=en, p. 4

Failure to Conduct an Operational Health Risk Assessment

In our September 24 letter, we stated that the IS/MND failed to conduct an HRA to evaluate the health risk posed to off-site nearby sensitive receptors as a result of the Project's operational emissions. In Response, the Project Applicant states,

> "The project is not a significant generator of toxic air contaminants (TAC) from operation as it is a hotel with no manufacturing, generators, or significant numbers of truck trips (such as a warehouse distribution facility). In fact, as stated in the Health Risk Assessment prepared for the proposed project, the project would replace the Stevens Creek Shell gasoline station which is an existing sources of TAC emissions" (Responses, p. 15).

We maintain that the omission of a proper HRA for existing, off-site sensitive receptors is inconsistent with recommendations set forth by the Office of Environmental Health Hazard Assessment (OEHHA), the organization responsible for providing recommendations for health risk assessments in California.[3] In February of 2015, OEHHA released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*, which was formally adopted in March of 2015.[4] This guidance document describes the types of projects that warrant the preparation of a HRA. Construction of the Project will produce emissions of DPM, a human carcinogen, through the exhaust stacks of construction equipment over a construction period of 18-months (IS/MND, p. 10). The OEHHA document recommends that all short-term projects lasting at least two months be evaluated for cancer risks to nearby sensitive receptors.[5] Therefore, regardless of the flaws, the Applicant's preparation of a construction HRA within the Responses was consistent with OEHHA guidelines. Furthermore, once construction of the Project is complete, the Project will operate for a long period of time. During operation, the Project will generate vehicle trips, which will generate additional exhaust emissions, thus continuing to expose nearby sensitive receptors to emissions. The OEHHA document recommends that exposure from projects lasting more than 6 months should be evaluated for the duration of the project, and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident (MEIR).[6] Even though we were not provided with the expected lifetime of the Project, we can reasonably assume that the Project will operate for at least 30 years, if not more. Therefore, health risks from Project operation should have also been evaluated by the IS/MND and the Responses, as a 30-year exposure duration vastly exceeds the 6-month requirement set forth by OEHHA.

Updated Analysis Demonstrated Significant Impact

In an effort to demonstrate the potential risk posed to nearby sensitive receptors as a result of the Project, we prepared an updated HRA including updated construction health risk calculations and an operational screening-level health risk. The results of our assessment, as described below, demonstrate

[3] See SWAPE's September 24, 2018 comment letter on the AC by Marriot – West San Jose Project

[4] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/hotspots2015.html

[5] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf, p. 8-18

[6] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf, p. 8-6, 8-15

that the construction health risk was underestimated and that operational DPM emissions may result in a potentially significant health risk impact that was not previously identified or evaluated.

In order to conduct our operational screening level risk assessment we relied upon AERSCREEN, which is a screening level air quality dispersion model. [7] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[8] and the California Air Pollution Control Officers Associated (CAPCOA)[9] guidance as the appropriate air dispersion model for Level 2 health risk screening assessments ("HRSAs"). A Level 2 HRSA utilizes a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed. If an unacceptable air quality hazard is determined to be possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project.

We prepared a preliminary HRA of the Project's health-related impact to sensitive receptors during operation using the annual PM10 exhaust estimates from the Responses' annual CalEEMod output files, found in Attachment B of the Responses. According to the HRA, the closest sensitive receptor is approximately 1.5 meters from the Project site (Attachment C, p. 4). Consistent with recommendations set forth by OEHHA, we used a residential exposure duration of 30 years, starting from the 3rd trimester stage of life. We also assumed that construction and operation of the Project would occur sequentially, with no gaps between each Project phase. Subtracting the 18-month construction duration from the total residential exposure duration of 30 years, we assumed that after Project construction, the MEIR would be exposed to the Project's operational DPM emissions for an additional 28.5 years. The AERSCREEN model relies on a continuous average emissions rate to simulate maximum downwind concentrations from point, area, and volume emissions sources. The CalEEMod model's annual emissions indicate that operational activities will generate approximately 48 pounds of DPM per year. We calculated an average DPM emission rate for operation by the following equation.

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{48.2\ lbs}{365\ \ days} \times \frac{453.6\ grams}{lb} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} \approx \mathbf{0.000693}\ {}^{\boldsymbol{g}}/_{\boldsymbol{s}}$$

Operational activity was simulated as a 0.41-acre rectangular area source in AERSCREEN, with dimensions of 41.5 meters by 40.6 meters. A release height of three meters was selected to represent the height of exhaust stacks on heavy-duty vehicles and an initial vertical dimension of one and a half meters was used to simulate instantaneous plume dispersion upon release. An urban meteorological setting was selected with model-default inputs for wind speed and direction distribution.

The AERSCREEN model generates maximum reasonable estimates of single-hour DPM concentrations from the Project site. EPA guidance suggests that in screening procedures, the annualized average

[7] "AERSCREEN Released as the EPA Recommended Screening Model," USEPA, April 11, 2011, *available at:* http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf
[8] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf
[9] "Health Risk Assessments for Proposed Land Use Projects," CAPCOA, July 2009, *available at:* http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf

concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[10] For example the single-hour concentration estimated by AERSCREEN for Project operation is approximately 3.984 µg/m^3 DPM at approximately 1 meter downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.3984 µg/m^3 for operation.

Moreover, as previously mentioned, the Responses' HRA utilizes U.S. EPA Regulatory Model AERMOD to obtain the concentration of DPM emitted as a result of on-site construction emissions. According to the HRA, the concentration of DPM at the nearest single-family residence located 1.5 meters from the Project site is approximately 0.0594 µg/m^3 for construction (Attachment C, p. 4 and Attachment C, pp. 24).

We calculated the excess cancer risk to the residential receptors located closest to the Project site using applicable HRA methodologies prescribed by OEHHA and the BAAQMD. Consistent with the construction schedule proposed by the IS/MND, the HRA's construction DPM concentration was used for the entire 3rd trimester of pregnancy (0.25 years) and the first 1.25 years of the infantile stage of life (0-2 years). The annualized average concentration for operation was used for the remainder of the 30-year exposure period, which makes up the remainder of the infantile stage of life, child stages of life (2 to 16 years), and adult stages of life (16 to 30 years). Consistent with OEHHA guidance, we used Age Sensitivity Factors (ASFs) to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution.[11] According to the updated guidance, quantified cancer risk should be multiplied by a factor of ten during the 3rd trimester of pregnancy and the first two years of life (infant), and should be multiplied by a factor of three during the child stage of life (2 to 16 years). Furthermore, in accordance with guidance set forth by OEHHA, we used 95th percentile breathing rates for infants.[12] Finally, according to BAAQMD guidance, we used a Fraction of Time At Home (FAH) Value of 0.85 for the 3rd trimester and infant receptors, 0.72 for child receptors, and 0.73 for the adult receptors.[13] We used a cancer potency factor of 1.1 (mg/kg-day)$^{-1}$ and an averaging time of 25,550 days. Additionally, in order to find the net lifetime cancer risk posed to the nearest sensitive receptor, we subtracted the cancer risk posed from the existing Shell Gas Station that will be removed during construction from the lifetime cancer risk. The results of our calculations are shown below.

