First Amendment to the Draft EIR

Marriott Townplace Suites

C19-051 & H19-053

Prepared by

CITY OF SAN JOSE

CAPITAL OF SILICON VALLEY

In Consultation with

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ENVIRONMENTAL CONSULTANTS & PLANNERS

August 2021

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SECTION 1.0 INTRODUCTION

This First Amendment, together with the Draft Supplemental Environmental Impact Report (Draft SEIR), constitutes the Final Environmental Impact Report (EIR) for the Marriott Townplace Suites Project.

1.1 PURPOSE OF THE FINAL EIR

In conformance with the California Environmental Quality Act (CEQA) and CEQA Guidelines, the Final EIR provides information regarding the environmental consequences of the proposed project. The Final EIR is intended to be used by the City of San José in making decisions regarding the project.

Pursuant to CEQA Guidelines Section 15090(a), prior to approving a project, the lead agency shall certify that:

(1) The Final EIR has been completed in compliance with CEQA;
(2) The Final EIR was presented to the decision-making body of the lead agency, and that the decision-making body reviewed and considered the information contained in the Final EIR prior to approving the project; and
(3) The Final EIR reflects the lead agency's independent judgment and analysis.

1.2 CONTENTS OF THE FINAL EIR

CEQA Guidelines Section 15132 specify that the Final EIR shall consist of:

a) The Draft SEIR or a revision of the Draft SEIR;
b) Comments and recommendations received on the Draft SEIR either verbatim or in summary;
c) A list of persons, organizations, and public agencies commenting on the Draft SEIR;
d) The Lead Agency's responses to significant environmental points raised in the review and consultation process; and
e) Any other information added by the Lead Agency.

1.3 PUBLIC REVIEW

In accordance with CEQA and the CEQA Guidelines (Public Resources Code Section 21092.5[a] and CEQA Guidelines Section 15088[b]), the City shall provide a written response to a public agency on comments made by that public agency at least 10 days prior to certifying the EIR. The Final EIR and all documents referenced in the Final EIR are available for public review at the Department of Planning, Building and Code Enforcement, 200 East Santa Clara Street, Third Floor, San José, California on weekdays during normal business hours. The Final EIR is also available for review on the City's website: www.sanjoseca.gov/activeeirs/.

SECTION 2.0 DRAFT SEIR PUBLIC REVIEW SUMMARY

The Draft SEIR for the Marriott Townplace Suites Project, dated March 2021, was circulated to affected public agencies and interested parties for a 45-day review period from April 5, 2021 through May 20, 2021. The City undertook the following actions to inform the public of the availability of the Draft SEIR:

- A Notice of Availability (NOA) of Draft SEIR was published on the City's website (www.sanjoseca.gov/activeeirs) and in the San José Mercury News;
- The NOA was distributed via electronic mail to project-area residents and other members of the public who had indicated interest in the project and to agencies with an interest in development in the City (see *Section 3.0* for a list of agencies, organizations, businesses, and individuals that received the Draft SEIR);
- The Draft SEIR was delivered to the State Clearinghouse on April 5, 2021 as well as sent to various governmental agencies, organizations, businesses, and individuals; and
- The Draft SEIR and documents referenced in the Draft SEIR were made available on the City's website (www.sanjoseca.gov/activeeirs/). Due to current situation under the coronavirus related Shelter-in-Place policy, the City's office and libraries were closed to the public. Therefore, the NOA included the option of requesting a hard copy be mailed to any interested party.

SECTION 3.0 DRAFT SEIR RECIPIENTS

CEQA Guidelines Section 15086 requires that a local lead agency consult with and request comments on the Draft SEIR prepared for a project of this type from responsible agencies (government agencies that must approve or permit some aspect of the project), trustee agencies for resources affected by the project, adjacent cities and counties, and transportation planning agencies.

The following agencies received a copy of the Draft SEIR from the City or via the State Clearinghouse:

- Association of Bay Area Governments
- Bay Area Air Quality Management District
- Bay Area Metro
- California Air Resources Board
- California Department of Fish and Wildlife, Region 3
- California Department of Transportation, District 4
- California Energy Commission
- California Environmental Protection Agency
- California Native American Heritage Commission
- California Regional Water Quality Control Board, Region 2
- City of Campbell, Planning Division
- City of Cupertino
- City of Fremont
- City of Milpitas
- City of Morgan Hill, Planning Division
- City of Mountain View, Community Development
- City of Santa Clara
- City of Saratoga
- City of Sunnyvale, Planning Division
- Department of Toxic Substances Control
- Greenbelt Alliance
- Guadalupe-Coyote Resource Conservation District
- Native American Heritage Commission
- PG&E Land Rights Services
- San José Unified School District
- San José Water Company
- Santa Clara County Planning Department
- Santa Clara County Roads & Airports Transportation Planning Department
- Santa Clara Valley Audubon Society
- Santa Clara Valley Transportation Authority
- Santa Clara Valley Water District
- Sierra Club-Loma Prieta Chapter
- State Department of Fish and Wildlife, Region 3
- Town of Los Gatos

- United States Fish and Wildlife Service.

Copies of the Notice of Availability for the Draft SEIR were sent by mail and/or email to the following organizations, businesses, and individuals who expressed interest in the project:

- Adams Broadwell Joseph & Cardozo
- Lozeau Drury LLP

SECTION 4.0 RESPONSES TO DRAFT SEIR COMMENTS

In accordance with CEQA Guidelines Section 15088, this document includes written responses to comments received by the City of San José on the Draft SEIR.

Comments are organized under headings containing the source of the letter and its date. The specific comments from each of the letters and/or emails are presented with each response to that specific comment directly following. Copies of the letters and emails received by the City of San José are included in their entirety in Appendix A of this document. Comments received on the Draft SEIR are listed below.

Comment Letter and Commenter **Page of Response**

REGIONAL AND LOCAL AGENCIES

A. Santa Clara Valley Transportation Authority (May 20, 2021)

Comment A.1: VTA appreciates the opportunity to comment on the Draft Supplemental Environmental Impact Report for the Marriott Townplace Suites project (C19-051 & H19-053). VTA has reviewed the document and has the following comments:

Existing (and Future) Transit Service

VTA recommends an update to Table 1 in Appendix H – Local Transportation Analysis (Existing Bus Service Near the Project Site) as some routes have changed. We have discontinued Express Route 181 and Express Route 168 will soon be replaced by Rapid Route 568, which will provide weekday service every 30 minutes throughout the day. Additionally, Rapid 523 now ends in Downtown San José at 7th and Santa Clara Streets.

> **Response A.1:** Table 1 in Appendix H has been revised to reflect the changes in bus routes and is included in *Section 6.0 Draft SEIR Text Revisions*. This change is administrative and does not create any new impacts, therefore recirculation is not required.

ORGANIZATIONS, BUSINESSES, AND INDIVIDUALS

B. Kanyon Konsulting, LLC (April 5, 2021)

Comment B.1: My name is Kanyon Sayers-Roods. I am writing this on behalf of the Indian Canyon Band of Costanoan Ohlone People as requested, responding to your letter dated: Aril 5,2021.

As this project's Area of Potential Effect (APE) overlaps or is near the management boundary of a recorded and potentially eligible cultural site, we recommend that a Native American Monitor and an Archaeologist be present on-site at all times. The presence of a monitor and archaeologist will help the project minimize potential effects on the cultural site and mitigate inadvertent issues.

Kanyon Konsulting, LLC has numerous Native Monitors available for projects such as this, if applicable, along with Cultural Sensitivity Training at the beginning of each project. This service is offered to aid those involved in the project to become more familiar with the indigenous history of the peoples of this land that is being worked on.

Kanyon Konsulting, LLC believes in having a strong proponent of honoring truth in history, when it comes to impacting cultural resources and potential ancestral remains. We have seen that projects like these tend to come into an area to consult/mitigate and move on shortly after. Doing so has the strong potential to impact cultural resources and disturb ancestral remains. Because of these possibilities, we highly recommend that you receive a specialized consultation provided by our company as the project commences.

As previously stated, our goal is to Honor Truth in History. And as such we want to ensure that there is an effort from the project organizer to take strategic steps in ways that #HonorTruthinHistory. This will make all involved aware of the history of the indigenous communities whom we acknowledge as the first stewards and land managers of these territories.

Potential Approaches to Ingenious Culture Awareness/History:
--Signs or messages to the audience or community of the territory being developed. (ex. A commerable plaque or as advantageous as an Educational/Cultural Center with information about the history of the land)

-- Commitment to consultation with the native peoples of the territory in regards to presenting messaging about the natives/Indigenous history of the land (Land Acknowledgement on website, written material about the space/org/building/business/etc)

-- Advocation of supporting indigenous lead movements and efforts. (informing one's audience and/or community about local present Indigenous community)

Response B.1: As described in Section 3.3 of the Draft SEIR and Section 4.19 of the Initial Study (Appendix A of the Draft SEIR), due to the project's proximity to Los Gatos Creek and the Guadalupe River, the project site could potentially contain buried archaeological resources. However, the project site has been developed for many years, the ground has been previously disturbed, and the proposed project plans do not include significant excavation; therefore, the draft SEIR concluded to address

the inadvertent discovery of currently unknown resources that may be uncovered during construction activities the following Standard Permit Condition would be implemented. This Standard Permit Condition is discussed on page 63 of the SEIR:

Standard Permit Condition
If prehistoric or historic resources are encountered during excavation and/or grading of the site, all activity within a 50-foot radius of the find shall be stopped, the Director of Planning, Building and Code Enforcement or the Director's designee and the City's Historic Preservation Officer shall be notified, and a qualified archaeologist shall examine the find. The archaeologist shall: (1) evaluate the find(s) to determine if they meet the definition of a historical or archaeological resource; and (2) make appropriate recommendations regarding the disposition of such finds prior to the issuance of building permits. Recommendations could include collection, recordation, and analysis of any significant cultural materials. A report of findings documenting any data recovery shall be submitted to Director of Planning, Building and Code Enforcement or the Director's designee and the City's Historic Preservation Officer and the Northwest Information Center (if applicable). Project personnel shall not collect or move any cultural materials.

C. Lozeau Drury LLP (May 20, 2021)

Comment C.1: I am writing on behalf of Laborers International Union of North America, Local Union 270 and its members living or working in and around the City of San José ("LIUNA") regarding the draft supplemental environmental impact report ("draft SEIR") prepared for the Marriott Townplace Suites Project (C19-051 & H19-053) ("Project") in San José. After reviewing the draft SEIR, it is clear that the document fails to comply with the California Environmental Quality Act ("CEQA"), and fails to adequately analyze and mitigate the Project's significant environmental impacts.

Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH, has conducted a review of the Project, the draft SEIR, and relevant appendices regarding the Project's indoor air emissions. Mr. Offerman concludes that it is likely that the Project will expose future employees of the hotel to significant impacts related to indoor air quality, and in particular, emissions of the cancer-causing chemical formaldehyde. This impact has not been addressed in the DEIR. Mr. Offermann is one of the world's leading experts on indoor air quality and has published extensively on the topic. Mr. Offerman's expert comments and CV are attached hereto as Exhibit A.

A revised EIR should be prepared prior to Project approval to analyze all impacts and require implementation of all feasible mitigation measures, as described more fully below.

Response C.1: The City of San José prepared the Draft SEIR in compliance with the requirements of CEQA and the CEQA Guidelines. Recirculation of an EIR is required when significant new information is added to the EIR (CEQA Guidelines Section 15088.5). As discussed in the responses to specific comments on the Draft SEIR below, the comments raised in this letter and attached exhibits do not identify a new or more significant impact, or a new feasible project alternative or mitigation

measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment C.2: PROJECT DESCRIPTION

The 0.6-acre Project site is located at 491, 493, 495, 497, and 499 West San Carlos Street and 270 and 280 Josefa Street (APN 259-47-013, -014, -015, and -016) on the northeast corner of West San Carlos Street and Josefa Street in the City of San José. The Project proposes to redevelop the project site with eight-story Marriott hotel building with up to 175 rooms. Some or all of the rooms could be extended stay. The maximum height of the building would be approximately 84.5 feet to the rooftop and 95 feet to top of the parapet. The first through third floors would consist of parking for hotel guests. The fourth through eighth floor of the building would have the hotel rooms. The building would be set back approximately six feet from the property lines along the street frontages to allow for a 15-foot wide public sidewalk on San Carlos Street and a 10-foot wide sidewalk on Josefa Street.

The Project site is currently developed with two commercial buildings, a tank house, a duplex, a mixed-use building, and one single-family residence, totaling approximately 26,233 square feet. The northernmost lot on Josefa Street (APN 259-47-016) is an asphalt-paved parking lot with no built structures. The project proposes to demolish the existing buildings and redevelop the site with the Project.

Response C.2: The comment provides a description of the proposed project, and is consistent with the project description in Section 3.0 of the Draft SEIR.
The comment does not raise any specific issues about the adequacy of the Draft SEIR; therefore, no further response is required.

Comment C.3: LEGAL STANDARD

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an environmental impact report ("EIR"), except in certain limited circumstances. (e.g., Pub. Res. Code § 21100.) The EIR is the very heart of CEQA. (Dunn- Edwards v. BAAQMD (1992) 9 Cal.App.4th 644, 652.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (Communities for a Better Envt. v. Calif. Resources Agency (2002) 103 Cal.App.4th 98, 109.)

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project. (14 CCR 15002(a)(1).) "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'" (Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal.3d 553, 564.) The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return." Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs. (2001) 91 Cal.App.4th 1344, 1354 (Berkeley Jets); County of Inyo v. Yorty (1973) 32 Cal.App.3d 795, 810.)

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures. (14 CCR § 15002(a)(2), (3); see also, Berkeley Jets, supra, 91 Cal.App.4th 1344, 1354; Citizens of Goleta

Valley, supra, 52 Cal.3d at 564.) The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced." (14 CCR 15002(a)(2). If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns." (PRC § 21081; 14 CCR 15092(b)(2)(A), (B).) The lead agency may deem a particular impact to be insignificant only if it produces rigorous analysis and concrete substantial evidence justifying the finding. (Kings County Farm Bureau v. City of Hanford (1990) 221 Cal.App.3d 692, 732.)