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[10] http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf

[11] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

[12] "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act," June 5, 2015, *available at:* http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588-risk-assessment-guidelines.pdf?sfvrsn=6, p. 19
"Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

[13] "Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines." BAAQMD, January 2016, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/rules-and-regs/workshops/2016/reg-2-5/hra-guidelines_clean_jan_2016-pdf.pdf?la=en

The Maximum Exposed Individual at an Existing Residential Receptor (MEIR)					
Activity	**Duration (years)**	**Concentration (µg/m³)**	**Breathing Rate (L/kg-day)**	**ASF**	**Cancer Risk**
Construction	0.25	0.0594	361	10	6.9E-07
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	***6.9E-07***
Construction	1.25	0.0594	1090	10	1.0E-05
Operation	0.25	0.3984	1090	10	1.4E-05
Infant Exposure Duration	***2.00***			***Infant Exposure***	***2.4E-05***
Operation	14.00	0.3984	572	3	1.0E-04
Child Exposure Duration	***14.00***			***Child Exposure***	***1.0E-04***
Operation	14.00	0.3984	261	1	1.6E-05
Adult Exposure Duration	***14.00***			***Adult Exposure***	***1.6E-05***
Lifetime Exposure Duration	**30.00**			**Lifetime Exposure**	**1.45E-04**
				Existing Shell Gas Station	**2.50E-06**
				Net Lifetime Exposure	***1.42E-04***

The excess cancer risk posed to adults, children, infants, and during the third trimester of pregnancy at the MEIR located approximately 1 meter away, over the course of Project construction and operation are approximately 16, 100, 24, and .69 in one million, respectively. Furthermore, the net excess cancer risk over the course of a residential lifetime (30 years) at the MEIR is approximately 142 in one million. Consistent with OEHHA guidance, exposure was assumed to begin in the third trimester of pregnancy to provide the most conservative estimates of air quality hazards. The adult, child, infant, and net lifetime cancer risks exceed the BAAQMD threshold of 10 in one million.

It should be noted that our construction analysis relies on the DPM concentration calculated from the Project's HRA. As previously mentioned, this concentration was calculated from a flawed CalEEMod model and, as a result, our construction health risk may be underestimated. Furthermore, our operational analysis represents a screening-level HRA, which is known to be more conservative, and tends to err on the side of health protection.[14] The purpose of a screening-level HRA, however, is to determine if a more refined HRA needs to be conducted. If the results of a screening-level health risk are above applicable thresholds, then the Project needs to conduct a more refined HRA that is more representative of site-specific concentrations. Our screening-level HRA demonstrates that operation of the Project could result in a potentially significant health risk impact, when correct exposure assumptions and up-to-date, applicable guidance are used. As a result, a refined HRA must be prepared to examine air quality impacts generated by Project operation using site-specific meteorology and specific equipment usage schedules. A DEIR must be prepared to adequately evaluate the Project's health risk impact and should include additional mitigation measures to reduce these impacts to a less-than-significant level.

[14] http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf p. 1-5

Sincerely,

Paul E. Rosenfeld, Ph.D.

Matt Hagemann, P.G., C.Hg.

Kaitlyn Heck

Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education:

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on VOC filtration.
M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.
B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience:

Dr. Rosenfeld is the Co-Founder and Principal Environmental Chemist at Soil Water Air Protection Enterprise (SWAPE). His focus is the fate and transport of environmental contaminants, risk assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling, oil spills, boilers, incinerators and other industrial and agricultural sources relating to nuisance and personal injury. His project experience ranges from monitoring and modeling of pollution sources as they relate to human and ecological health. Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing petroleum, chlorinated solvents, pesticides, radioactive waste, PCBs, PAHs, dioxins, furans, volatile organics, semi-volatile organics, perchlorate, heavy metals, asbestos, PFOA, unusual polymers, MtBE, fuel oxygenates and odor. Dr. Rosenfeld has evaluated greenhouse gas emissions using various modeling programs recommended by California Air Quality Management Districts.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist
Bureau of Land Management, Kremmling Colorado 1990; Scientist

Publications:

Chen, J. A., Zapata, A R., Sutherland, A. J., Molmen, D. R,. Chow, B. S., Wu, L. E., **Rosenfeld, P. E.,** Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermod and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

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Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, 70, 000527-000530.

Hensley, A.R. A. Scott, J. J. J. Clark, **Rosenfeld, P.E.** (2007). Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility. *Environmental Research*. 105, 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007). The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities. *Water Science & Technology* 55(5), 345-357.

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Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.** (2007). *Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities.* Boston Massachusetts: Elsevier Publishing,

Rosenfeld P.E., and Suffet, I.H. (Mel) (2007). Anatomy of an Odor Wheel. *Water Science and Technology*.

Rosenfeld, P.E., Clark, J.J.J., Hensley A.R., Suffet, I.H. (Mel) (2007). The use of an odor wheel classification for evaluation of human health risk criteria for compost facilities. *Water Science And Technology*.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash. *Water Science and Technology*. 49(9),171-178.

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Rosenfeld, P.E., and Suffet, I.H. (2004). Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids. *Water Science and Technology*. 49(9), 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash, *Water Science and Technology*, 49(9), 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004). Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. *Water Environment Research*. 76(4), 310-315.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). Compost Demonstration Project, Sacramento California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Integrated Waste Management Board Public Affairs Office*, Publications Clearinghouse (MS–6), Sacramento, CA Publication #442-02-008.

Rosenfeld, P.E., and C.L. Henry. (2001). Characterization of odor emissions from three different biosolids. *Water Soil and Air Pollution*. 127(1-4), 173-191.

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Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. *Water Environment Research*. 73(4), 363-367.

Rosenfeld, P.E., and C.L. Henry. (2001). Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants. *Water Environment Research*, 73, 388-393.

Rosenfeld, P.E., and Henry C. L., (2001). High carbon wood ash effect on biosolids microbial activity and odor. *Water Environment Research*. 131(1-4), 247-262.

Chollack, T. and **P. Rosenfeld. (**1998). Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

Rosenfeld, P. E. (1992). The Mount Liamuiga Crater Trail. *Heritage Magazine of St. Kitts*, 3(2).

Rosenfeld, P. E. (1993). High School Biogas Project to Prevent Deforestation On St. Kitts. *Biomass Users Network*, 7(1).

Rosenfeld, P. E. (1998). Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

Rosenfeld, P. E. (1994). Potential Utilization of Small Diameter Trees on Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

Presentations:

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society.* Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Bringing Environmental Justice to East St. Louis, Illinois. *Urban Environmental Pollution.* Lecture conducted from Boston, MA.

Rosenfeld, P.E. (April 19-23, 2009). Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (20-22 July, 2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modeling, Monitoring and Management of Air Pollution*. Lecture conducted from Tallinn, Estonia.

Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. The *23rd Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference.* Lecture conducted from Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*.. Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E, C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993.

Deposition and/or Trial Testimony:

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Jerry Dovico, et al., Plaintiffs vs. Valley View Sine LLC, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Doug Pauls, et al.,, et al., Plaintiffs vs. Richard Warren, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

In The Third Judicial District County of Dona Ana, New Mexico
Betty Gonzalez, et al. Plaintiffs vs. Del Oro Dairy, Del Oro Real Estate LLC, Jerry Settles and Deward DeRuyter, Defendants
Rosenfeld Deposition: July 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case Number CACE07030358 (26)
Rosenfeld Deposition: December 2014

In the United States District Court Western District of Oklahoma
Tommy McCarty, et al., Plaintiffs, v. Oklahoma City Landfill, LLC d/b/a Southeast Oklahoma City Landfill, et al. Defendants.
Case No. 5:12-cv-01152-C
Rosenfeld Deposition: July 2014

In the County Court of Dallas County Texas
Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant.*
Case Number cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial: April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs,* vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

In the Court of Common Pleas for the Second Judicial Circuit, State of South Carolina, County of Aiken
David Anderson, et al., *Plaintiffs*, vs. Norfolk Southern Corporation, et al., *Defendants*.
Case Number: 2007-CP-02-1584

In the Circuit Court of Jefferson County Alabama
Jaeanette Moss Anthony, et al., *Plaintiffs*, vs. Drummond Company Inc., et al., *Defendants*
Civil Action No. CV 2008-2076
Rosenfeld Deposition: September 2010

In the Ninth Judicial District Court, Parish of Rapides, State of Louisiana
Roger Price, et al., *Plaintiffs*, vs. Roy O. Martin, L.P., et al., *Defendants*.
Civil Suit Number 224,041 Division G
Rosenfeld Deposition: September 2008

In the United States District Court, Western District Lafayette Division
Ackle et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 2:07CV1052
Rosenfeld Deposition: July 2009