The EIR is the very heart of CEQA "and the integrity of the process is dependent on the adequacy of the EIR." (Berkeley Jets, supra, 91 Cal.App.4th at 1355.) CEQA requires that a lead agency analyze all potentially significant environmental impacts of its proposed actions in an EIR. (PRC § 21100(b)(1); 14 CCR 15126(a); Berkeley Jets, supra, 91 Cal.App.4th at 1354.) The EIR must not only identify the impacts, but must also provide "information about how adverse the impacts will be." (Santiago County Water Dist. v. County of Orange (1981) 118 Cal.App.3d 818, 831.) The lead agency may deem a particular impact to be insignificant only if it produces rigorous analysis and concrete substantial evidence justifying the finding. (Kings County Farm Bureau, supra, 221 Cal.App.3d at 732.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (Communities for a Better Envt., supra, 103 Cal.App.4th at 109.)

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A 'clearly inadequate or unsupported study is entitled to no judicial deference.'" (Berkeley Jets, supra, 91 Cal.App.4th at 1355 [quoting Laurel Heights Improvement Assn. v. Regents of University of California (1988) 47 Cal.3d 376, 391, 409 n. 12].) A prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process." (San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus (1994) 27 Cal.App.4th 713, 722; Galante Vineyards v. Monterey Peninsula Water Mgmt. Dist. (1997) 60 Cal.App.4th 1109, 1117; County of Amador v. El Dorado Cnty. Water Agency (1999) 76 Cal. App. 4th 931, 946.)

Response C.3: Refer to Response C.1

Comment C.4: DISCUSSION

A. The Draft SEIR Fails to Discuss Indoor Air Quality Impacts Related to the Project.

The draft SEIR fails to discuss, disclose, analyze, and mitigate the significant health risks posed by the Project from formaldehyde, a toxic air contaminant ("TAC"). Certified Industrial Hygienist, Francis Offermann, PE, CIH, has conducted a review of the Project, the DEIR, and relevant documents regarding the Project's indoor air emissions. Mr. Offermann is one of the world's leading experts on indoor air quality, in particular emissions of formaldehyde, and has published extensively on the topic. As discussed below and set forth in Mr. Offermann's comments, the Project's emissions of formaldehyde to air will result in very significant cancer risks to future residents at the Project's apartments. Mr. Offermann's expert opinion demonstrates the Project's significant health risk

impacts, which the City has a duty to investigate, disclose, and mitigate in an EIR. Mr. Offermann's comment and curriculum vitae are attached as Exhibit A.

Formaldehyde is a known human carcinogen and listed by the State as a TAC. BAAQMD has established a significance threshold of health risks for carcinogenic TACs of 10 in a million and a cumulative health risk threshold of 100 in a million. The draft SEIR fails to acknowledge the significant indoor air emissions that will result from the Project. Specifically, there is no discussion of impacts or health risks, no analysis, and no identification of mitigations for significant emissions of formaldehyde to air from the Project.

Mr. Offermann explains that many composite wood products typically used in home and apartment building construction contain formaldehyde-based glues which off-gas formaldehyde over a very long time period. He states, "The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particle board. These materials are commonly used in residential, office, and retail building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims." (Ex. A, pp. 2-3.)

Mr. Offermann found that future employees of the hotel will be exposed to a cancer risk from formaldehyde of approximately 17.7 per million, ***even assuming that*** all materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure. (Ex. A, pp. 4-5.) This impacts [sic] exceeds BAAQMD's CEQA significance threshold of 10 per million. (*Id*.)

Mr. Offermann concludes that these significant environmental impacts must be analyzed in an EIR and mitigation measures should be imposed to reduce the risk of formaldehyde exposure. (Ex. A, pp. 5-6, 12-13.) He prescribes a methodology for estimating the Project's formaldehyde emissions in order to do a more project-specific health risk assessment. (*Id*., pp. 5- 10.). Mr. Offermann also suggests several feasible mitigation measures, such as requiring the use of no-added-formaldehyde composite wood products, which are readily available. (*Id*., pp. 12- 13.) Mr. Offermann also suggests requiring air ventilation systems which would reduce formaldehyde levels. (*Id*.) Since the EIR does not analyze this impact at all, none of these or other mitigation measures have been considered.

When a Project exceeds a duly adopted CEQA significance threshold, as here, this alone establishes substantial evidence that the project will have a significant adverse environmental impact. Indeed, in many instances, such air quality thresholds are the only criteria reviewed and treated as dispositive in evaluating the significance of a project's air quality impacts. (*See, e.g. Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 960 [County applies Air District's "published CEQA quantitative criteria" and "threshold level of cumulative significance"]; *see also Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 110-111 ["A 'threshold of significance' for a given environmental effect is simply that level at which the lead agency finds the effects of the project to be significant"].)

Response C.4: The commenter is incorrect in stating that the BAAQMD significance threshold related to health risks for carcinogenic Toxic Air Contaminants (TACs) of 10 in a million and 100 in a million for cumulative health risk applies to indoor formaldehyde exposure. BAAQMD does not have an adopted threshold for formaldehyde exposure from indoor building sources. While BAAQMD recognizes

formaldehyde as an outdoor TAC from automobile and truck exhaust, the BAAQMD CEQA guidelines do not define a specific threshold for formaldehyde, nor does it regulate indoor air quality.

The California Supreme Court in a December 2015 opinion (*California Building Industry Association v. Bay Area Air Quality Management District*) confirmed that CEQA, with several specific exceptions, is concerned with the impacts of a project on the environment, not the effects of the existing environment may have on a project. The proposed project would be built in accordance to the most recent California Green Building Code (CALGreen), 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 (CARBs) Air Toxic Control Measures. In addition, the project would be required to comply with the City's Green Building Ordinance (Policy 6-32) and would be designed to achieve minimum LEED certification. LEED certification will require measures to improve indoor air quality.

Furthermore, the commenter is speculating in the assertion that composite wood materials would be used in the interior of the building. Indoor building materials will not be known until the building permit stage, and as stated above, these materials will be required to comply with CARB, 2016 CalGreen building code, and LEED certification requirements. Lastly, even with the regulations in place, if materials containing formaldehyde were to be used, it would be speculative for the City to estimate the type and volume of building materials that may contain formaldehyde. Per Section 15145 of the CEQA guidelines, speculative analysis is not acceptable. Because there would be no way to quantify the off-gassing of materials, and because no thresholds exist, no additional CEQA analysis or mitigation measures related to formaldehyde would be required.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment C.5: The California Supreme Court made clear the substantial importance that an air district significance threshold plays in providing substantial evidence of a significant adverse impact. (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 327 ["As the [South Coast Air Quality Management] District's established significance threshold for NOx is 55 pounds per day, these estimates [of NOx emissions of 201 to 456 pounds per day] constitute substantial evidence supporting a fair argument for a significant adverse impact."].) Since expert evidence demonstrates that the Project will exceed the SCAQMD's CEQA significance threshold, there is substantial evidence that an "unstudied, ***potentially significant environmental effect[]***" exists. (*See Friends of Coll. of San Mateo Gardens v. San Mateo Cty. Cmty. Coll. Dist.* (2016) 1 Cal.5th 937, 958 [emphasis added].) As a result, the City must prepare an EIR for the Project to address this impact and identify enforceable mitigation measures.

Response C.5: The South Coast Air Quality Management District has no jurisdiction in Santa Clara County. The South Coast Air Quality Management District covers

portions of Los Angeles, San Bernardino, and Riverside Counties. Santa Clara County is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) which does not have an adopted CEQA threshold for formaldehyde from indoor building sources. The comment does not raise any specific issues about the adequacy of the Draft SEIR; therefore, no further response is required.

The City of San José has prepared an SEIR for the project which is the subject of this comment letter. The Final EIR is available for review on the City's website: www.sanjoséca.gov/activeeirs

Comment C.6: The failure of the draft SEIR to address the Project's formaldehyde emissions is contrary to the California Supreme Court's decision in *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 386 ("*CBIA*"). In that case, the Supreme Court expressly holds that potential adverse impacts to future users and residents from pollution generated by a proposed project ***must be addressed*** under CEQA. At issue in *CBIA* was whether the Air District could enact CEQA guidelines that advised lead agencies that they must analyze the impacts of adjacent environmental conditions on a project. The Supreme Court held that CEQA does not generally require lead agencies to consider the environment's effects on a project. (*CBIA*, 62 Cal.4th at 800-01.) However, to the extent a project may exacerbate existing environmental conditions at or near a project site, those would still have to be considered pursuant to CEQA. (*Id*. at 801.) In so holding, the Court expressly held that CEQA's statutory language required lead agencies to disclose and analyze "impacts on ***a project's users or residents*** that arise ***from the project's effects*** on the environment." (*Id*. at 800 [emphasis added].)

The carcinogenic formaldehyde emissions identified by Mr. Offermann are not an existing environmental condition. Those emissions to the air will be from the Project. People will be residing in and working in the Project's buildings once built and emitting formaldehyde. Once built, the Project will begin to emit formaldehyde at levels that pose significant direct and cumulative health risks. The Supreme Court in *CBIA* expressly finds that this type of air emission and health impact by the project on the environment and a "project's users and residents" must be addressed in the CEQA process. The existing TAC sources near the Project site would have to be considered in evaluating the cumulative effect on future residents of both the Project's TAC emissions as well as those existing off-site emissions.

The Supreme Court's reasoning is well-grounded in CEQA's statutory language. CEQA expressly includes a project's effects on human beings as an effect on the environment that must be addressed in an environmental review. "Section 21083(b)(3)'s express language, for example, requires a finding of a 'significant effect on the environment' (§ 21083(b)) whenever the 'environmental effects of a project will cause substantial adverse effects *on human beings*, either directly or indirectly.'" (*CBIA*, 62 Cal.4th at 800.) Likewise, "the Legislature has made clear—in declarations accompanying CEQA's enactment—that public health and safety are of great importance in the statutory scheme." (*Id*. [citing e.g., PRC §§ 21000, 21001].) It goes without saying that the future residents and employees at the Project are human beings and their health and safety must be subject to CEQA's safeguards.

The City has a duty to investigate issues relating to a project's potential environmental impacts. (*See County Sanitation Dist. No. 2 v. County of Kern*, (2005) 127 Cal.App.4th 1544, 1597–98. ["[U]nder

CEQA, the lead agency bears a burden to investigate potential environmental impacts."].) The proposed buildings will have significant impacts on air quality and health risks by emitting cancer-causing levels of formaldehyde into the air that will expose future residents and employees to cancer risks potentially in excess of BAAQMD's threshold of significance for cancer health risks of 10 in a million. Likewise, when combined with the risks posed by the nearby TAC sources, the health risks inside the project may exceed BAAQMD's cumulative health risk threshold of 100 cancers in a million. Currently, outside of Mr. Offermann's comments, the City does not have any idea what risks will be posed by formaldehyde emissions from the Project or the residences. As a result, the City must include an analysis and discussion in an updated draft SEIR which discloses and analyzes the health risks that the Project's formaldehyde emissions may have on future residents and employees and identifies appropriate mitigation measures.

CONCLUSION

For the foregoing reasons, the draft SEIR for the Project should be revised and circulated for public review and comment in accordance with CEQA. Thank you for considering these comments.

Response C.6: Refer to Response C.4.

EXHIBIT A – MEMO FROM INDOOR ENVIRONMENTAL ENGINEERING

Comment C.7: Indoor Air Quality Impacts

Indoor air quality (IAQ) directly impacts the comfort and health of building occupants, and the achievement of acceptable IAQ in newly constructed and renovated buildings is a well-recognized design objective. For example, IAQ is addressed by major high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014). Indoor air quality in homes is particularly important because occupants, on average, spend approximately ninety percent of their time indoors with the majority of this time spent at home (EPA, 2011). Some segments of the population that are most susceptible to the effects of poor IAQ, such as the very young and the elderly, occupy their homes almost continuously. Additionally, an increasing number of adults are working from home at least some of the time during the workweek. Indoor air quality also is a serious concern for workers in hotels, offices and other business establishments.

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson, 2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

Indoor Formaldehyde Concentrations Impact. In the California New Home Study (CNHS) of 108 new homes in California (Offermann, 2009), 25 air contaminants were measured, and formaldehyde was identified as the indoor air contaminant with the highest cancer risk as determined by the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), No Significant Risk Levels (NSRL) for carcinogens. The NSRL is the daily intake level calculated to result in one excess case of cancer in an exposed population of 100,000 (i.e., ten in one million cancer risk) and for formaldehyde is 40 μg/day. The NSRL concentration of formaldehyde that represents a daily dose of 40 μg is 2 $\mu g/m^3$, assuming a continuous 24-hour exposure, a total daily inhaled air volume of 20 m^3, and 100%

absorption by the respiratory system. All of the CNHS homes exceeded this NSRL concentration of 2 μg/m3. The median indoor formaldehyde concentration was 36 μg/m^3, and ranged from 4.8 to 136 μg/m^3, which corresponds to a median exceedance of the 2 μg/m^3 NSRL concentration of 18 and a range of 2.3 to 68.

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 μg/m^3, is 180 per million as a result of formaldehyde alone. The CEQA significance threshold for airborne cancer risk is 10 per million, as established by the South Coast Air Quality Management District (BAAQMD, 2017).

> **Response C.7:** The South Coast Air Quality Management District has no jurisdiction in Santa Clara County. The South Coast Air Quality Management District covers portions of Los Angeles, San Bernardino, and Riverside Counties. Santa Clara County is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) which does not have an adopted CEQA threshold for formaldehyde from indoor building sources. Furthermore, the proposed project is a hotel and is not comparable to a personal residence in terms of use or exposure.
>
> The comment does not raise any specific issues about the adequacy of the Draft SEIR; therefore, no further response is required.