In the United States District Court for the Southern District of Ohio
Carolyn Baker, et al., *Plaintiffs*, vs. Chevron Oil Company, et al., *Defendants*.
Case Number 1:05 CV 227
Rosenfeld Deposition: July 2008

In the Fourth Judicial District Court, Parish of Calcasieu, State of Louisiana
Craig Steven Arabie, et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 07-2738 G

In the Fourteenth Judicial District Court, Parish of Calcasieu, State of Louisiana
Leon B. Brydels, *Plaintiffs*, vs. Conoco, Inc., et al*., Defendants*.
Case Number 2004-6941 Division A

In the District Court of Tarrant County, Texas, 153rd Judicial District
Linda Faust, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, Witco Chemical Corporation A/K/A Witco Corporation, Solvents and Chemicals, Inc. and Koppers Industries, Inc., *Defendants*.
Case Number 153-212928-05
Rosenfeld Deposition: December 2006, October 2007
Rosenfeld Trial: January 2008

In the Superior Court of the State of California in and for the County of San Bernardino
Leroy Allen, et al., *Plaintiffs*, vs. Nutro Products, Inc., a California Corporation and DOES 1 to 100, inclusive, *Defendants*.
John Loney, Plaintiff, vs. James H. Didion, Sr.; Nutro Products, Inc.; DOES 1 through 20, inclusive, *Defendants*.
Case Number VCVVS044671
Rosenfeld Deposition: December 2009
Rosenfeld Trial: March 2010

In the United States District Court for the Middle District of Alabama, Northern Division
James K. Benefield, et al., *Plaintiffs*, vs. International Paper Company, *Defendant*.
Civil Action Number 2:09-cv-232-WHA-TFM
Rosenfeld Deposition: July 2010, June 2011

In the Superior Court of the State of California in and for the County of Los Angeles
Leslie Hensley and Rick Hensley, *Plaintiffs*, vs. Peter T. Hoss, as trustee on behalf of the Cone Fee Trust; Plains Exploration & Production Company, a Delaware corporation; Rayne Water Conditioning, Inc., a California Corporation; and DOES 1 through 100, *Defendants.*
Case Number SC094173
Rosenfeld Deposition: September 2008, October 2008

In the Superior Court of the State of California in and for the County of Santa Barbara, Santa Maria Branch
Clifford and Shirley Adelhelm, et al., all individually, *Plaintiffs*, vs. Unocal Corporation, a Delaware Corporation; Union Oil Company of California, a California corporation; Chevron Corporation, a California corporation; ConocoPhillips, a Texas corporation; Kerr-McGee Corporation, an Oklahoma corporation; and DOES 1 though 100, *Defendants.*
Case Number 1229251 (Consolidated with case number 1231299)
Rosenfeld Deposition: January 2008

In the United States District Court for Eastern District of Arkansas, Eastern District of Arkansas
Harry Stephens Farms, Inc, and Harry Stephens, individual and as managing partner of Stephens Partnership, *Plaintiffs*, vs. Helena Chemical Company, and Exxon Mobil Corp., successor to Mobil Chemical Co., *Defendants.*
Case Number 2:06-CV-00166 JMM (Consolidated with case number 4:07CV00278 JMM)
Rosenfeld Deposition: July 2010

In the United States District Court for the Western District of Arkansas, Texarkana Division
Rhonda Brasel, et al., *Plaintiffs*, vs. Weyerhaeuser Company and DOES 1 through 100, *Defendants.*
Civil Action Number 07-4037
Rosenfeld Deposition: March 2010
Rosenfeld Trial: October 2010

In the District Court of Texas 21st Judicial District of Burleson County
Dennis Davis, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, *Defendant.*
Case Number 25,151
Rosenfeld Trial: May 2009

In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and on behalf of those similarly situated, *Plaintiffs,* vs. BP Products North America, Inc., *Defendant.*
Case 3:10-cv-00622
Rosenfeld Deposition: February 2012
Rosenfeld Trial: April 2013

In the Circuit Court of Baltimore County Maryland
Philip E. Cvach, II et al., *Plaintiffs* vs. Two Farms, Inc. d/b/a Royal Farms, Defendants
Case Number: 03-C-12-012487 OT
Rosenfeld Deposition: September 2013

EXHIBIT 2

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BAAQMD

Air Toxics NSR Program

Health Risk Assessment (HRA) Guidelines

January 2016

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

BAAQMD Air Toxics NSR Program

Health Risk Assessment (HRA) Guidelines

1. INTRODUCTION

This document describes the Bay Area Air Quality Management District's guidelines for conducting health risk assessments. Any health risk assessment (HRA) that is required pursuant to Regulation 2 Permits, Rule 1 General Requirements or Rule 5 New Source Review of Toxic Air Contaminants shall be conducted in accordance with these Air District HRA Guidelines.

In accordance with Regulation 2-5-402, the Air District HRA Guidelines generally conform to the Health Risk Assessment Guidelines adopted by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) for use in the Air Toxics Hot Spots Program. In addition, these guidelines are in accordance with State "Risk Management Guidance for Stationary Sources of Air Toxics" developed by the California Air Resources Board (ARB) and the California Air Pollution Control Officers Association (CAPCOA). The Air District will periodically update these Air District HRA Guidelines to clarify procedures or incorporate other revisions to regulatory guidelines.

2. PROCEDURES

The procedures described below constitute the Regulation 2-5-603 Health Risk Assessment Procedures. All HRAs shall be completed by following the procedures described in the OEHHA Health Risk Assessment Guidelines for the Air Toxics Hot Spots Program adopted by OEHHA on March 6, 2015 and using the recommended breathing rates described in the ARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics adopted by ARB on July 23, 2015.

The OEHHA HRA Guidelines contain several sections which identify (a) the overall methodology, (b) the exposure assessment assumptions and procedures, and (c) the health effects data (cancer potency factors and reference exposure levels).

A summary of OEHHA's HRA Guidelines and an index of the relevant documents are located at:

http://www.oehha.ca.gov/air/hot_spots/index.html

OEHHA's risk assessment methodology (February 2015) is located at:

http://www.oehha.ca.gov/air/risk_assess/index.html

The exposure assessment and stochastic technical support document (August 2012) is located at:

http://www.oehha.ca.gov/air/exposure_assess/index.html

The Technical Support Document for Cancer Potency Factors: Methodologies for Derivation, Listing of Available Values, and Adjustments to Allow for Early Life Stage Exposures (May 2009) is located at:

http://www.oehha.ca.gov/air/hot_spots/tsd052909.html

The Technical Support Document for the Derivation of Noncancer Reference Exposure Levels (June 2008) is located at:

http://www.oehha.ca.gov/air/hot_spots/rels_dec2008.html

The ARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics (July 23, 2015) provides guidance on managing potential health risks from sources subject to California air toxics programs and updates the Risk Management Policy for Inhalation Risk Assessments. It is located at:

http://www.arb.ca.gov/toxics/rma/rmaguideline.htm

Sections 2.1 through 2.6 below clarify and highlight some of the exposure assessment procedures including exposure assumptions (e.g., breathing rate and exposure duration), health effect values, and calculation procedures to be used for conducting Air District HRAs.

2.1 Clarifications of Exposure Assessment Procedures

This section clarifies and highlights some of the exposure assessment procedures that should be followed when conducting an Air District HRA.

2.1.1 Breathing Rate

On July 23, 2015, ARB adopted "Risk Management Guidance for Stationary Sources of Air Toxics", which includes an updated Risk Management Policy for Inhalation Risk Assessments. For the HRA methodology used in the Air Toxics NSR Program, the Air District has conformed with these State guidelines and adopted the exposure assessment recommendations made by ARB and CAPCOA. The policy considers the new science while providing a reasonable estimate of potential cancer risk for use in risk assessments for risk management decisions. This policy recommends using a combination of the 95th percentile and 80th percentile daily breathing rates as the minimum exposure inputs for risk management decisions. Specifically, the policy recommends using the 95th percentile rate for age groups less than 2 years old and the 80th percentile rate for age groups that are greater than or equal to 2 years old.