Comment C.8: Besides being a human carcinogen, formaldehyde is also a potent eye and respiratory irritant. In the CNHS, many homes exceeded the non-cancer reference exposure levels (RELs) prescribed by California Office of Environmental Health Hazard Assessment (OEHHA, 2017b). The percentage of homes exceeding the RELs ranged from 98% for the Chronic REL of 9 μg/m^3 to 28% for the Acute REL of 55 μg/m^3.

The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

In January 2009, the California Air Resources Board (CARB) adopted an airborne toxics control measure (ATCM) to reduce formaldehyde emissions from composite wood products, including hardwood plywood, particleboard, medium density fiberboard, and also furniture and other finished products made with these wood products (California Air Resources Board 2009). While this formaldehyde ATCM has resulted in reduced emissions from composite wood products sold in California, they do not preclude that homes built with composite wood products meeting the CARB ATCM will have indoor formaldehyde concentrations below cancer and non-cancer exposure guidelines.

A follow up study to the California New Home Study (CNHS) was conducted in 2016-2018 (Singer et. al., 2019), and found that the median indoor formaldehyde in new homes built after 2009 with CARB Phase 2 Formaldehyde ATCM materials had lower indoor formaldehyde concentrations, with a median indoor concentrations of 22.4 μg/m^3 (18.2 ppb) as compared to a median of 36 μg/m^3 found in the 2007 CNHS. Unlike in the CNHS study where formaldehyde concentrations were measured with pumped DNPH samplers, the formaldehyde concentrations in the HENGH study were measured

with passive samplers, which were estimated to under-measure the true indoor formaldehyde concentrations by approximately 7.5%. Applying this correction to the HENGH indoor formaldehyde concentrations results in a median indoor concentration of 24.1 μg/m^3, which is 33% lower than the 36 μg/m^3 found in the 2007 CNHS.

Thus, while new homes built after the 2009 CARB formaldehyde ATCM have a 33% lower median indoor formaldehyde concentration and cancer risk, the median lifetime cancer risk is still 120 per million for homes built with CARB compliant composite wood products. This median lifetime cancer risk is more than 12 times the OEHHA 10 in a million cancer risk threshold (OEHHA, 2017a).

With respect to the Marriott Townplace Suites, San Jose, CA, the buildings consist of a hotel building.

The employees of the hotel building are expected to experience significant indoor exposures (e.g., 40 hours per week, 50 weeks per year). These exposures for employees are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in offices, warehouses, residences and hotels.

Because the hotel will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 24.1 μg/m^3 (Singer et. al., 2020)

Assuming that the hotel employees work 8 hours per day and inhale 20 m^3 of air per day, the formaldehyde dose per work-day at the offices is 161 μg/day.

Assuming that these employees work 5 days per week and 50 weeks per year for 45 years (start at age 20 and retire at age 65) the average 70-year lifetime formaldehyde daily dose is 70.9 μg/day.

This is 1.77 times the NSRL (OEHHA, 2017a) of 40 μg/day and represents a cancer risk of 17.7 per million, which exceeds the CEQA cancer risk of 10 per million. This impact should be analyzed in an environmental impact report ("EIR"), and the agency should impose all feasible mitigation measures to reduce this impact. Several feasible mitigation measures are discussed below and these and other measures should be analyzed in an EIR.

Appendix A, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, provides analyses that show utilization of CARB Phase 2 Formaldehyde ATCM materials will not ensure acceptable cancer risks with respect to formaldehyde emissions from composite wood products.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

The following describes a method that should be used, prior to construction in the environmental review under CEQA, for determining whether the indoor concentrations resulting from the formaldehyde emissions of specific building materials/furnishings selected exceed cancer and non-cancer guidelines. Such a design analyses can be used to identify those materials/furnishings prior to the completion of the City's CEQA review and project approval, that have formaldehyde emission rates that contribute to indoor concentrations that exceed cancer and non-cancer guidelines, so that alternative lower emitting materials/furnishings may be selected and/or higher minimum outdoor air ventilation rates can be increased to achieve acceptable indoor concentrations and incorporated as mitigation measures for this project.

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment

This formaldehyde emissions assessment should be used in the environmental review under CEQA to assess the indoor formaldehyde concentrations from the proposed loading of building materials/furnishings, the area-specific formaldehyde emission rate data for building materials/furnishings, and the design minimum outdoor air ventilation rates. This assessment allows the applicant (and the City) to determine, before the conclusion of the environmental review process and the building materials/furnishings are specified, purchased, and installed, if the total chemical emissions will exceed cancer and non-cancer guidelines, and if so, allow for changes in the selection of specific material/furnishings and/or the design minimum outdoor air ventilations rates such that cancer and non-cancer guidelines are not exceeded.

1) Define Indoor Air Quality Zones. Divide the building into separate indoor air quality zones, (IAQ Zones). IAQ Zones are defined as areas of well-mixed air. Thus, each ventilation system with recirculating air is considered a single zone, and each room or group of rooms where air is not recirculated (e.g. 100% outdoor air) is considered a separate zone. For IAQ Zones with the same construction material/furnishings and design minimum outdoor air ventilation rates. (e.g. hotel rooms, apartments, condominiums, etc.) the formaldehyde emission rates need only be assessed for a single IAQ Zone of that type.

2.) Calculate Material/Furnishing Loading. For each IAQ Zone, determine the building material and furnishing loadings (e.g., m^2 of material/m^2 floor area, units of furnishings/m^2 floor area) from an inventory of all potential indoor formaldehyde sources, including flooring, ceiling tiles, furnishings, finishes, insulation, sealants, adhesives, and any products constructed with composite wood products containing urea-formaldehyde resins (e.g., plywood, medium density fiberboard, particleboard).
3.) Calculate the Formaldehyde Emission Rate. For each building material, calculate the formaldehyde emission rate (µg/h) from the product of the area-specific formaldehyde emission rate (µg/m^2-h) and the area (m^2) of material in the IAQ Zone, and from each furnishing (e.g. chairs, desks, etc.) from the unit-specific formaldehyde emission rate (µg/unit-h) and the number of units in the IAQ Zone.

NOTE: As a result of the high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014), most manufacturers of building materials furnishings sold in the United States conduct chemical emission rate tests using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers," (CDPH, 2017), or other equivalent chemical emission rate testing methods. Most manufacturers of building furnishings sold

in the United States conduct chemical emission rate tests using ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions (BIFMA, 2018), or other equivalent chemical emission rate testing methods.

CDPH, BIFMA, and other chemical emission rate testing programs, typically certify that a material or furnishing does not create indoor chemical concentrations in excess of the maximum concentrations permitted by their certification. For instance, the CDPH emission rate testing requires that the measured emission rates when input into an office, school, or residential model do not exceed one-half of the OEHHA Chronic Exposure Guidelines (OEHHA, 2017b) for the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017). These certifications themselves do not provide the actual area-specific formaldehyde emission rate (i.e., $\mu g/m^2$-h) of the product, but rather provide data that the formaldehyde emission rates do not exceed the maximum rate allowed for the certification. Thus, for example, the data for a certification of a specific type of flooring may be used to calculate that the area-specific emission rate of formaldehyde is less than 31 $\mu g/m^2$-h, but not the actual measured specific emission rate, which may be 3, 18, or 30 $\mu g/m^2$-h. These area-specific emission rates determined from the product certifications of CDPH, BIFA, and other certification programs can be used as an initial estimate of the formaldehyde emission rate.

If the actual area-specific emission rates of a building material or furnishing is needed (i.e. the initial emission rates estimates from the product certifications are higher than desired), then that data can be acquired by requesting from the manufacturer the complete chemical emission rate test report. For instance if the complete CDPH emission test report is requested for a CDHP certified product, that report will provide the actual area-specific emission rates for not only the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017), but also all of the cancer and reproductive/developmental chemicals listed in the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), all of the toxic air contaminants (TACs) in the California Air Resources Board Toxic Air Contamination List (CARB, 2011), and the 10 chemicals with the greatest emission rates.

Alternatively, a sample of the building material or furnishing can be submitted to a chemical emission rate testing laboratory, such as Berkeley Analytical Laboratory (https://berkeleyanalytical.com), to measure the formaldehyde emission rate.

4.) Calculate the Total Formaldehyde Emission Rate. For each IAQ Zone, calculate the total formaldehyde emission rate (i.e. µg/h) from the individual formaldehyde emission rates from each of the building material/furnishings as determined in Step 3.

5.) Calculate the Indoor Formaldehyde Concentration. For each IAQ Zone, calculate the indoor formaldehyde concentration (µg/m3) from Equation 1 by dividing the total formaldehyde emission rates (i.e. µg/h) as determined in Step 4, by the design minimum outdoor air ventilation rate (m3/h) for the IAQ Zone.

$$C_{in} = \frac{E_{total}}{Q_{oa}}$$ (Equation 1)

where:

C_{in} = indoor formaldehyde concentration ($\mu g/m^3$)

E_{total} = total formaldehyde emission rate ($\mu g/h$) into the IAQ Zone.

Q_{oa} = design minimum outdoor air ventilation rate to the IAQ Zone (m^3/h)

The above Equation 1 is based upon mass balance theory, and is referenced in Section 3.10.2 "Calculation of Estimated Building Concentrations" of the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017).

6.) Calculate the Indoor Exposure Cancer and Non-Cancer Health Risks. For each IAQ Zone, calculate the cancer and non-cancer health risks from the indoor formaldehyde concentrations determined in Step 5 and as described in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2015).

7.) Mitigate Indoor Formaldehyde Exposures of exceeding the CEQA Cancer and/or Non-Cancer Health Risks. In each IAQ Zone, provide mitigation for any formaldehyde exposure risk as determined in Step 6, that exceeds the CEQA cancer risk of 10 per million or the CEQA non-cancer Hazard Quotient of 1.0.

Provide the source and/or ventilation mitigation required in all IAQ Zones to reduce the health risks of the chemical exposures below the CEQA cancer and non-cancer health risks. Source mitigation for formaldehyde may include:

1.) reducing the amount materials and/or furnishings that emit formaldehyde
2.) substituting a different material with a lower area-specific emission rate of Formaldehyde

Ventilation mitigation for formaldehyde emitted from building materials and/or furnishings may include:

1.) increasing the design minimum outdoor air ventilation rate to the IAQ Zone.

NOTE: Mitigating the formaldehyde emissions through use of less material/furnishings, or use of lower emitting materials/furnishings, is the preferred mitigation option, as mitigation with increased outdoor air ventilation increases initial and operating costs associated with the heating/cooling systems.

Further, we are not asking that the builder "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers," (CDPH, 2017), and use the procedure described earlier

above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Response C.8: BAAQMD does not have thresholds for formaldehyde exposure. While BAAQMD recognizes formaldehyde as an outdoor TAC from automobile and truck exhaust, the BAAQMD CEQA guidelines do not define a specific threshold for formaldehyde or regulate indoor air quality. The California Supreme Court in a December 2015 opinion (California Building Industry Association v. Bay Area Air Quality Management District) confirmed that CEQA, with several specific exceptions, is concerned with the impacts of a project on the environment, not the effects of the existing environment may have on a project. The proposed project would be built in accordance with the most recent California Green Building Code (CALGreen), 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 (CARBs) Air Toxic Control Measures. In addition, the project would be required to comply with the City's Green Building Ordinance (Policy 6-32) and would be designed to achieve minimum LEED certification. LEED certification will require measures to improve indoor air quality.

Furthermore, the commenter is speculating in the assertion that composite wood materials would be used in the interior of the building. Indoor building materials will not be known until the building permit stage and, as stated above, these materials will be required to comply with CARB, the 2016 CalGreen building code, and LEED certification requirements. Lastly, even with the regulations in place, if materials containing formaldehyde were to be used, it would be speculative for the City to estimate the type and volume of building materials that may contain formaldehyde. Per Section 15145 of the CEQA guidelines, speculative analysis is not acceptable. Because there would be no way to quantify the off-gassing of materials, and because no thresholds exist, no additional analysis or mitigation measures related to formaldehyde would be required.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment C.9: Outdoor Air Ventilation Impact. Another important finding of the CNHS, was that the outdoor air ventilation rates in the homes were very low. Outdoor air ventilation is a very important factor influencing the indoor concentrations of air contaminants, as it is the primary removal mechanism of all indoor air generated contaminants. Lower outdoor air exchange rates cause indoor generated air contaminants to accumulate to higher indoor air concentrations. Many homeowners rarely open their windows or doors for ventilation as a result of their concerns for security/safety, noise, dust, and odor concerns (Price, 2007). In the CNHS field study, 32% of the homes did not use their windows during the 24-hour Test Day, and 15% of the homes did not use their windows during the entire preceding week. Most of the homes with no window usage were homes in the winter field session. Thus, a substantial percentage of homeowners never open their windows, especially in the winter season. The median 24-hour measurement was 0.26 air changes per

hour (ach), with a range of 0.09 ach to 5.3 ach. A total of 67% of the homes had outdoor air exchange rates below the minimum California Building Code (2001) requirement of 0.35 ach. Thus, the relatively tight envelope construction, combined with the fact that many people never open their windows for ventilation, results in homes with low outdoor air exchange rates and higher indoor air contaminant concentrations.

The Project is close to roads with moderate to high traffic (e.g., SR-87, I-280, West San Carlos Street, Josepha Street, Park Avenue, Bird Avenue etc.) as well as air traffic from San Jose International Airport and railroad traffic by Caltrain, the VTA, Amtrak, Union Pacific, and the Altamont Corridor Express.

According to Table 3.6-4 in the Supplemental Environmental Impact Report – Marriott Townplace Suites (City of San Jose, 2021), the future noise levels at the building façade range from 61-70 dBA DNL.

As a result of the high outdoor noise levels, the current project will require a mechanical supply of outdoor air ventilation to allow for a habitable interior environment with closed windows and doors. Such a ventilation system would allow windows and doors to be kept closed at the occupant's discretion to control exterior noise within building interiors.

> **Response C.9:** The analysis referenced by the commenter is based on a residential occupancy, whereas the proposed project is a hotel project which is transitory in nature. The comment does not raise any specific issues about the adequacy of the analysis in the Draft SEIR; therefore, no further response is required.

Comment C.10: PM2.5 Outdoor Concentrations Impact. An additional impact of the nearby motor vehicle traffic associated with this project, are the outdoor concentrations of PM2.5. According to the Supplemental Environmental Impact Report – Marriott Townplace Suites (City of San Jose, 2021), the Project is located in the San Francisco Bay Area Basin, which is a State and Federal non-attainment area for PM2.5.

An air quality analyses should to be conducted to determine the concentrations of PM2.5 in the outdoor and indoor air that people inhale each day. This air quality analyses needs to consider the cumulative impacts of the project related emissions, existing and projected future emissions from local PM2.5 sources (e.g. stationary sources, motor vehicles, and airport traffic) upon the outdoor air concentrations at the Project site. If the outdoor concentrations are determined to exceed the California and National annual average PM2.5 exceedance concentration of 12 μg/m3, or the National 24-hour average exceedance concentration of 35 μg/m3, then the buildings need to have a mechanical supply of outdoor air that has air filtration with sufficient removal efficiency, such that the indoor concentrations of outdoor PM2.5 particles is less than the California and National PM2.5 annual and 24-hour standards.

> **Response C.10:** As required under CEQA, operational emissions from the project, including $PM_{2.5}$, were addressed in Section 3.1.2.1 pages 25-26 of the SEIR. Cumulative community risk impacts from $PM_{2.5}$ concentrations were addressed on pages 33-34 of the SEIR. The analysis concluded that while the project would contribute to the significant unavoidable criteria pollutant impact identified for full

build out of the Downtown Strategy 2040, the project by itself would have a less than significant operational impact. The projects contribution to cumulative $PM_{2.5}$ was determined to be less than significant with the identified mitigation.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment C.11: It is my experience that based on the projected high traffic noise levels, the annual average concentration of PM2.5 will exceed the California and National PM2.5 annual and 24-hour standards and warrant installation of high efficiency air filters (i.e. MERV 13 or higher) in all mechanically supplied outdoor air ventilation systems.

Response C.11: Projected high traffic noise levels do not directly equate to high concentrations of air pollutants and elevated traffic noise levels alone do not justify the need for high efficiency air filters. As shown in Table 3.1-7 of the SEIR (page 34) all existing $PM_{2.5}$ sources in the project area (mobile and stationary) individually and combined do not exceed the BAAQMD single-source and cumulative thresholds for community risk impacts as measured at the maximum exposed individual (MEI) location. Figure 3.1-2 of the Draft SEIR shows the MEI location as being directly adjacent to the southeast corner of the project site along West San Carlos Street. As such, the exposure of existing $PM_{2.5}$ sources at the MEI would be equivalent to the $PM_{2.5}$ exposure on the project site and high efficiency air filters would not be required.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment C.12: Indoor Air Quality Impact Mitigation Measures
The following are recommended mitigation measures to minimize the impacts upon indoor quality:

Indoor Formaldehyde Concentrations Mitigation. Use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins (CARB, 2009). CARB Phase 2 certified composite wood products, or ultra-low emitting formaldehyde (ULEF) resins, do not insure indoor formaldehyde concentrations that are below the CEQA cancer risk of 10 per million. Only composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

Alternatively, conduct the previously described Pre-Construction Building Material/Furnishing Chemical Emissions Assessment, to determine that the combination of formaldehyde emissions from building materials and furnishings do not create indoor formaldehyde concentrations that exceed the CEQA cancer and non-cancer health risks.

It is important to note that we are not asking that the builder "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), and use the procedure described above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Outdoor Air Ventilation Mitigation. Provide each habitable room with a continuous mechanical supply of outdoor air that meets or exceeds the California 2016 Building Energy Efficiency Standards (California Energy Commission, 2015) requirements of the greater of 15 cfm/occupant or 0.15 cfm/ft^2 of floor area. Following installation of the system conduct testing and balancing to insure that required amount of outdoor air is entering each habitable room and provide a written report documenting the outdoor airflow rates. Do not use exhaust only mechanical outdoor air systems, use only balanced outdoor air supply and exhaust systems or outdoor air supply only systems. Provide a manual for the occupants or maintenance personnel, that describes the purpose of the mechanical outdoor air system and the operation and maintenance requirements of the system.

$PM_{2.5}$ Outdoor Air Concentration Mitigation. Install air filtration with sufficient $PM_{2.5}$ removal efficiency (e.g. MERV 13 or higher) to filter the outdoor air entering the mechanical outdoor air supply systems, such that the indoor concentrations of outdoor PM2.5 particles are less than the California and National PM2.5 annual and 24-hour standards. Install the air filters in the system such that they are accessible for replacement by the occupants or maintenance personnel. Include in the mechanical outdoor air ventilation system manual instructions on how to replace the air filters and the estimated frequency of replacement.

Response C.12: As discussed in Responses C.7 - C.13, there is no method available to quantify the off-gassing of materials and there is no adopted threshold for formaldehyde by which to measure an effect. Therefore, no impact has been identified and there is no nexus by which to require mitigation for the project. The Draft SEIR quantified $PM_{2.5}$ emissions and the impact would be less than significant for existing sources. Therefore, no mitigation is required.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

D. Preservation Action Council of San José (dated May 20, 2021)

Comment D.1: Thank you for the opportunity to provide comments on the Draft SEIR for the Marriott Townplace Suites Project, a proposed seven-story, 175-room hotel development on an 0.6-acre site in Downtown San José. As proposed, the project calls for the demolition of six existing structures fronting West San Carlos and Josefa Streets. PAC*SJ strongly concurs with the DSEIR findings that two of these structures qualify as Candidate City Landmarks, and should therefore be considered as qualified historic resources under CEQA.

In general, PAC*SJ appreciates the response to our Notice of Preparation comments and acknowledges that a good-faith effort was made to explore project alternatives that would avoid demolition of these resources. We also appreciate the inclusion of mitigation measures that will allow for complete digital recordation of the impacted sites (MM CUL-1.2) and a requirement for documenting selective deconstruction/reverse construction prior to demolition. As part of this required mitigation scope, we strongly encourage the City and applicant to investigate whether any elements of the historic storefront and signage visible in the circa-1920 photograph of 497-99 West San Carlos (Appendix C, Figure 20) have survived beneath later building alterations. If so, all effort should be made to salvage these elements.

> **Response D.1:** In accordance with Mitigation Measure CUL-1.5, prior to and during demolition activities, all structures and associated features being salvaged and demolished shall be documented, photographed, and videoed by a qualified architectural historian showing in reverse the original methods of construction and use of materials. Additionally, Mitigation Measure CUL-1.4 requires the applicant make the structures and historic building materials available for salvage prior to the issuance of demolition permits. If elements of the historic storefront or signage is intact under the existing building alterations, it would be identified during the salvage process noted above.

Comment D.2: We also suggest that the figures illustrating DSEIR Project Alternatives 4, 5, and 6 (Figures 7.4-1, 7.4-2, and 7.4-3) be further annotated. We believe Figures 7.4-2 and 7.4-3 are mislabeled, and we suggest adding street names and cardinal directions to all figures for ease of comparison. It appears that massing modules of different sizes are rendered in specific colors, but no explanation or key is included. Without this context, it is difficult to understand what these figures are intended to illustrate or analyze.

We again thank you for the opportunity to provide these comments and look forward to continued cooperation with the City and the project developer to address these issues through an appropriate and comprehensive mitigation strategy.

> **Response D.2:** The proposed revisions to Figures 7.4-1 through 7.4-3 (add street names, cardinal directions and correct labeling) are included in *Section 6.0 Draft SEIR Text Revisions.*

SECTION 5.0 RESPONSES TO DRAFT SEIR COMMENTS RECEIVED AFTER THE PUBLIC REVIEW PERIOD

The following comment letter was submitted after the public review period ended. The City is responding to the comments as a courtesy, though it is not required under the CEQA regulations.

E. Lozeau Drury LLP (May 27, 2021)

Comment E.1: I am writing on behalf of Laborers' International Union of North America, Local Union 270 and its members living or working in and around the City of San José ("LIUNA") to supplement LIUNA's previous May 20, 2021 comment regarding the draft supplemental environmental impact report ("draft SEIR") prepared for the Marriott Townplace Suites Project (C19-051 & H19-053) ("Project") in San José.

LIUNA's previous comment contained the analysis of Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH, regarding the Project's indoor air impacts. This comment includes the analysis of air quality experts Matt Hagemann, P.G., C.Hg., and Paul E. Rosenfeld, Ph.D., of the Soil/Water/Air Protection Enterprise ("SWAPE"). SWAPE's comment and CVs are attached as Exhibit A.

The draft SEIR underestimated the Project's emissions.
SWAPE found that the draft SEIR underestimated the Project's emissions and therefore cannot be relied upon to determine the significant of the Project's air quality impacts. The draft SEIR relies on emissions calculated from the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod"). (Ex. A, p. 1) This model, which is used to generate a project's construction and operational emissions, relies on recommended default values based on site specific information related to a number of factors (Id., pp. 1-2.) CEQA requires that any changes to the default values must be justified by substantial evidence. (Id.)

SWAPE reviewed the Project's CalEEMod output files and found that the values input into the model were inconsistent with information provided in the draft SEIR. (Ex. A, p. 2.) This results in an underestimation of the Project's emissions. (Id.) As a result, the draft SEIR's air quality analysis cannot be relied upon to estimate the Project's emissions.

Specifically, SWAPE found that the following values used in the draft SEIR's air quality analysis were either inconsistent with information provided in the draft SEIR or otherwise unjustified:

1. Unsubstantiated Construction Phase Lengths (Ex. A, pp. 2-3.)
2. Unsubstantiated Changes to Off-Road Equipment (Ex. A, pp. 3-5.)
3. Unsubstantiated Changes to Construction Trips (Ex. A, pp. 5-6.)
4. Unsubstantiated Changes to Wastewater Treatment System (Ex. A, pp. 6-7.)
5. Improper Application of Construction Mitigation Measures (Ex. A, pp. 7-9.)
6. Improper Application of Operational Mitigation Measures (Ex. A, pp. 9-11.)

As a result of these errors in the draft SEIR, the Project's construction and operational emissions are underestimated and cannot be relied upon to determine the significance of the Project's air quality impacts.

Response E.1: The comment does not present any information that the changes made to the CalEEMod model defaults results in lower emissions than if the default modeling inputs were used. CalEEMod users typically input project specific information into CalEEMod to increase the accuracy of the modeling results. Default modeling inputs were not used because CalEEMod default conditions are inappropriate for modeling urban projects with vertical construction elements on small sized lots. The CalEEMod model was designed for horizontal projects and uses the inputs of land size in acreage, project type, and size to develop a generic set of construction inputs settings (i.e., default values) that do not recognize project specific techniques or vertical construction requirements. Examples of unique construction requirements for this project that CalEEMod does not recognize included more extensive demolition, more extensive site preparation and grading, and trenching. In addition, the default motor vehicle emission rates contained as default conditions are not appropriate to use as they are seven years old and superseded by newer rates provided by the State (i.e., California Air Resources Board). To overcome CalEEMod's deficiencies in modeling construction emissions from this type of development, project specific construction information was used in the modeling (see Attachment 2 of Appendix B of the SEIR). This approach represents best available information for modeling the construction activity and provides a more accurate result than the generic modeling default factors generated by CalEEMod.

The statement by the commentor that use of CalEEMod with default settings would produce more accurate results and that the SEIR Air Quality Analysis approach would underestimate the emissions is unsubstantiated. Modeling using the incorrect CalEEMod default settings would yield emission results that are much lower than those reported in the SEIR. A modeling scenario was computed using the project type and size along with the CalEEMod default assumptions, as suggested by the commenter. Note that with CalEEMod default conditions, the project would be constructed over 123 workdays, which is unrealistic for a project of this size and scope. The SEIR air quality analysis modeling was based on 473 workdays. Table 1 below provides a comparison of modeling results using CalEEMod default settings with those from the SEIR modeling that used project design information. The modeling output is provided as Attachment A to this document.

Table 1. Comparison of Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust	CO_{2e}
SEIR Air Quality Analysis - Total	0.8 tons	2.1 tons	0.1 tons	0.1 tons	359 MT
SEIR Air Quality Analysis - Daily	3.5 lbs.	8.7 lbs.	0.5 lbs.	0.4 lbs.	--
CalEEMod defaults - Total	0.7 tons	0.6 tons	0.03 tons	0.02 tons	123 MT
CalEEMod defaults - Daily	11.4 lbs.	9.8 lbs.	0.5 lbs.	0.4 lbs.	--
Significance Thresholds	54 lbs/day	54 lbs/day	82 lbs/day	54 lbs/day	--

[1] CalEEMod default construction period is 123 days compared to 473 workdays used for SEIR air quality analysis.

Use of the unrealistic CalEEMod default values would slightly increase some emission rates but the daily emissions rates would be well below the thresholds used to judge the significance of construction period emissions. More importantly, the use of a much shorter construction duration under default conditions would cause the analysis to greatly underestimate human health risk impacts that are based on the total emissions that occur during the construction period. For more detailed response, please refer to Responses E.5 through E.11 below. This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment E.2: The draft SEIR inadequately analyzed the Project's impact on human health due to emissions of diesel particulate matter.

The draft SEIR concluded that the Project would result in a less-than-significant health risk impact based on quantified health risk assessment ("HRA"). However, SWAPE found that draft SEIR's HRAs were inadequate (Ex. A., p. 12.)