To assess potential inhalation exposure to offsite workers, OEHHA recommends assuming a breathing rate of 230 L/kg-8 hours. This value represents the 95th percentile 8-hour breathing rate based on moderate activity of 16-70 years-old age range.

To assess exposure to children at schools and daycare facilities, OEHHA recommends using the 95th percentile moderate intensity breathing rates from Table 5.8 of OEHHA's HRA Guidelines. As a default, the Air District recommends using the breathing rate for 2<16 years (520 L/kg-8 hours) for children at schools. For a more refined analysis, the Air District will allow the use of breathing rates for other age ranges that are tailored to the ages of the children in the specific school under evaluation.

2.1.2 Exposure Frequency

Based on OEHHA recommendations, the Air District will estimate cancer risk to residential receptors assuming exposure occurs 24 hours per day for 350 days per year. For a worker receptor, exposure is assumed to occur 250 days per year. However, for some professions (e.g., teachers) a different schedule may be more appropriate. For children at school sites, exposure is assumed to occur 180 days (or 36 weeks) per year.

2.1.3 Exposure Duration

Based on OEHHA recommendations, the Air District will estimate cancer risk to residential receptors based on a 30-year exposure duration. Although 9-year and 70-year exposure scenarios may be presented for information purposes, risk management decisions will be made based on 30-year exposure duration for residential receptors.

For worker receptors, risk management decisions will be made based on OEHHA's recommended exposure duration of 25 years.

As a default, cancer risk estimates for children at school sites will be calculated based on a 9 year exposure duration, such as for a K-8 school. However, this exposure duration may be refined based on the specific school under evaluation (i.e. 6 years for a K-5 elementary school, 4 years for a 9-12 high school, or 3 years for a 6-8 middle school). For any analyses using an alternative to the 9-year default duration for school children, the breathing rate assumptions must also be adjusted in accordance with the ages of the children in the school.

2.2 Health Effects Values

Chemical-specific health effects values have been consolidated and are presented in the Air District's Permit Handbook Trigger Level Table for use in conducting HRAs. The Air District has added the 8-hour reference exposure levels (RELs) adopted by OEHHA to this table. The Air District will periodically update this table to include OEHHA's revisions to health effects values.

2.3 Cancer Risk Calculations

In accordance with OEHHA's 2015 HRA Guidelines, cancer risk estimates should incorporate age sensitivity factors (ASFs) and fraction of time at home (FAH) adjustment factors. Air District HRAs should follow OEHHA's recommended cancer risk calculation procedures as presented in Section 8.2 of OEHHA's 2015 HRA Guidelines.

For residential exposures, the cancer risk calculations should include the most sensitive age groups: from third trimester of pregnancy to 30 years of age for a 30-year exposure duration. For worker receptors, assume working begins at age 16 years.

2.3.1 Fraction of Time at Home (FAH)

For the initial cancer risk estimate, assume the fraction of time at home factors are equal to one (FAH = 1.0) for the following age bins: 3rd trimester to < 2 years and 2 to < 16 years. Use this initial analysis to assess if there are any schools within cancer risk isopleths of one in a million or greater. If there are no schools within one in a million or greater cancer risk isopleths, the cancer risk analysis may be refined by using the FAH factors for these age bins identified in Table 8.4 of the 2015 OEHHA Guidelines:

- FAH = 0.85 for age bin: 3rd trimester to < 2 years;
- FAH = 0.72 for age bin: 2 to < 16 years;
- FAH = 0.73 for age bin: 16 to 70 years.

2.3.2 Short Term Projects

In the 2015 HRA Guidelines, OEHHA recommends using actual project duration for short term projects, but cautions that the risk manager should consider a lower cancer risk threshold for very short term projects, because a higher exposure over a short period of time may pose a greater risk than the same total exposure spread over a much longer period of time. To ensure that short-term projects do not result in unanticipated higher cancer impacts due to short-duration high-exposure rates, the Air District recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for projects lasting three years or less. For residential exposures, the cancer risk calculations should include the most sensitive age groups (beginning with the third trimester of pregnancy) and should use the 95th percentile breathing rates. The Air District recommends following OEHHA guidelines for other aspects of short term projects. In summary, the Air District recommends:

- use of actual emission rates over a minimum 3-year duration for cancer risk assessments involving projects lasting 3 years or less, and
- use of actual project duration for cancer risk assessments on projects lasting longer than 3 years.

2.4 Noncancer Health Impacts

In accordance with OEHHA's 2015 HRA Guidelines, noncancer health impacts should be calculated using the hazard index approach. Air District HRAs should follow OEHHA's recommended calculation procedures for noncancer health impacts, as presented in Section 8.3 of OEHHA's 2015 HRA Guidelines.

Regarding Section 8.3.5 of OEHHA's 2015 HRA Guidelines, the Air District does not require inclusion of the contribution of background criteria pollutants to respiratory health effects for Air District HRAs.

2.5 Spatial Averaging

Typically, HRA results for an individual receptor have been based on air dispersion modeling results at a single point or location. In the 2015 OEHHA Guidelines (Section 4.7.3), OEHHA provides a refinement option that takes into account that people move around within their property or workplace and do not normally remain at a single fixed point for the entire exposure duration. This spatial averaging refinement may be used for any chronic analysis in an Air District HRA. Spatial averaging is not appropriate for an acute analysis.

After the points of interest have been identified by the air dispersion modeling analysis, the ground level air concentration for each maximum impact point may be refined by using the arithmetic mean of the receptor concentrations identified within a spatial average grid instead of the single maximum impact point concentration. The modeler shall generally center the spatial average grid around the maximum impact point, but the modeler shall also consider facility boundaries, possible receptor locations, and predominant wind direction. This grid shall be of an appropriate shape, shall be no larger than 400 square meters, and shall have a receptor spacing within the grid of no more than 5 meters. Grid shape, size, and location are subject to Air District approval.

2.6 Stochastic Risk Assessment

For a stochastic, multipathway risk assessment, the potential cancer risk should be reported for the full distribution of exposure from all exposure pathways included in the risk assessment. For risk management decisions, the potential cancer risk from a stochastic, multipathway risk assessment should be based on the 95^{th} percentile cancer risk.

3. Assessment of Acrolein Emissions

ARB has issued advisories regarding acrolein emissions data determined using ARB Method 430 (M430): http://www.arb.ca.gov/ei/acrolein.htm. The ARB advisories state that acrolein emissions data determined using ARB Method 430 are suspect and should be flagged as non-quantitative. Although acrolein emission factor data is available for several types of stationary combustion sources, this data was developed based on source tests that utilized ARB Method 430 or equally inaccurate test methods; therefore, the validity of this acrolein emission factor data is suspect. In addition, the tools the Air District needs to implement and enforce acrolein emission limits are not available due to the lack of an ARB approved acrolein test method for stationary sources.

In consideration of this information, the Air District has determined that acrolein emissions may be included in Air District HRAs for screening or informational purposes, but the Air District will exclude acrolein emissions from the final HRA results on which risk management decisions will be based.

References

1 *"Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments, ", OEHHA, February 2015*

2 *"Air Toxics Hot Spots Program Risk Assessment Guidelines; Technical Support Document for Exposure Assessment and Stochastic Analysis", OEHHA, August 2012*

3 *"Air Toxics Hot Spots Program Risk Assessment Guideline; Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures", OEHHA, May, 2009.*

4 *"Air Toxics Hot Spots Program Risk Assessment Guidelines; Technical Support Document for the Derivation of Noncancer Reference Exposure Levels", OEHHA, June 2008.*

5 *"Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values", California Air Resources Board, updated May 13, 2015.*

6 *"Risk Management Guidance for Stationary Sources of Air Toxics", Air Resources Board and California Air Pollution Control Officers Association, July 23, 2015.*

EXHIBIT 3

Francis (Bud) J. Offermann III PE, CIH

Indoor Environmental Engineering

Education

M.S. Mechanical Engineering (1985)
Stanford University, Stanford, CA.

Graduate Studies in Air Pollution Monitoring and Control (1980)
University of California, Berkeley, CA.

B.S. in Mechanical Engineering (1976)
Rensselaer Polytechnic Institute, Troy, N.Y.

Professional Experience

President: Indoor Environmental Engineering, San Francisco, CA. December, 1981 - present.

Direct team of environmental scientists, chemists, and mechanical engineers in conducting State and Federal research regarding indoor air quality instrumentation development, building air quality field studies, ventilation and air cleaning performance measurements, and chemical emission rate testing.

Provide design side input to architects regarding selection of building materials and ventilation system components to ensure a high quality indoor environment.

Direct Indoor Air Quality Consulting Team for the winning design proposal for the new State of Washington Ecology Department building.

Develop a full-scale ventilation test facility for measuring the performance of air diffusers; ASHRAE 129, Air Change Effectiveness, and ASHRAE 113, Air Diffusion Performance Index.

Develop a chemical emission rate testing laboratory for measuring the chemical emissions from building materials, furnishings, and equipment.

Principle Investigator of the California New Homes Study (2005-2007). Measured ventilation and indoor air quality in 108 new single family detached homes in northern and southern California.

Develop and teach IAQ professional development workshops to building owners, managers, hygienists, and engineers.

Air Pollution Engineer: Earth Metrics Inc., Burlingame, CA, October, 1985 to March, 1987.

Responsible for development of an air pollution laboratory including installation a forced choice olfactometer, tracer gas electron capture chromatograph, and associated calibration facilities. Field team leader for studies of fugitive odor emissions from sewage treatment plants, entrainment of fume hood exhausts into computer chip fabrication rooms, and indoor air quality investigations.

Staff Scientist: Building Ventilation and Indoor Air Quality Program, Energy and Environment Division, Lawrence Berkeley Laboratory, Berkeley, CA. January, 1980 to August, 1984.

Deputy project leader for the Control Techniques group; responsible for laboratory and field studies aimed at evaluating the performance of indoor air pollutant control strategies (i.e. ventilation, filtration, precipitation, absorption, adsorption, and source control).

Coordinated field and laboratory studies of air-to-air heat exchangers including evaluation of thermal performance, ventilation efficiency, cross-stream contaminant transfer, and the effects of freezing/defrosting.

Developed an *in situ* test protocol for evaluating the performance of air cleaning systems and introduced the concept of effective cleaning rate (ECR) also known as the Clean Air Delivery Rate (CADR).

Coordinated laboratory studies of portable and ducted air cleaning systems and their effect on indoor concentrations of respirable particles and radon progeny.

Co-designed an automated instrument system for measuring residential ventilation rates and radon concentrations.

Designed hardware and software for a multi-channel automated data acquisition system used to evaluate the performance of air-to-air heat transfer equipment.

Assistant Chief Engineer: Alta Bates Hospital, Berkeley, CA, October, 1979 to January, 1980.

Responsible for energy management projects involving installation of power factor correction capacitors on large inductive electrical devices and installation of steam meters on physical plant steam lines. Member of Local 39, International Union of Operating Engineers.

Manufacturing Engineer: American Precision Industries, Buffalo, NY, October, 1977 to October, 1979.

Responsible for reorganizing the manufacturing procedures regarding production of shell and tube heat exchangers. Designed customized automatic assembly, welding, and testing equipment. Designed a large paint spray booth. Prepared economic studies justifying new equipment purchases. Safety Director.

Project Engineer: Arcata Graphics, Buffalo, N.Y. June, 1976 to October, 1977.

Responsible for the design and installation of a bulk ink storage and distribution system and high speed automatic counting and marking equipment. Also coordinated material handling studies which led to the purchase and installation of new equipment.

PROFESSIONAL ORGANIZATION MEMBERSHIP

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)

- Chairman of SPC-145P, Standards Project Committee - Test Method for Assessing the Performance of Gas Phase Air Cleaning Equipment (1991-1992)
- Member SPC-129P, Standards Project Committee - Test Method for Ventilation Effectiveness (1986-97)
  - Member of Drafting Committee
- Member Environmental Health Committee (1992-1994, 1997-2001, 2007-2010)
  - Chairman of EHC Research Subcommittee
  - Member of Man Made Mineral Fiber Position Paper Subcommittee
  - Member of the IAQ Position Paper Committee
  - Member of the Legionella Position Paper Committee
  - Member of the Limiting Indoor Mold and Dampness in Buildings Position Paper Committee
- Member SSPC-62, Standing Standards Project Committee - Ventilation for Acceptable Indoor Air Quality (1992 to 2000)
  - Chairman of Source Control and Air Cleaning Subcommittee
- Chairman of TC-4.10, Indoor Environmental Modeling (1988-92)
  - Member of Research Subcommittee
- Chairman of TC-2.3, Gaseous Air Contaminants and Control Equipment (1989-92)
  - Member of Research Subcommittee

American Society for Testing and Materials (ASTM)

- D-22 Sampling and Analysis of Atmospheres
  - Member of Indoor Air Quality Subcommittee
- E-06 Performance of Building Constructions

American Board of Industrial Hygiene (ABIH)

American Conference of Governmental Industrial Hygienists (ACGIH)

- Bioaerosols Committee (2007-2013)

American Industrial Hygiene Association (AIHA)

Cal-OSHA Indoor Air Quality Advisory Committee

International Society of Indoor Air Quality and Climate (ISIAQ)

- Co-Chairman of Task Force on HVAC Hygiene

U. S. Green Building Council (USGBC)
- Member of the IEQ Technical Advisory Group (2007-2009)
- Member of the IAQ Performance Testing Work Group (2010-2012)

Western Construction Consultants (WESTCON)

PROFESSIONAL CREDENTIALS

Licensed Professional Engineer - Mechanical Engineering

Certified Industrial Hygienist - American Board of Industrial Hygienists

SCIENTIFIC MEETINGS AND SYMPOSIA

Biological Contamination, Diagnosis, and Mitigation, Indoor Air'90, Toronto, Canada, August, 1990.

Models for Predicting Air Quality, Indoor Air'90, Toronto, Canada, August, 1990.

Microbes in Building Materials and Systems, Indoor Air '93, Helsinki, Finland, July, 1993.

Microorganisms in Indoor Air Assessment and Evaluation of Health Effects and Probable Causes, Walnut Creek, CA, February 27, 1997.

Controlling Microbial Moisture Problems in Buildings, Walnut Creek, CA, February 27, 1997.

Scientific Advisory Committee, Roomvent 98, 6th International Conference on Air Distribution in Rooms, KTH, Stockholm, Sweden, June 14-17, 1998.

Moisture and Mould, Indoor Air '99, Edinburgh, Scotland, August, 1999.

Ventilation Modeling and Simulation, Indoor Air '99, Edinburgh, Scotland, August, 1999.

Microbial Growth in Materials, Healthy Buildings 2000, Espoo, Finland, August, 2000.

Co-Chair, Bioaerosols X- Exposures in Residences, Indoor Air 2002, Monterey, CA, July 2002.

Healthy Indoor Environments, Anaheim, CA, April 2003.

Chair, Environmental Tobacco Smoke in Multi-Family Homes, Indoor Air 2008, Copenhagen, Denmark, July 2008.

Co-Chair, ISIAQ Task Force Workshop; HVAC Hygiene, Indoor Air 2002, Monterey, CA, July 2002.

Chair, ETS in Multi-Family Housing: Exposures, Controls, and Legalities Forum, Healthy Buildings 2009, Syracuse, CA, September 14, 2009.

Chair, Energy Conservation and IAQ in Residences Workshop, Indoor Air 2011, Austin, TX, June 6, 2011.

Chair, Electronic Cigarettes: Chemical Emissions and Exposures Colloquium, Indoor Air 2016, Ghent, Belgium, July 4, 2016.