First, the draft SEIR's construction HRA relies on the same flawed air model discussed above. (Ex. A, p. 12.) Because the air model underestimated the Project's emissions, the HRA underestimated the Project's diesel particulate matter ("DPM") emissions. As such, the HRA cannot be relied upon to estimate the Project's construction-related health risks. (Id.)

Second, the draft SEIR fails to include a quantified HRA to evaluates the Project's health risks to nearby sensitive receptors for the entirety of Project operation. (Ex. A, p. 12.) The Project would generate approximately 738.5 average daily vehicle trips, yet the draft SEIR does not disclose or discuss the concentrations at which such pollutants would trigger adverse health effects. (Id.) Thus, the draft SEIR is inconsistent with CEQA's requirement to correlate the increase in emissions generated by the Project with the potential adverse impacts on human health. (Id.)

Third, the failure of the draft SEIR to provide a quantified HRA is inconsistent with the most recent guidance of the Office of Environmental Health Hazard Assessment ("OEHHA"). OEHHA recommends that exposure from projects lasting more than 6 months 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"). (Ex. A, p. 12.) Therefore, the SEIR must include an analysis of health risks resulting from operation of the Project. (Id.)

Lastly, the draft SEIR fails to sum the cancer risk calculated for each age group for the entirety of Project construction and operation together. (Ex. A, p. 13.) OEHHA guidance requires that "the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk at the receptor location." (Id.) As such, the draft SEIR should have quantified and summed the cancer risks from construction and operation of the Project.

Response E.2: Human health risks from construction and operation of the project were addressed in the Section 3.1 Air Quality Analysis for the SEIR.

First, the commenter claims that construction emissions presented in the Air Quality Analysis for the SEIR were underestimated. A reanalysis of the project emissions

using the CalEEMod model default conditions presented in response to these comments demonstrate that emissions of TACs (i.e., specifically diesel particulate matter) and fine particulate matter ($PM_{2.5}$) were not underestimated. Construction emissions used in the health risk assessment for unmitigated and mitigated conditions were properly computed. As described in the Air Quality Analysis for the SEIR, the cancer risk computations for the SEIR analysis were made following BAAQMD's recommendations for implementing OEHHA's 2015 guidance.

Second, the commenter incorrectly asserts that traffic produced by a downtown hotel with 175 rooms would cause significant health risks from traffic. In response to this claim about the project's traffic resulting in significant health risk impacts, the total project daily trips were modeled to further prove that the project's traffic does not pose a significant health risk. However, it should be noted, that per BAAQMD, roads with less than 10,000 total vehicles per day and less than 1,000 trucks per day are categorized as minor, low impact sources that do not pose a significant health impact even in combination with other nearby sources. As a result, this source can be excluded from the CEQA evaluation.[1] The project would generate approximately 738 daily trips, which is well below the 10,000 daily vehicles per day threshold. Most of these trips would be made by automobiles. These trips would be distributed among many roadways. Therefore, the Air Quality Analysis for the SEIR complies with the BAAQMD's guidance.

To emphasize that there is no operational health impact as a result of the project, however, a project-specific refined dispersion model was used to demonstrate that the project-caused cancer risks from operational traffic are even lower than the screening values. This operational HRA is consistent with OEHHA guidance, and the results were compared against the BAAQMD threshold to show that there would be a less than significant health risk (see below).

A refined assessment of operational health risks that included dispersion modeling was conducted to evaluate the project operational risks from mobile sources. The modeling of project traffic on the main roadways within 1,000 feet of the project site was conducted with the AERMOD dispersion model using line-volume sources to represent the roadways near the project area (see Figure 1 under Response E.13 below). The modeling used a five-year data set (2013-2017) of hourly meteorological data from the San José International Airport that was prepared for use with the AERMOD model by BAAQMD. The same model and meteorological data used for the construction and cumulative roadway health risk assessments for the SEIR Air Quality Analysis were used for this modeling. TAC and $PM_{2.5}$ concentrations at the same sensitive receptors and MEI locations were calculated with AERMOD. The MEI is the maximum exposed individual or sensitive receptor with highest impact from the project.

[1] Bay Area Air Quality Management District, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

Emissions for 2023 project traffic (project operational year) were calculated with the CT-EMFAC2017 model assuming the same local urban road conditions used in the cumulative roadway modeling in the SEIR Air Quality Analysis. Travel speeds of 35 miles per hour (mph) for West San Carlos Street and 25 mph for Josefa Street, based on posted speed limit signs, were used for all periods of the day. The traffic volume distribution of the project traffic shown in Figure 1 of the Marriott Hotel Development LTA prepared by Hexagon Transportation Consultants (See Appendix H of the SEIR) was used. Roadways were modeled as line-volume sources. Project traffic modeling is provided as Attachment A to this document. The results of this analysis are provided in Table 2 below. These results support the conclusion in the Air Quality Analysis for the SEIR that traffic generated by the project would not contribute to significant health risks.

Table 2. Project Operation Risk Impacts from Mobile Sources

Source	Cancer Risk* (per million)	Annual $PM_{2.5}$* ($\mu g/m^3$)	Hazard Index
Project Traffic			
Maximum from traffic at nearby receptors (Infant & Child)	0.05	0.01	<0.01
Maximum from traffic at construction MEI (30yr Exposure)	0.02	<0.01	<0.01
BAAQMD Single-Source Threshold	***10.0***	***0.3***	***1.0***
Exceed Thresholds?	*No*	*No*	*No*

* Maximum cancer risk and maximum PM2.5 concentration occur at same receptor building but at different floors.

The project construction and operation increased cancer risk at the MEI was summed to demonstrate that the Project's increased cancer risk would not be significant with mitigation for construction. Note that the $PM_{2.5}$ concentration and hazard index values are not summed but are based on an annual maximum risk for the entirety of the project.

For a residential sensitive receptor, the exposure duration was analyzed for 30 years. Table 3 includes the sum of construction and operation exposures for all sensitive receptor age exposures, which includes third trimester fetuses, infants, children, and adults. The sum of the construction and the operation cancer risks at the existing off-site sensitive receptors would not exceed the BAAQMD single source threshold of greater than 10.0 per million with mitigation. The quantified contribution of the project operational traffic in the health risk prediction does not change the conclusions nor the mitigation measures identified in the SEIR.

Table 3. Construction and Operation Risk Impacts at the Project MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction -Residential MEI			
Unmitigated	**111.9 (infant)**	**1.29**	0.11
Mitigated	9.2 (infant)	0.27	0.01
Project Generator - Construction MEI (Infant, Child, and adult Exposure)	<0.1	<0.01	<0.01
Project Traffic - Construction MEI (Infant, Child, and adult Exposure)	<0.1	<0.01	<0.01
Unmitigated Total/Maximum Project Risks	**<112.0 (infant)**	**1.29**	0.11
Unmitigated Total/Maximum Project Risks	<9.3 (infant)	0.27	0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?			
Unmitigated Risk	***Yes***	***Yes***	*No*
Mitigated Construction plus Operation Risk	*No*	*No*	*No*

Therefore, the analysis and conclusions of the Air Quality Analysis and SEIR are correct. This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment E.3: The Project will result in a potentially significant impact to human health from emissions of diesel particulate matter.

SWAPE prepared a screening-level health risk assessment ("HRA") to evaluate potential DPM impacts from the construction and operation of the Project. (Ex. A, pp. 13-16.) SWAPE used AERSCREEN, the leading screening-level air quality dispersion model. (*Id*. at p. 13.) SWAPE used a sensitive receptor distance of 25 meters and analyzed impacts to individuals at different stages of life based on OEHHA and BAAQMD guidance. (*Id*. at pp. 14-16.)

SWAPE found that the excess cancer risk for adults, children, and infants, at the closest sensitive receptor located approximately 25 meters away, over the course of Project construction and operation, are approximately 17, 110, and 41 in one million, respectively. (Ex. A, p. 15.) Moreover, SWAPE found that the excess cancer risk over the course of a residential lifetime is approximately 240 in one million. (*Id*.) Thus, the infant, child, adult, and lifetime cancer risks all exceed the BAAQMD threshold of 10 in one million. Therefore, an updated SEIR must be prepared to disclose and mitigate the Project's significant health risk impact.

Response E.3: The commenter's assertion that mitigated risk would be significant is incorrect and relied on a screening level risk assessment performed by SWAPE (Exhibit B of the comment letter). SWAPE's screening level analysis is misleading and inaccurate. First, SWAPE incorrectly assigns the emissions of DPM from project traffic to the project site. This is erroneous in two ways: (1) it assumes that all PM_{10} exhaust emissions are a TAC, specifically diesel particulate matter, when most traffic would be standard automobiles and would not emit diesel exhaust and (2) it assumes

that all emissions from roadway travel would occur at the project site rather than along the roadways mostly away from the project site. The emissions that come from project traffic would be spread over the travel ways used by project generated traffic. These travel distances are estimated by CalEEMod to range from 7.3 to 9.5 miles. The SWAPE analysis did not consider traffic generated by existing land uses. Finally, the SWAPE analysis relied upon a screening model, AERSCREEN, to inflate their results rather than using the more accurate AERMOD model that is recommended by BAAQMD.[2] The AESCREEN model is a screening model that computes the maximum 1-hour concentration from a source and then applies a simple factor to estimate annual exposures. The model assumes that the source is continuous for every hour of the day for 365 days with adverse meteorological conditions that lead to conservatively high concentrations. AERSCREEN is a screening model that is recommended by U.S. EPA to identify the potential for impacts and is not used to quantify significant impacts. If significant impacts are predicted using this model, then further analysis should be conducted. In addition, this model is inappropriate for modeling traffic sources.[3]

Figure 1. Locations of Project Construction Site, Project Generator, Project Traffic Model, Off-Site Sensitive Receptors, and TAC Impacts

[2] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0*. May.

[3] According to the U.S. EPA (40 CFR Part 51, Appendix W – Guidelines on Air Quality Models), there are generally two levels of sophistication of air quality models. The first level consists of screening models that provide conservative modeled estimates of the air quality impact of a specific source or source category based on simplified assumptions of the model inputs (e.g., preset, worst-case meteorological conditions). If a screening model indicates that the increase in concentration attributable to the source could cause or exacerbate air quality conditions, then the second level of more sophisticated models should be applied unless appropriate controls or operational restrictions are implemented based on the screening modeling. AERSCREEN is a first-level screening model that is designed to provide a conservative (i.e., overestimate) of air pollutant impacts.

For all these reasons, the analysis and conclusions of the Air Quality Analysis and SEIR are correct. No new analysis is required. This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment E.4: The draft SEIR inadequately addresses the Arena Project's impacts on greenhouse gases.

The draft SEIR relies upon the Project's consistency with the City's 2030 Greenhouse Gas Reduction Strategy ("GHGRS") in order to conclude that the Project would result in a less than-significant greenhouse gas ("GHG") impact. (Ex. A, p. 16.) As explained in the draft SEIR, ". . . a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the GHGRS." (Draft SEIR, App. D, p. 1.)

However, SWAPE found that the Project is inconsistent with numerous policies in the GHGRS (Ex. A, pp. 17-24.) For example, the draft SEIR claims that the Project is consistent with Policy MS-2.2 ("Encourage maximized use of on-site generation of renewable energy for all new and existing buildings") because "The project includes solar hot water." (Draft SEIR, App. D, p. 5.) However, as SWAPE notes, "heating water does not constitute 'on-site generation of renewable energy." (Ex. A, p. 17.) As another example, the draft SEIR claims the Project is consistent with Policy MS-3.2 ("Promote the use of green building technology or techniques that can help reduce the depletion of the City's potable water supply") because "The project will implement sustainability measures equivalent to LEED Silver." (Draft SEIR, App. D, p. 9.) However, as SWAPE notes, just because the Project meets LEED Silver standards, it ddoes [sic] not necessarily follow that the Project would "help reduce the depletion of the City's potable water supply" or "promote the use of captured rainwater, graywater, or recycled water as required by Policy MS 3.2. (Ex. A, p. 22.)

By failing to demonstrate actual compliance with the GHGRS, the draft SIER's conclusions as to the Project's GHG impacts cannot be relied upon. In order to mitigate the project's GHG impacts, the City should ensure that all Project design features are included as formal mitigation measures to ensure that the measures will be implemented and enforceable. (Ex. A, p. 24.)

CONCLUSION

For the foregoing reasons and the reasons stated in LIUNA's May 20 comment, the draft SEIR for the Project should be revised and circulated for public review and comment in accordance with CEQA. Thank you for considering these comments.

Response E.4: As discussed on page 71 of the SEIR, the 2030 Greenhouse Gas Reduction Strategy (GHGRS) is the latest update to the City's GHGRS and is designed to meet statewide GHG reduction targets for 2030 set by Senate Bill 32. As a qualified Climate Action Plan, the 2030 GHGRS allows for tiering and streamlining of GHG analyses under CEQA. The GHGRS identifies General Plan policies and strategies to be implemented by development projects in the areas of green building/energy use, multimodal transportation, water conservation, and solid waste

reduction. Projects that comply with the policies and strategies outlined in the 2030 GHGRS, would have less than significant GHG impacts under CEQA.

The checklist was developed by the City as a means to allow project applicants to show compliance with the GHGRS. For build out of the Downtown Strategy 2040 Plan, however, GHG emissions were already quantified and found to be less than significant through 2030 and significant and unavoidable through 2040. See page 71 of the SEIR for this discussion. Projects within the downtown plan area are not required to quantify emissions as they tier from the findings of the Downtown Strategy 2040 EIR. Pages 72-73 of the SEIR disclose how the project is consistent with the mandatory measures of the GHGRS and Climate Smart San José. No update to the SEIR is required.

Project design features are already part of the project which will be further reviewed to ensure inclusion during permitting if the project is approved. Regulatory compliance measures are required by law and have systems in place to ensure implementation. Design features and regulatory measures are not mitigation under CEQA.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

EXHIBIT A – MEMO FROM SWAPE

Comment E.5: We have reviewed the Supplemental Environmental Impact Report ("SEIR") for the Marriott Townplace Suites Project ("Project") located in the City of San Jose ("City"). The Project proposes to demolish 26,233-SF of existing buildings and construct a 114,577-SF, 175-room hotel, as well as 117 parking spaces within an on-site parking garage, on the 0.6-acre site.