SPECIAL CONSULTATION

Provide consultation to the American Home Appliance Manufacturers on the development of a standard for testing portable air cleaners, AHAM Standard AC-1.

Served as an expert witness and special consultant for the U.S. Federal Trade Commission regarding the performance claims found in advertisements of portable air cleaners and residential furnace filters.

Conducted a forensic investigation for a San Mateo, CA pro se defendant, regarding an alleged homicide where the victim was kidnapped in a steamer trunk. Determined the air exchange rate in the steamer trunk and how long the person could survive.

Conducted *in situ* measurement of human exposure to toluene fumes released during nailpolish application for a plaintiffs attorney pursuing a California Proposition 65 product labeling case. June, 1993.

Conducted a forensic *in situ* investigation for the Butte County, CA Sheriff's Department of the emissions of a portable heater used in the bedroom of two twin one year old girls who suffered simultaneous crib death.

Consult with OSHA on the 1995 proposed new regulation regarding indoor air quality and environmental tobacco smoke.

Consult with EPA on the proposed Building Alliance program and with OSHA on the proposed new OSHA IAQ regulation.

Johnson Controls Audit/Certification Expert Review; Milwaukee, WI. May 28-29, 1997.

Winner of the nationally published 1999 Request for Proposals by the State of Washington to conduct a comprehensive indoor air quality investigation of the Washington State Department of Ecology building in Lacey, WA.

Selected by the State of California Attorney General's Office in August, 2000 to conduct a comprehensive indoor air quality investigation of the Tulare County Court House.

Lawrence Berkeley Laboratory IAQ Experts Workshop: "Cause and Prevention of Sick Building Problems in Offices: The Experience of Indoor Environmental Quality Investigators", Berkeley, California, May 26-27, 2004.

Provide consultation and chemical emission rate testing to the State of California Attorney General's Office in 2013-2015 regarding the chemical emissions from e-cigarettes.

PEER-REVIEWED PUBLICATIONS :

F.J.Offermann, C.D.Hollowell, and G.D.Roseme, "Low-Infiltration Housing in Rochester, New York: A Study of Air Exchange Rates and Indoor Air Quality," *Environment International*, *8*, pp. 435-445, 1982.

W.W.Nazaroff, F.J.Offermann, and A.W.Robb, "Automated System for Measuring Air Exchange Rate and Radon Concentration in Houses," *Health Physics*, *45*, pp. 525-537, 1983.

F.J.Offermann, W.J.Fisk, D.T.Grimsrud, B.Pedersen, and K.L.Revzan, "Ventilation Efficiencies of Wall- or Window-Mounted Residential Air-to-Air Heat Exchangers," *ASHRAE Annual Transactions*, *89-2B*, pp 507-527, 1983.

W.J.Fisk, K.M.Archer, R.E Chant, D. Hekmat, F.J.Offermann, and B.Pedersen, "Onset of Freezing in Residential Air-to-Air Heat Exchangers," *ASHRAE Annual Transactions*, *91-1B*, 1984.

W.J.Fisk, K.M.Archer, R.E Chant, D. Hekmat, F.J.Offermann, and B.Pedersen, "Performance of Residential Air-to-Air Heat Exchangers During Operation with Freezing and Periodic Defrosts," *ASHRAE Annual Transactions*, *91-1B*, 1984.

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R.G.Sextro, F.J.Offermann, W.W.Nazaroff, A.V.Nero, K.L.Revzan, and J.Yater, "Evaluation of Indoor Control Devices and Their Effects on Radon Progeny Concentrations," *Atmospheric Environment*, *12*, pp. 429-438, 1986.

W.J. Fisk, R.K.Spencer, F.J.Offermann, R.K.Spencer, B.Pedersen, R.Sextro, "Indoor Air Quality Control Techniques," *Noyes Data Corporation*, Park Ridge, New Jersey, (1987).

F.J.Offermann, "Ventilation Effectiveness and ADPI Measurements of a Forced Air Heating System," *ASHRAE Transactions* , Volume 94, Part 1, pp 694-704, 1988.

F.J.Offermann and D. Int-Hout "Ventilation Effectiveness Measurements of Three Supply/Return Air Configurations," *Environment International* , Volume 15, pp 585-592 1989.

F.J. Offermann, S.A. Loiselle, M.C. Quinlan, and M.S. Rogers, "A Study of Diesel Fume Entrainment in an Office Building," *IAQ '89*, The Human Equation: Health and Comfort, pp 179-183, ASHRAE, Atlanta, GA, 1989.

R.G.Sextro and F.J.Offermann, "Reduction of Residential Indoor Particle and Radon Progeny Concentrations with Ducted Air Cleaning Systems," submitted to *Indoor Air*, 1990.

S.A.Loiselle, A.T.Hodgson, and F.J.Offermann, "Development of An Indoor Air Sampler for Polycyclic Aromatic Compounds", *Indoor Air* , Vol 2, pp 191-210, 1991.

F.J.Offermann, S.A.Loiselle, A.T.Hodgson, L.A. Gundel, and J.M. Daisey, "A Pilot Study to Measure Indoor Concentrations and Emission Rates of Polycyclic Aromatic Compounds", *Indoor Air* , Vol 4, pp 497-512, 1991.

F.J. Offermann, S. A. Loiselle, R.G. Sextro, "Performance Comparisons of Six Different Air Cleaners Installed in a Residential Forced Air Ventilation System," *IAQ'91*, Healthy Buildings, pp 342-350, ASHRAE, Atlanta, GA (1991).

F.J. Offermann, J. Daisey, A. Hodgson, L. Gundell, and S. Loiselle, "Indoor Concentrations and Emission Rates of Polycyclic Aromatic Compounds", *Indoor Air,* Vol 4, pp 497-512 (1992).

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"Designing for Healthy and Comfortable Indoor Environments", Construction Specification Institute, Santa Rosa, CA, November 6, 1997.

"Ventilation System Design for Good IAQ", University of Tulsa 10th Annual Conference, San Francisco, CA, February 25, 1998.

"The Building Shell", Tools For Building Green Conference and Trade Show, Alameda County Waste Management Authority and Recycling Board, Oakland, CA, February 28, 1998.

"Identifying Fungal Contamination Problems In Buildings", The City of Oakland Municipal Employees, Oakland, CA, March 26, 1998.

"Managing Indoor Air Quality in Schools: Staying Out of Trouble", CASBO, Sacramento, CA, April 20, 1998.

"Indoor Air Quality", CSOOC Spring Conference, Visalia, CA, April 30, 1998.

"Particulate and Gas Phase Air Filtration", ACGIH/OSHA, Ft. Mitchell, KY, June 1998.

“Building Air Quality Facts and Myths”, The City of Oakland / Alameda County Safety Seminar, Oakland, CA, June 12, 1998.

“Building Engineering and Moisture”, Building Contamination Workshop, University of California Berkeley, Continuing Education in Engineering and Environmental Management, San Francisco, CA, October 21-22, 1999.

“Identifying and Mitigating Mold Contamination in Buildings”, Western Construction Consultants Association, Oakland, CA, March 15, 2000; AIG Construction Defect Seminar, Walnut Creek, CA, May 2, 2001; City of Oakland Public Works Agency, Oakland, CA, July 24, 2001; Executive Council of Homeowners, Alamo, CA, August 3, 2001.

“Using the EPA BASE Study for IAQ Investigation / Communication”, Joint Professional Symposium 2000, American Industrial Hygiene Association, Orange County & Southern California Sections, Long Beach, October 19, 2000.

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“Managing Building Air Quality and Energy Efficiency, Meeting the Standard of Care”, BOMA, MidAtlantic Environmental Hygiene Resource Center, Seattle, WA, May 23rd, 2000; San Antonio, TX, September 26-27, 2000.

“Diagnostics & Mitigation in Sick Buildings: When Good Buildings Go Bad,” University of California Berkeley, September 18, 2001.

“Mold Contamination: Recognition and What To Do and Not Do”, Redwood Empire Remodelers Association; Santa Rosa, CA, April 16, 2002.