Our review concludes that the SEIR fails to adequately evaluate the Project's air quality, health risk, and greenhouse gas impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An SEIR should be prepared to adequately assess and mitigate the potential air quality, health risk, and greenhouse gas impacts that the project may have on the surrounding environment.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The SEIR's air quality analysis relies on emissions calculated with CalEEMod.2016.3.2 (p. 4.3-6).[4] CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence. Once all of the values are inputted into the

[4] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/defaultsource/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4.

model, the Project's construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters are utilized in calculating the Project's air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

When reviewing the Project's CalEEMod output files, provided in the Marriott Hotel 495 W. San Carlos Street Air Quality and Greenhouse Gas Assessment ("AQ & GHG Assessment") as Appendix B to the SEIR, we found that several model inputs were not consistent with information disclosed in the SEIR. As a result, the Project's construction and operational emissions are underestimated. As a result, an updated SEIR should be prepared to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Response E.5: The City of San José prepared the Draft SEIR for the referenced project in compliance with the requirements of CEQA and the CEQA Guidelines. Recirculation of an EIR is required when significant new information is added to the EIR (CEQA Guidelines Section 15088.5). As discussed in the responses to specific comments on the Draft SEIR below, the comments raised in this attachment do not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be revised.

Comment E.6: Unsubstantiated Changes to Individual Construction Phase Lengths

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default individual construction phase lengths (see excerpt below) (Appendix B, pp. 43, 89).

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	94.00
tblConstructionPhase	NumDays	100.00	132.00
tblConstructionPhase	NumDays	10.00	39.00
tblConstructionPhase	NumDays	2.00	25.00
tblConstructionPhase	NumDays	5.00	63.00
tblConstructionPhase	NumDays	1.00	18.00

As a result, the model includes a construction schedule as follows (see excerpt below) (Appendix B, pp. 62-63).

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/4/2021	2/11/2021	7	39	
2	Site Preparation	Site Preparation	2/22/2021	3/11/2021	7	18	
3	Grading	Grading	3/22/2021	4/15/2021	7	25	
4	Trenching	Trenching	4/26/2021	8/5/2021	7	102	
5	Building Construction	Building Construction	8/24/2021	1/2/2022	7	132	
6	Architectural Coating	Architectural Coating	2/18/2022	5/22/2022	7	94	
7	Paving	Paving	5/24/2022	7/25/2022	7	63	

As you can see in the excerpt, the demolition phase was increased by approximately 290%, from the default value of 10 to 39 days; the site preparation phase was increased by approximately 1,700%, from the default value of 1 to 18 days; the grading phase was increased by approximately 1,150%, from the default value of 2 to 25 days; the building construction phase was increased by approximately 32%, from the default value of 100 to 132 days; the architectural coating phase was increased by approximately 1,780%, from the default value of 5 to 94 days; and the paving phase was increased by approximately 1,160%, from the default value of 5 to 63 days.

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[5] According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is: "provided construction schedule" (Appendix B, pp. 41, 87). Furthermore, the SEIR states:

> "Construction of the proposed project is estimated to start in Winter 2021 and would take approximately 19 months to complete" (p. 10).

However, while the SEIR provides the overall construction duration, it fails to justify or the provide the revised individual construction phase lengths. As a result, we cannot verify the revised individual construction phase lengths and the changes are unsubstantiated.

These unsubstantiated changes present an issue, as they improperly spread out construction emissions over a longer period of time than is anticipated for the Project. According to the CalEEMod User's Guide, each construction phase is associated with different emissions activities (see excerpt below)[6]

> ***Demolition*** involves removing buildings or structures.
>
> ***Site Preparation*** involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
>
> ***Grading*** involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.
>
> ***Building Construction*** involves the construction of the foundation, structures and buildings.
>
> ***Architectural Coating*** involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.
>
> ***Paving*** involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.

As such, by disproportionately altering individual construction phase lengths without proper justification, the models' calculations are altered and underestimate emissions. Thus, by including unsubstantiated changes to the default architectural coating and paving phase lengths, the model may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

[5] CalEEMod User Guide, available at: http://www.caleemod.com/, p. 2, 9
[6] "CalEEMod User's Guide." CAPCOA, November 2017, available at: http://www.aqmd.gov/docs/defaultsource/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 31.

Response E.6: The construction phase lengths were based on the construction information sheet provided by the applicant (see Attachment 2 of Appendix B to the SEIR) that include the project construction dates and duration in terms of workdays for each construction phase. The construction schedule and equipment list represent project specific information that is deemed as substantial evidence, where use of default CalEEMod inputs would be inappropriate for this project. Therefore, the modeling and analysis conclusions are correct.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment E.7: Unsubstantiated Changes to Off-Road Equipment Unit Amounts and Usage Hours

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default off-road construction equipment unit amounts and usage values (see excerpt below) (Appendix B, pp. 44-45).

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[7] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "provided construction schedule" (Appendix B, pp. 41-42, 87-88). Furthermore, the AQ & GHG Assessment provides an equipment list, but states: "Equipment listed in this sheet is to provide an example of inputs" (Appendix B, pp. 39). However, these changes remain unsupported for two reasons.

[7] CalEEMod User Guide, available at: http://www.caleemod.com/, p. 2, 9

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	1.30
tblOffRoadEquipment	UsageHours	8.00	6.20
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	6.10
tblOffRoadEquipment	UsageHours	8.00	6.70
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	1.00	6.20
tblOffRoadEquipment	UsageHours	1.00	6.40
tblOffRoadEquipment	UsageHours	8.00	6.10
tblOffRoadEquipment	UsageHours	6.00	6.20
tblOffRoadEquipment	UsageHours	6.00	6.40
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	8.00	6.70

First, the SEIR and associated documents fail to justify or provide the revised unit amounts and usage hours values whatsoever.

Second, simply providing an example construction list does not justify the revised unit amounts and usage hours inputted into the model. Rather, according to the CalEEMod User's Guide:

> "CalEEMod was also designed to allow the user to change the defaults to reflect site- or project- specific information, when available, ***provided that the information is supported by substantial evidence as required by CEQA***."[8]

Thus, as the AQ & GHG Assessment fails to provide substantial evidence to support the revised equipment unit amounts and usage hours, we cannot verify the changes.

These unsubstantiated changes present an issue, as CalEEMod uses the off-road equipment unit amounts and usage hours to calculate emissions associated with off-road construction equipment.[9] By including unsubstantiated changes to the default off-road construction equipment unit amounts and usage hours, the models may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

[8] CalEEMod User Guide, available at: http://www.caleemod.com/, p. 12.
[9] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 32.

Response E.7: As stated in Response E.6 above, the changes to the default off-road construction equipment unit amounts and usage values were based on the construction information sheet (see Attachment 2 of Appendix B to the SEIR) that include the quantity of project construction equipment needed along with the estimated number of days and average hours of operations for days that equipment is used. The quantity of project construction equipment represents project specific information that is deemed as substantial evidence, where use of default CalEEMod inputs would be inappropriate for this project. Therefore, the modeling and analysis conclusions are correct.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment E.8: Unsubstantiated Changes to Construction Trip Lengths and Numbers
Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default construction trip lengths and numbers (excerpt below) (Appendix B, pp. 45-46, 91-92).

Table Name	Column Name	Default Value	New Value
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripNumber	119.00	0.00
tblTripsAndVMT	HaulingTripNumber	125.00	0.00
tblTripsAndVMT	VendorTripNumber	29.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	74.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	0.00

As you can see in the excerpt above, the hauling trip length was decreased from the default value of 20- to 7.3-miles, and the hauling, vendor, and worker trip numbers were decreased to zero. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[10] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "0 trips EMFAC2017, 25tons pavement demo = 5 demo trips +119 = 124, building const = 350 total round cement truck trips" (Appendix B, pp. 42, 88). Furthermore, regarding the construction vehicle trip lengths, the AQ & GHG Assessment states:

> "Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and ***20 miles for hauling***" (emphasis added) (Appendix B, p. 9).

[10] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

However, these changes are unsupported for two reasons.

First, as the AQ & GHG Assessment claims the hauling trip length is based on the CalEEMod default length, the change to the default value is unsubstantiated.

Second, while the AQ & GHG Assessment discusses the vehicle mix, trip numbers, trip distances, and idling times of construction trips, it fails to demonstrate how the Project's on-road construction-related vehicle emissions were calculated (Appendix B, p. 9). Absent additional information regarding the AQ & GHG Assessment's analysis of the Project's on-road construction-related vehicle emissions, we cannot verify these changes and the less-than-significant air quality impact conclusion should not be relied upon.

These unsubstantiated changes present an issue, as CalEEMod uses hauling, vendor, and worker trip lengths and numbers to calculate the Project's construction-related emissions associated with on-road vehicles.[11] Thus, by including unsubstantiated changes to the default hauling, vendor, and worker trip lengths and numbers, the models may underestimate the Project's mobile-source construction-related emissions and should not be relied upon to determine Project significance.

> **Response E.8:** Pages 8-10 of Appendix B of the SEIR describe how emissions from construction trips were computed. Because CalEEMod version 2016.3.2 uses the outdated EMFAC2014 model, emissions from construction traffic were computed outside of the model using the newer EMFAC2017 model. Table 2 (page 10) of Appendix B of the SEIR describes the number and type of construction trips input to that model. Attachment 2 to Appendix B of the SEIR provides the EMFAC2017 computations. Changes to the CalEEMod and EMFAC2017 modeling were conducted in a method that increased construction period traffic over default conditions since construction phases were longer, a trenching phase was added, and cement trips were also included in the building phase that CalEEMod does not include as defaults. The added cement truck trips, which are vendor trips, were classified as haul trips due to the vehicle type (HDDT). The trips lengths are typical of vendor types at 7.3 miles as there are numerous suppliers of cement/concrete within five miles such as Star Concrete at two miles and Graniterock at four miles. In addition, cement and asphalt trips were added to the CalEEMod default conditions. Therefore, the modeling and analysis conclusions are correct.
>
> This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment E.9: Unsubstantiated Changes to Wastewater Treatment System Percentages
Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default wastewater treatment system percentages (see excerpt below) (Appendix B, pp. 59-60, 105).

[11] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 34.

Table Name	Column Name	Default Value	New Value
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

As you can see in the excerpt above, the model assumes that the Project's wastewater would be treated 100% aerobically. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified. According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "WWTP 100% aerobic" (Appendix B, pp. 42, 88).

Furthermore, according to the AQ & GHG Assessment, "[w]ater/wastewater use were changed to 100% aerobic conditions to represent treatment plant conditions" (Appendix B, p. 12). Finally, the SEIR states:

> "CalEEMod defaults for energy use and emissions associated with solid waste generation and water/wastewater use were used" (p. 25).

However, these changes remain unsupported for two reasons. First, the SEIR fails to provide a source to support its claim that the treatment plan for the Project's wastewater would be 100% aerobic. Second, the AQ & GHG Assessment and CalEEMod models directly contradict the SEIR, which claims that CalEEMod defaults for water/wastewater were used. As a result, the revised wastewater treatment system percentages are unsubstantiated.

These unsubstantiated changes present an issue, as each type of wastewater treatment system is associated with different GHG emission factors, which are used by CalEEMod to calculate the Project's total GHG emissions.[12] Thus, by including unsubstantiated changes to the default wastewater treatment system percentages, the models may underestimate the Project's GHG emissions and should not be relied upon to determine Project significance.

> **Response E.9:** Wastewater treatment systems only cause indirect emissions of greenhouse gases and do not affect criteria air pollutant emissions.[13] Default assignments of percentage of treatment type in CalEEMod reflect statewide averages and not conditions in San José. The CalEEMod model provides three options to enter for wastewater treatment: (1) through septic systems, (2) anerobic treatment, and (3) facultative lagoons. The septic systems and facultative lagoons are aerobic treatment techniques that typically occur in rural areas and not in San José. The project plans, obviously, do not include this treatment type. Wastewater would be sent to the San José Wastewater Treatment plant. It is correct that biosolids removed from the wastewater treatment would be processed using anerobic digesters, but they would capture these emissions. In any event, the difference in greenhouse gas emissions

[12] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 45.
[13] Personal Communication: Illingworth & Rodkin, June 11, 2021.

from operation of the project with and without this change is minor. Revised modeling is provided in Attachment A of this document. When the revised modeling is compared with water-related greenhouse gas emissions in the SEIR Appendix B Air Quality Analysis, the emissions would only change by three metric tons if the default assumptions did not change. This would be a 0.4 percent change and would not change any of the conclusions or recommended mitigation measures contained in the SEIR.

This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

<u>Comment E.10:</u> Incorrect Application of Construction-Related Mitigation Measures

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include the following construction related mitigation measures (see excerpt below) (Appendix B, pp. 64):

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment
Use Cleaner Engines for Construction Equipment
Use Soil Stabilizer
Replace Ground Cover
Water Exposed Area
Reduce Vehicle Speed on Unpaved Roads

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[14] According to the "User Entered Comments and Non-Default Data" table, the justification provided for the inclusion of these measures is: "BMPs, Tier 4 interim mitigation, electric stationary equip" (Appendix B, pp. 42, 88). Furthermore, the SEIR includes MM AIR-1.1, which states:

> "Prior to the issuance of any demolition, grading, or building permits (whichever occurs earliest), the project applicant shall submit a construction operations plan to the Director of Planning or Director's designee of the City of San José Department of Planning, Building and Code Enforcement that includes specifications of the equipment to be used during construction and that outlines how the mitigation measure will be achieved. The plan shall be accompanied by a letter signed by an air quality specialist, verifying that the equipment included in the plan meets the standards set forth below.
>
> - For all construction equipment larger than 25 horsepower operating on-site for more than two days continuously or 20 hours total, use equipment that meets U.S. Environmental Protection Agency (EPA) Tier 4 particulate matter emissions standards.
> - If Tier 4 equipment is not available, all construction equipment larger than 25 horsepower used at the site for more than two days continuously or 20 hours total shall use equipment that 1) meet the U.S. EPA emission standards for Tier 3 engines and include CARB-certified Level 3 Diesel Particulate Filters or equivalent that together achieve an 85 percent reduction in particulate matter exhaust in comparison

[14] CalEEMod User Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-sguide2016- 3-2_15november2017.pdf?sfvrsn=4, p. 2, 9.

to uncontrolled equipment and/or 2) use alternatively-fueled equipment (e.g., nondiesel) that would meet this reduction requirement.

- Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment, such as generators, air compressors, and concrete/industrial saws" (p. iii – iv).

However, the inclusion of the "Use Alternative Fuel for Construction Equipment," "Use Soil Stabilizer Replace Ground Cover," "Water Exposed Area," and "Reduce Vehicle Speed on Unpaved Roads" construction-related mitigation measures remains unsupported.

First, simply because MM AIR-1.1 requires the Project to provide power lines during construction does not guarantee that electric construction equipment would be used. As a result, the inclusion of the "Use Alternative Fuel for Construction Equipment" construction-related mitigation measure is unsubstantiated.

Second, while best management practices ("BMPs") are recommended by the BAAQMD, they are not required. Specifically, the May 2017 BAAQMD CEQA Guidelines state:

> "For fugitive dust emissions, staff *recommends* following the current best management practices approach which has been a pragmatic and effective approach to the control of fugitive dust emissions. Studies have demonstrated (Western Regional Air Partnership, U.S.EPA) that the application of best management practices at construction sites have significantly controlled fugitive dust emissions. Individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent. In the aggregate best management practices will substantially reduce fugitive dust emissions from construction sites. These studies support staff's recommendation that ***projects implementing construction best management practices will reduce fugitive dust emissions to a less than significant level***."[15]

As you can see in the excerpt above, BMPs are recommended, but not required. Thus, the justification provided by the "User Entered Comments & Non-Default Data" table fails to justify the inclusion of BMPs. As a result, the inclusion of the "Use Soil Stabilizer Replace Ground Cover," "Water Exposed Area," and "Reduce Vehicle Speed on Unpaved Roads" construction-related mitigation measures remains unsupported. By incorrectly including a construction-related mitigation measure, the models underestimates the Project's construction-related emissions and should not be relied upon to determine Project significance.

> **Response E.10:** As stated in the Draft SEIR, the project is included in the San José Downtown Strategy 2040 Plan (DTS) and Diridon Station Area Plan (DSAP) and is subject to the mitigation measures contained in the previous plans' Environmental Impact Reports.[16,17] Applicable construction emissions control measures are

[15] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. D-47.

[16] The City of San Jose, Downtown Strategy 2040 Integrated Final Environmental Impact Report, SCH# 2003042127, December 2018.

[17] The City of San Jose, Diridon Station Area Plan Integrated Final Program Environmental Impact Report, SCH#

described on pages 4 and 5 of Appendix B to the SEIR. Furthermore, Best Management Practices (BMPs) that the City requires for construction projects (City's General Plan Policy MS-13.1 and Action MS-13.4), as required for most construction projects in the Bay Area, are appropriate. More specifically, the dust control measures are included on page 27 of the SEIR as Standard Permit Conditions, not recommendations, that are required during all phases of construction. In addition, as noted in the excerpt from the SEIR provided by the commenter, the mitigation measures states:

> "Prior to the issuance of any demolition, grading, or building permits (whichever occurs earliest), the project applicant shall submit construction operations plan to the Director of Planning or Director's designee of the City of San José Department of Planning, Building and Code Enforcement that includes specifications of the equipment to be used during construction and that outlines how the mitigation measure will be achieved. The plan shall be accompanied by a letter signed by an air quality specialist, verifying that the equipment included in the plan meets the standards set forth below."

As a result, the developer will be required to demonstrate to the City the use of electrified equipment on-site. As a result, the model defaults are supported and the conclusions of the SEIR are correct. This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

<u>Comment E.11:</u> Incorrect Application of Operational Mitigation Measures

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include the following energy-, water-, and waste-related operational mitigation measures (see excerpt below) (Appendix B, pp. 79, 83, 84, 108, 112, 113):

Energy-Related Operational Mitigation Measure:

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

Water-Related Operational Mitigation Measure:

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Waste-Related Operational Mitigation Measure:

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

2011092022, August 2014.

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.13 According to the "User Entered Comments and Non-Default Data" table, the justification provided for the inclusion of this energy-related operational mitigation measures is: "SJCE 100% carbon free renewable energy," "Water conservation measures, on-site storage and low flow," and "Recycling and composting waste" (Appendix B, pp. 42, 88). Furthermore, according to the SEIR:

> "Climate Smart San José is a plan to reduce air pollution, save water, and create a stronger and healthier community. The City approved goals and milestones in February 2018 to ensure the City can substantially reduce GHG emissions through reaching the following goals and milestones: …
>
> - San Jose Clean Energy (SJCE) will provide 100-percent carbon-free base power by 2021" (p. 69)

Finally, the SEIR states:

> "The 2030 GHGRS identifies required General Plan policies and strategies to be implemented by development projects in the areas of green building/energy use, multimodal transportation, water conservation, and solid waste reduction" (p. 72).

However, the inclusion of these operational mitigation measures remains unsupported for three reasons.

First, the SEIR fails mention or require the Project to institute recycling and composting services whatsoever.

Second, simply because the Project's utility company would provide 100% carbon-free energy, does not mean that the proposed Project would implement any energy-related operational mitigation measures whatsoever.

Third, the inclusion of these operational mitigation measures, based on the Project's compliance with the 2030 GHGRS, is unsupported. According to the Association of Environmental Professionals' ***CEQA Portal Topic Paper*** on mitigation measures:

> "By definition, ***mitigation measures are not part of the original project design.*** Rather, mitigation measures are actions taken by the lead agency to reduce impacts to the environment resulting from the original project design. Mitigation measures are identified by the lead agency after the project has undergone environmental review and are ***above-and-beyond existing laws, regulations, and requirements*** that would reduce environmental impacts" (emphasis added).14

As you can see in the excerpt above, mitigation measures "are not part of the original project design" and are intended to go "above-and-beyond" existing regulatory requirements. As such, the inclusion of these measures, based solely on the Project's compliance with existing policies and regulations, is unsubstantiated.

Fourth, AEP guidance states:

> "While not "mitigation", a good practice is ***to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP).*** Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, ***it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact" (emphasis added***.[18]

As you can see in the excerpts above, design features that are not formally included as mitigation measures may be eliminated from the Project's design altogether. Thus, as the above-mentioned energy-, water-, and waste-related operational measures are not formally included as mitigation measures, we cannot guarantee that they would be implemented, monitored, and enforced on the Project site. As a result, the inclusion of the above-mentioned operational mitigation measures in the model is incorrect. By incorrectly including several energy-, water-, and waste-related operational mitigation measures, without properly committing to their implementation, the models may underestimate the Project's operational emissions and should not be relied upon to determine Project significance.

> **Response E.11:** Reported energy greenhouse gas emissions in the SEIR and Appendix B to the SEIR are based on mitigated emissions generated by CalEEMod and shown in Attachment 2 to Appendix B of the SEIR. In order to account for SJCE's 100 percent carbon free renewable energy for projects operational after 2021, it had to be applied in the mitigated energy greenhouse gas emissions section. The mitigated solid waste and water emissions were used to show that if the project decided to use these types of initiatives (i.e., low flow appliances and composing measures), the project could lower its greenhouse gas emissions, but was not proposed mitigation for the project. The application of these mitigation measures does not change the conclusion of the significance finding for greenhouse gas emissions and climate change impacts.
>
> This comment does not identify a new or more significant impact, or a new feasible project alternative or mitigation measure considerably different than identified in the Draft SEIR. For these reasons, the Draft SEIR does not need to be recirculated.

Comment E.12: Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated
The SEIR concludes that the Project would result in a less-than-significant health risk impact based on a quantified health risk analyses ("HRA(s)") evaluating the impacts of Project construction and the proposed emergency generator. Specifically, the SEIR estimates that Project construction and the proposed emergency generator would result in a combined, mitigated excess cancer risk of 9.3 in one million, which would not exceed the BAAQMD threshold of 10 in one million (see excerpt below) (p. 34, Table 3.1-7).

[18] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

Table 3.1-7: Cumulative Community Risk Impacts from Combined TAC Sources at MEI			
Source	Maximum Cancer Risk* (per million)	$PM_{2.5}$ Concentration* ($\mu g/m^3$)	Hazard Index (HI)
Total/Maximum Project Risks (Years 0-30)			
Unmitigated	<112.0 (infant)	1.29	0.11
Mitigated	9.3 (infant)	0.27	0.01
BAAQMD Single-Source Threshold	*>10.0*	*>0.3*	*>0.1*
Significant?			
Unmitigated	*Yes*	*Yes*	No
Mitigated	No	No	No

Regarding the potential health risk impacts associated with Project operation, the SEIR states:

> "The project would generate some traffic, consisting mostly of light-duty vehicles that are not a source of substantial TACs or PM2.5. Based on the project's trip generation estimates provided by the traffic study, the project would add 738 maximum daily trips on Josefa Street. Even with the maximum project's trips included, the average daily traffic (ADT) on Josefa Street would be below 10,000 vehicles. Therefore, the project's increase in traffic would be a negligible source of TACs and PM2.5" (p. 28).

However, the SEIR's evaluation of the Project's potential health risk impacts, as well as the subsequent less-than-significant impact conclusion, is incorrect for three reasons.

First, the SEIR's construction HRA is incorrect, as it relies upon exhaust estimates from flawed air models, as discussed above (Appendix B, p. 14). Thus, the construction HRA utilizes an underestimated diesel particulate matter ("DPM") concentration to calculate the health risk associated with Project construction. As such, the SEIR's construction HRA, which relies upon an incorrect and unsubstantiated air model, should not be relied upon to determine the significance of the Project's health risk impacts.

Second, while the SEIR includes a quantified HRA for the proposed emergency generator, the SEIR fails to prepare a quantified HRA evaluating the potential impacts posed by ***the entirety of Project operation*** to nearby, existing sensitive receptors. This is incorrect, as the Project's CalEEMod output files indicate that the Project would generate approximately 738.5 average daily vehicle trips, which would generate additional exhaust emissions and continue to expose nearby sensitive receptors to DPM emissions (Appendix B, pp. 79, 107). However, the SEIR's vague discussion of the potential TAC emissions resulting from Project operation fails to indicate the concentrations at which such pollutants would trigger adverse health effects. Thus, without making a reasonable effort to connect the entirety of the Project's operational TAC emissions to the potential health risks posed to nearby receptors, the SEIR is inconsistent with CEQA's requirement to correlate the increase in emissions generated by the Project with the potential adverse impacts on human health.

Third, the SEIR's conclusion is also inconsistent with the most recent guidance published by the Office of Health Hazard Assessment ("OEHHA"). OEHHA, the organization responsible for providing guidance on conducting HRAs in California, released its most recent ***Risk Assessment***

Guidelines: Guidance Manual for Preparation of Health Risk Assessments in February 2015, as referenced by the AQ & GHG Assessment (Appendix B, p. 2).[19] The OEHHA document recommends that exposure from projects lasting more than 6 months 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").[20] 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, we recommend that health risk impacts from Project operation also be evaluated, as a 30-year exposure duration vastly exceeds the 6-month requirement set forth by OEHHA. These recommendations reflect the most recent state health risk policies, and as such, we recommend that an analysis of health risk impacts posed to nearby sensitive receptors from Project operation be included in an updated EIR for the Project.

Fourth, while the SEIR includes HRAs for Project construction and the proposed emergency generator, the SEIR fails to sum the cancer risk calculated for each age group for the *entirety of Project construction and operation together*. This is incorrect and, as a result, the SEIR's health risk impact evaluation and significance conclusion should not be relied upon. According to the OEHHA guidance, as referenced by the AQ & GHG Assessment, "the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk at the receptor location," as previously stated (Appendix B, p. 2).[21] Therefore, the HRA should have quantified and summed the Project's construction-related and operational cancer risks, as stated in the OEHHA guidance.

Response E.12: See Response E.2.

Comment E.13: Screening-Level Assessment Indicates a Potentially Significant Health Risk Impact

In order to conduct our screening-level risk assessment we relied upon AERSCREEN, which is a screening level air quality dispersion model.[22] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[23] and the California Air Pollution Control Officers Associated ("CAPCOA")[24] 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 operational health risk impact to residential sensitive receptors using the annual PM10 exhaust estimates from the SEIR's CalEEMod output files. Consistent with recommendations set forth by OEHHA, we assumed residential exposure

[19] "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
[20] "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
[21] "Guidance Manual for preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 8-4
[22] U.S. EPA (April 2011) AERSCREEN Released as the EPA Recommended Screening Model, http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf
[23] "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
[24] CAPCOA (July 2009) Health Risk Assessments for Proposed Land Use Projects, http://www.capcoa.org/wpcontent/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf.

begins during the third trimester stage of life. Subtracting the 567-day construction period from the total residential duration of 30 years, we assumed that after Project construction, the sensitive receptor would be exposed to the Project's operational DPM for an additional 28.45 years, approximately. The Project's operational CalEEMod emissions indicate that operational activities will generate approximately 44 pounds of DPM per year throughout operation. To account for the variability in equipment usage and truck trips over Project operation, we calculated an average DPM emission rate by the following equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{44\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.00063\ g/s}$$

Using this equation, we estimated an operational emission rate of 0.00063 g/s. Construction and operational activity was simulated as a 0.6-acre rectangular area source in AERSCREEN with dimensions of 50 by 49 meters. A release height of three meters was selected to represent the height of exhaust stacks on operational equipment and other 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 concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[25] According to the IS/MND, the nearest sensitive receptors are "adjacent multi-family residences approximately 10 feet [3.05 meters] to the north and east of the project site" (p. 23). Thus, the single-hour concentration for Project operation estimated by AERSCREEN is 4.163 µg/m3 DPM at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.4163 µg/m3 for Project operation at the MEIR.