“Investigative Tools of the IAQ Trade”, Healthy Indoor Environments 2002; Austin, TX; April 22, 2002.

“Finding Hidden Mold: Case Studies in IAQ Investigations”, AIHA Northern California Professionals Symposium; Oakland, CA, May 8, 2002.

“Assessing and Mitigating Fungal Contamination in Buildings”, Cal/OSHA Training; Oakland, CA, February 14, 2003 and West Covina, CA, February 20-21, 2003.

“Use of External Containments During Fungal Mitigation”, Invited Speaker, ACGIH Mold Remediation Symposium, Orlando, FL, November 3-5, 2003.

Building Operator Certification (BOC), 106-IAQ Training Workshops, Northwest Energy Efficiency Council; Stockton, CA, December 3, 2003; San Francisco, CA, December 9, 2003; Irvine, CA, January 13, 2004; San Diego, January 14, 2004; Irwindale, CA, January 27, 2004; Downey, CA, January 28, 2004; Santa Monica, CA, March 16, 2004; Ontario, CA, March 17, 2004; Ontario, CA, November 9, 2004, San Diego, CA, November 10, 2004; San Francisco, CA, November 17, 2004; San Jose, CA, November 18, 2004; Sacramento, CA, March 15, 2005.

“Mold Remediation: The National QUEST for Uniformity Symposium”, Invited Speaker, Orlando, Florida, November 3-5, 2003.

“Mold and Moisture Control”, Indoor Air Quality workshop for The Collaborative for High Performance Schools (CHPS), San Francisco, December 11, 2003.

“Advanced Perspectives In Mold Prevention & Control Symposium”, Invited Speaker, Las Vegas, Nevada, November 7-9, 2004.

“Building Sciences: Understanding and Controlling Moisture in Buildings”, American Industrial Hygiene Association, San Francisco, CA, February 14-16, 2005.

“Indoor Air Quality Diagnostics and Healthy Building Design”, University of California Berkeley, Berkeley, CA, March 2, 2005.

“Improving IAQ = Reduced Tenant Complaints”, Northern California Facilities Exposition, Santa Clara, CA, September 27, 2007.

“Defining Safe Building Air”, Criteria for Safe Air and Water in Buildings, ASHRAE Winter Meeting, Chicago, IL, January 27, 2008.

“Update on USGBC LEED and Air Filtration”, Invited Speaker, NAFA 2008 Convention, San Francisco, CA, September 19, 2008.

“Ventilation and Indoor air Quality in New California Homes”, National Center of Healthy Housing, October 20, 2008.

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“Mechanical Outdoor air Ventilation Systems and IAQ in New Homes”, ACI Home Performance Conference, Kansas City, MO, April 29, 2009.

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“Respiration: IEQ and Ventilation”, AIHce 2010, How IH Can LEED in Green buildings, Denver, CO, May 23, 2010.

“IAQ Considerations for Net Zero Energy Buildings (NZEB)”, Northern California Facilities Exposition, Santa Clara, CA, September 22, 2010.

“Energy Conservation and Health in Buildings”, Berkeley High SchoolGreen Career Week, Berkeley, CA, April 12, 2011.

“What Pollutants are Really There ?”, ACI Home Performance Conference, San Francisco, CA, March 30, 2011.

“Energy Conservation and Health in Residences Workshop”, Indoor Air 2011, Austin, TX, June 6, 2011.

“Assessing IAQ and Improving Health in Residences”, US EPA Weatherization Plus Health, September 7, 2011.

“Ventilation: What a Long Strange Trip It’s Been”, Westcon, May 21, 2014.

“Chemical Emissions from E-Cigarettes: Direct and Indirect Passive Exposures”, Indoor Air 2014, Hong Kong, July, 2014.

“Infectious Disease Aerosol Exposures With and Without Surge Control Ventilation System Modifications”, Indoor Air 2014, Hong Kong, July, 2014.

“Chemical Emissions from E-Cigarettes”, IMF Health and Welfare Fair, Washington, DC, February 18, 2015.

“Chemical Emissions and Health Hazards Associated with E-Cigarettes”, Roswell Park Cancer Institute, Buffalo, NY, August 15, 2014.

“Formaldehyde Indoor Concentrations, Material Emission Rates, and the CARB ATCM”, Harris Martin’s Lumber Liquidators Flooring Litigation Conference, WQ Minneapolis Hotel, May 27, 2015.

“Chemical Emissions from E-Cigarettes: Direct and Indirect Passive Exposure”, FDA Public Workshop: Electronic Cigarettes and the Public Health, Hyattsville, MD June 2, 2015.

“Creating Healthy Homes, Schools, and Workplaces”, Chautauqua Institution, Athenaeum Hotel, August 24, 2015.

“Diagnosing IAQ Problems and Designing Healthy Buildings”, University of California Berkeley, Berkeley, CA, October 6, 2015.

“Diagnosing Ventilation and IAQ Problems in Commercial Buildings”, BEST Center Annual Institute, Lawrence Berkeley National Laboratory, January 6, 2016.

“A Review of Studies of Ventilation and Indoor Air Quality in New Homes and Impacts of Environmental Factors on Formaldehyde Emission Rates From Composite Wood Products”, AIHce2016, May, 21-26, 2016.

“Admissibility of Scientific Testimony”, Science in the Court, Proposition 65 Clearinghouse Annual Conference, Oakland, CA, September 15, 2016.

“Indoor Air Quality and Ventilation”, ASHRAE Redwood Empire, Napa, CA, December 1, 2016.

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

M E M O

Date: January 7, 2019

To: **Hunter Oliver**
Oliver Holdings SC, LLC

From: **James Reyff**
Illingworth & Rodkin, Inc.

RE: AC by Marriott Construction Health Risk Analysis – West San Jose, CA
Job#18-214

SUBJECT: Response to Comments on Air Quality Made by Lozeau Drury LLP

This memo addresses comments on the construction health risk analysis (HRA) for the AC by Marriot hotel project in San Jose, CA made by Lozeau Drury LLP, dated January 4, 2019. Illingworth & Rodkin, Inc. prepared the construction HRA assessment for this project (Construction HRA Memo).[1] Attached to this memo are roadway screening calculations from project traffic that represent operational emissions from the project.

Issue 1: **Substantial Expert Evidence Establishes a Fair Argument That the Project's Emissions of Diesel Particulate Matter May Have Significant Impacts on Adjacent Residents.**

Incorrect Evaluation of Construction-Related Health Risk: Construction Schedule

Response: The construction HRA was conducted based on information provided by the project applicant. This schedule is focused on construction activities that include use of diesel construction equipment. The schedule does not include time for interior finishes (e.g., plumbing, electrical, furnishings, etc.) that do not require use of diesel-powered construction equipment. As noted in

[1] Illingworth & Rodkin, Inc. 2018. *AC by Marriott – West in San Jose, CA Health Risk Analysis of Construction Emissions Memo*, November 5.

our assessment, diesel particulate matter from construction equipment is the primary toxic air contaminant of concern). Therefore, the CalEEMod construction schedule used is appropriate. The additional five months are for interior work, inspections, finishing (i.e., furnishings, fixtures and equipment installation), and staff training that will not use diesel-powered construction equipment.

Incorrect Evaluation of Construction-Related Health Risk: 3rd Trimester Exposure

Response: Based on the construction schedule provided as explained above, construction is assumed to last about one year. Maximum construction health risk impacts from the project were computed based on an assumed infant exposure duration of one year. The Commenter is correct in the fact that the 3rd trimester gestation exposure was not included in the cancer risk calculations. However, use of this exposure period (instead of infant) would not result in the maximum exposure period that could occur. By assuming an infant exposure for the entire one-year construction period rather than a combination of 3rd trimester exposure and an infant exposure, the analysis computes the maximum construction risk impacts at offsite sensitive receptors. The daily breathing rate for a 3rd trimester exposure is 361 liters per kilogram (L/kg) body weight body weight-day, while the breathing rate for an infant is 1,090 L/kg body weight-day. Both infants and a 3rd trimester fetus have the same age sensitivity to cancer risk. A higher breathing rate results in a higher cancer risk because the individual would inhale more construction emissions than someone with a lower breathing rate. Figure 1 shows the predicted increased cancer risk when 3rd trimester and infant exposure are both accounted for and the results show that the cancer risk would be lower using the combined exposure (i.e. 8.1 per million assuming 3rd trimester/infant exposure). Note that the original cancer risk predicted using only infant exposure estimated the cancer risk to be 9.7 per million. Therefore, using one year of infant exposure results in a higher, more conservative cancer risk prediction than if some of that time were assumed to be 3rd-trimester fetus exposure.

Figure 1. Construction Health Risk Calculations with 3rd Trimester Exposure

AC Marriot, San Jose CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Informatio DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Infant/Child Cancer Risk (per million)	Adult - Exposure Information Modeled DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Adult Cancer Risk (per million)	Maximum Fugitive PM2.5	Maximum Total PM2.5
0	**0.25**	-0.25 - 0*	2019	0.0594	10	0.81	-	-	-	-		
1	**0.75**	0 - 1	2019	0.0594	10	7.31	2019	0.0594	1	0.17	0.0127	0.072
Total Increased Cancer Risk						**8.1**				**0.17**		

* Third trimester of pregnancy

Failure to Conduct an Operational Health Risk Assessment

Response: Operation of the project would not be considered a source of toxic air contaminant (TAC) emissions as the project would not be a source of substantial truck emissions or emissions from stationary equipment. The Commenter provides an erroneous assessment of health risks that uses incorrect emission rates, incorrectly places those emissions only at the project site and then uses a screening model to exaggerate the impacts.

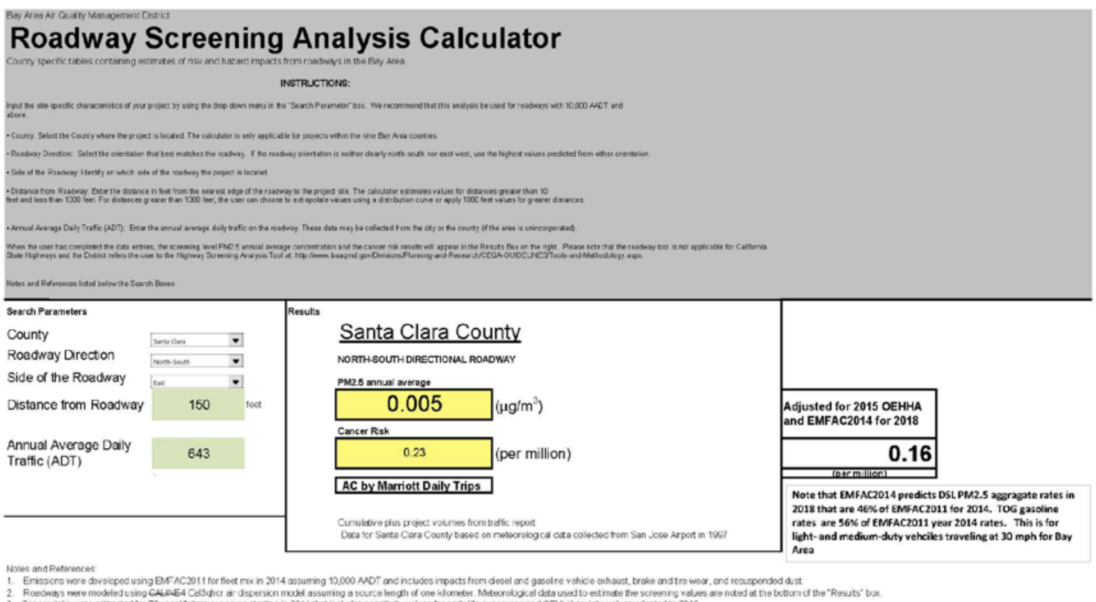
First, the Commenter uses the operational exhaust PM_{10} emissions rates from CalEEMod to represent diesel particulate matter emissions that they attribute to project vehicle traffic. This is wrong because (1) most project traffic is not diesel powered, so, it is wrong to conclude the PM_{10} emissions are diesel particulate matter and (2) project traffic would be spread out over many miles (about 7 to 12 miles) rather than concentrated at only the project site as characterized by the

Commenter. Finally, AERSCREEN is a screening model that is recommended by U.S. EPA to identify the potential for impacts and not used to quantify significant impacts. In addition, this model is inappropriate for modeling traffic sources.

Traffic would be the primary source of emissions from operation of the project. To further address this comment, operational emission from the net new trips that the hotel project would generate were modeled. Traffic impacts to health risk were computed using the BAAQMD's Roadway Screening Calculator where the inputs included the net daily trip generation increase of 643 vehicles per day caused by the project and the distance between the sensitive receptor and the closest travel areas for this traffic of 150 feet. The sensitive receptor included was the location where the greatest construction health risk impacts would occur. The increased cancer risk from project traffic would be negligible, an increased cancer risk of 0.16 per million and less than a 0.01 increase in annual $PM_{2.5}$ concentration.

The results of this modeling are summarized in Figure 2 of this memo.

Figure 2. Roadway Screening Analysis Model



Issue 2: Substantial Expert Evidence Establishes a Fair Argument That the Project's Emissions of Formaldehyde May Have Significant Impacts on Future Employees.

Response: The Commenter speculates that hotel workers would be exposed to substantial levels of formaldehyde that would outgas from building products.

Illingworth and Rodkin, Inc. conducted the construction HRA following the BAAQMD CEQA Air Quality Guidelines in terms of identifying sources of containments and their environmental impacts. Therefore, the construction HRA evaluation focuses on impacts of the project on the environment and surrounding sensitive receptors (children, adults, and seniors).[2] Under this definition the on-site and off-site workers are not considered a sensitive receptor. The health and safety of workers is regulated and overseen by the Occupation Safety and Health Administration (OSHA). In California, the state has a OSHA-approved State Plan that sets and enforces the proper standards needed to assure that working conditions are safe and healthy for all workers involved.

It should be noted that the project is not a unique source of formaldehyde emissions. Substantial sources of formaldehyde emissions from the project have not been identified.

The claims provided by the Commenter are speculative since they assume that the hotel project will have the median average of CARB Phase 2 Formaldehyde ATCM materials and have made general assumptions regarding exposure of workers in terms of their exposure level (workplace) and contaminant intake. The median levels are taken from a 2009 study of existing single-family homes. The Commenter is speculating that levels inside of the hotel that the workers would be exposed would be similar to those of the single-family homes in a study referenced by the Commenter[3]. That study only speculated on the sources of formaldehyde emissions, believing that they are from be composite wood products. Sources of formaldehyde were not specifically identified or quantified. The report notes other sources as “combustion sources (e.g., tobacco smoking, cooking fireplaces, woodstoves), cellulose-based products such as acoustic ceiling tiles, and paints. Additional sources of formaldehyde include permanent-pressed fabrics and insulation made with urea formaldehyde resins.” In addition, the comment describes ventilation systems of older single-family homes and habitable rooms inside of homes rather than the project, which is a modern hotel. The commenter further goes on to speculate $PM_{2.5}$ levels at the project without providing any analysis of the sources or the levels within the project building.

As stated by the City in previous comments, the project is required to comply with the California Green Building Standards Code (CALGreen) Sections 4.504.5 and 5.504.4.5 and composite wood products used in the project must be compliant with the California Air Resource Board (CARB) Airborne Toxic Control Measures Phase II or Toxic Substances Control Act (TSCA) Title VI. These state codes along with Cal/OSHA are the main regulators for indoor formaldehyde levels.

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[2] Bay Area Air Quality Management District, *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012.
3 Offermann, F. J. 2009. *Ventilation and Indoor Air Quality in New Homes.* California Air Resources Board and California Energy Commission, PIER Energy-Related Environmental Research Program. Collaborative Report. CEC-500-2009-085.