We calculated the excess cancer risk to the MEIR using applicable HRA methodologies prescribed by OEHHA. Consistent with the 567-day construction schedule included in the Project's CalEEMod output files, the annualized average concentration for Project operation was used for the remainder of the 30-year exposure period, which makes up the remaining 0.7 years of the infantile stage of life, the entire child stage of life (2 – 16 years), and the entire the adult stage of life (16 – 30 years).

Consistent with the AQ & GHG Assessment's methodology, we used Age Sensitivity Factors ("ASF(s)") to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution (Appendix B, pp. 35). According to this guidance, the quantified cancer risk should be multiplied by a factor of ten during the third trimester of pregnancy and during the first two years of life (infant) as well as multiplied by a factor of three during the child stage of life (2 – 16 years). We also included the quantified cancer risk without adjusting for the heightened susceptibility of

[25] "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." EPA, 1992, *available at*: http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf; *see also* "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 p. 4-36.

young children to the carcinogenic toxicity of air pollution in accordance with older OEHHA guidance from 2003. This guidance utilizes a less health protective scenario than what is currently recommended by SCAQMD, the air quality district with jurisdiction over the City, and several other air districts in the state. Furthermore, in accordance with the guidance set forth by OEHHA, we used the 95th percentile breathing rates for infants.[26] 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.[27] We used a cancer potency factor of 1.1 (mg/kg-day)$^{-1}$ and an averaging time of 25,550 days. The results of our calculations are shown below.

As demonstrated in the table above, the excess cancer risks to adults, children, and infants at the MEIR located approximately 25 meters away, over the course of Project operation, are approximately 17, 110, and 41 in one million, respectively. When summing Project's operational cancer risk, as estimated by SWAPE, with the SEIR's mitigated cancer risk estimate of 9.3 in one million (for Project construction and the proposed emergency generator), we estimate an excess cancer risk of approximately in one million [sic] over the course of a residential lifetime (30 years) (p. 34, Table 3.1-7).[28] The infant, child, adult, and lifetime cancer risks exceed the BAAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not previously addressed or identified by the SEIR.

The Maximally Exposed Individual at an Existing Residential Receptor					
Activity	**Duration (years)**	**Concentration (ug/m3)**	**Breathing Rate (L/kg-day)**	**ASF**	**Cancer Risk with ASFs***
Construction	0.25	*	361	10	*
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	
Construction	1.30	*	1090	10	*
Operation	0.70	0.4163	1090	10	4.1E-05
Infant Exposure Duration	***2.00***			***Infant Exposure***	***4.1E-05***
Operation	14.00	0.4163	572	3	1.1E-04
Child Exposure Duration	***14.00***			***Child Exposure***	***1.1E-04***
Operation	14.00	0.4163	261	1	1.7E-05
Adult Exposure Duration	***14.00***			***Adult Exposure***	***1.7E-05***
* Construction-related cancer risk calculated separately in the SEIR.					

An agency must include an analysis of health risks that connects the Project's air emissions with the health risk posed by those emissions. Our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection.[29] The purpose of the screening-

[26] "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act," July 2018, *available at:* http://www.aqmd.gov/docs/default-source/planning/riskassessment/ab2588supplementalguidelines.pdf, p. 16. "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEH

[27] "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/hraguidelines_clean_jan_2016-pdf.pdf?la=en

[28] Calculated: 9.3 in one million + 41 in one million + 110 in one million + 17 in one million = 177.3 in one million.

[29] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February

level construction and operational HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. Our screening-level HRA demonstrates that construction and 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. Therefore, since our screening-level HRA indicates a potentially significant impact, the City should prepare an updated EIR with an HRA which makes a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors. Thus, the City should prepare an updated, quantified air pollution model as well as an updated, quantified refined health risk assessment which adequately and accurately evaluates health risk impacts associated with both Project construction and operation.

Response E.13: See Response E.3.

Comment E.14: Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

The SEIR relies upon the Project's consistency with the City's 2030 Greenhouse Gas Reduction Strategy ("GHGRS") in order to conclude that the Project would result in a less than significant impact with respect to greenhouse gases ("GHGs") (p. 72-73). Specifically, according to the Compliance Checklist, provided as Appendix D to the SEIR:

> "Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the GHGRS" (Appendix D, p.1).

However, review of the City's GHGRS reveals that the Project is inconsistent with numerous measures, including but not limited to those listed below:

City of San José 2030 Greenhouse Gas Reduction Strategy Compliance Checklist[30]	
GHGRS Strategies Consistency	
Strategy 1: Energy & Water Efficient Buildings	
1. Consistency with the Land Use/Transportation Diagram (Land Use and Density)	Here, the Project's Compliance Checklist states that the Project would be: "consistent with the Land Use/Transportation Diagram because it locates commercial (and hotel) development on a downtown site within a designated Urban Village" (Appendix D, p. 4). However, this response is insufficient, as the Project fails to mention or address density whatsoever. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
*2. Implementation of Green Building Measures **MS-2.2:** Encourage*	Here, the Compliance Checklist states: "The project includes solar hot water" (Appendix D, p. 5).

2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 1-5

[30] "2030 Greenhouse Gas Reduction Strategy." City of San Jose, August 2020, *available at:* https://www.sanjoseca.gov/home/showpublisheddocument/63667/637347412207870000.

maximized use of on-site generation of renewable energy for all new and existing buildings.	However, this response is insufficient for two reasons. First, solar hot water is only mentioned once in the SEIR, and the SEIR fails to elaborate, or discuss enforcement and implementation whatsoever. Second, heating water does *not* constitute "on-site generation of renewable energy," as solar water heaters do *not* generate energy, but rather passively heat water. Thus, we cannot verify that the Project will include any on-site renewable energy generation. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
*2. Implementation of Green Building Measures **MS-2.3:** Encourage consideration of solar orientation, including building placement, landscaping, design and construction techniques for new construction to minimize energy consumption.*	Here, the Compliance Checklist states: "The project is located on a corner site that will maximize solar orientation" (Appendix D, p. 5). However, this response is insufficient for two reasons. First, simply because the Project would be located on a corner site, does not mean that the Project would be oriented to minimize energy consumption through solar orientation. Second, the SEIR fails to mention this measure. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
*2. Implementation of Green Building Measures **MS-2.7:** Encourage the installation of solar panels or other clean energy power generation sources over parking areas.*	The Compliance Checklist indicates that this measure is inapplicable to the proposed Project, stating: "Parking is located within a structured parking garage with landscaped area and hotel units above" (Appendix D, p. 5). However, this response is insufficient. Simply because there are hotel units above the parking garage does not mean that the Project would be unable to encourage the installation of solar panels or other clean energy power generation source. Absent additional information explaining why this measure is inapplicable to the proposed Project, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
*2. Implementation of Green Building Measures **MS-2.11:** Require new development to incorporate green building practices, including those required by the Green Building Ordinance. Specifically, target reduced energy use through construction techniques (e.g., design of building envelopes and systems to maximize energy performance), through architectural design (e.g., design to maximize*	Here, the Compliance Checklist states: "The project will be LEED Silver-equivalent and SJ REACH Code compliant. The project will feature sustainable energy and water usage, natural ventilation, EV parking and reduced carbon footprint" (Appendix D, p. 5). However, this response is insufficient for three reasons. First, simply stating that the Project would "feature sustainable energy and water usage" fails to indicate any actual design features or measures being taken to reduce impact. Second, while the SEIR mentions "natural ventilation," this is never

cross ventilation and interior daylight) and through site design techniques (e.g., orienting buildings on sites to maximize the effectiveness of passive solar design).	elaborated upon, and no actual measures or features have been articulated. Third, according to the AEP *CEQA Portal Topic Paper* on mitigation measures: "While not "mitigation", a good practice is *to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP)*. Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, *it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact*" (emphasis added).[31] As you can see in the excerpts above, project design features are not mitigation measures and *may be eliminated from the Project's design*. Here, the SEIR fails to require any of the above-mentioned green building practices, we cannot guarantee that this measure would be implemented, monitored, and enforced on the Project site. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
*2. Implementation of Green Building Measures **MS-16.2:** Promote neighborhood-based distributed clean/renewable energy generation to improve local energy security and to reduce the amount of energy wasted in transmitting electricity over long distances.*	The Compliance Checklist indicates that this measure is inapplicable to the proposed Project (Appendix D, p. 5). However, the Compliance Checklist fails to "Describe how the project is consistent or why the measure is not applicable," as required. Absent additional information explaining why this measure is inapplicable to the proposed Project, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-2.1:** Promote the Circulation Goals and Policies in the Envision San Jose 2040 General Plan. Create streets that promote pedestrian and bicycle transportation by following applicable and policies in the Circulation section of the Envision San Jose 2040 General Plan.* ***a)** Design the street network for its safe shared use by pedestrians, bicyclists, and*	Here, the Compliance Checklist states: "The project has been designed to be safe for pedestrians, bicyclists and vehicles. The project includes 19 enclosed bicycle parking spaces to promote transportation alternatives to motor vehicles" (Appendix D, p. 6). However, this response is insufficient, as the Compliance Checklist fails to mention elements that increase driver awareness, wider sidewalks, shade structures attractive street furniture, street trees, reduced traffic speeds, pedestrian-oriented lighting, mid-block pedestrian crossings, pedestrian-activated crossing lights, bulb-outs and curb extensions at

[31] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

vehicles. Include elements that increase driver awareness. ***b)*** *Create a comfortable and safe pedestrian environment by implementing wider sidewalks, shade structures, attractive street furniture, street trees, reduced traffic speeds, pedestrian-oriented lighting, mid-block pedestrian crossings, pedestrian-activated crossing lights, bulb-outs and curb extensions at intersections, and on-street parking that buffers pedestrians from vehicles.* ***c)*** *Consider support for reduced parking requirements, alternative parking arrangements, and Transportation Demand Management strategies to reduce area dedicated to parking and increase area dedicated to employment, housing, parks, public art, or other amenities. Encourage de- coupled parking to ensure that the value and cost of parking are considered in real estate and business transactions.*	intersections, reduced parking requirements, Transportation Demand Management strategies, de-coupled parking, or on-street parking that buffers pedestrians from vehicles. Thus, by merely including bicycle parking spaces, the Project fails to demonstrate consistency with all aspects of this measure. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-2.1:*** *Integrate Green Building Goals and Policies of the Envision San José 2040 General Plan into site design to create healthful environments. Consider factors such as shaded parking areas, pedestrian connections, minimization of impervious surfaces, incorporation of stormwater treatment measures, appropriate building orientations, etc.*	Here, the Compliance Checklist states: "The project will be LEED Silver-equivalent and SJ REACH Code compliant. The project will feature sustainable energy and water usage, natural ventilation, EV parking and reduced carbon footprint" (Appendix D, p. 6). However, this response is insufficient for three reasons. First, while the Compliance Checklist states that the Project would "feature sustainable energy and water usage, natural ventilation, EV parking and reduced carbon footprint," it fails to indicate any mitigation measures that would be implemented. Second, according to the AEP *CEQA Portal Topic Paper* on mitigation measures: "While not "mitigation", a good practice is *to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP)*. Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, *it is easy for someone not involved in the*

	original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact" (emphasis added).[32] As you can see in the excerpts above, project design features are not mitigation measures and *may be eliminated from the Project's design*. Here, the SEIR fails to require any of the above-mentioned green building practices, we cannot guarantee that this measure would be implemented, monitored, and enforced on the Project site. Third, the Compliance Checklist fails to mention stormwater treatment measures whatsoever. As a result, we are unable to verify the Project's supposed consistency with this aspect of the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-3.2:*** *Prioritize pedestrian and bicycle connections to transit, community facilities (including schools), commercial areas, and other areas serving daily needs. Ensure that the design of new facilities can accommodate significant anticipated future increases in bicycle and pedestrian activity.*	Here, the Compliance Checklist states: "The project is located in a transit centric location served by various modes of public transportation such as bikeways, VTA light rail and buses, and a planned BART extension. 19 bicycle parking spaces are included" (Appendix D, p. 7). However, this response is insufficient, as the SEIR fails to mention or support the conclusion that "pedestrian and bicycle connections to transit." As a result, we are unable to verify the Project's consistency with the GHGRS, and the less- than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-3.4:*** *Encourage pedestrian cross-access connections between adjacent properties and require pedestrian and bicycle connections to streets and other public spaces, with particular attention and priority given to providing convenient access to transit facilities. Provide pedestrian and vehicular connections with cross-access easements within and between new and existing developments to encourage walking and minimize interruptions by parking areas and curb cuts.*	The Compliance Checklist indicates that this measure is inapplicable to the proposed Project (Appendix D, p. 7). However, the Compliance Checklist fails to "Describe how the project is consistent or why the measure is not applicable," as required. Absent additional information explaining why this measure is inapplicable to the proposed Project, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures	Here, the Compliance Checklist states:

[32] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

LU-3.5: *Balance the need for parking to support a thriving Downtown with the need to minimize the impacts of parking upon a vibrant pedestrian and transit oriented urban environment. Provide for the needs of bicyclists and pedestrians, including adequate bicycle parking areas and design measures to promote bicyclist and pedestrian safety.*	"The project includes 117 parking spaces for 175 hotel rooms as well as 19 enclosed bicycle parking spaces" (Appendix D, p. 7). However, this response is insufficient, as it fails to mention "design measures to promote bicyclist and pedestrian safety," as required by the measure. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less- than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***TR-2.8:*** *Require new development to provide on-site facilities such as bicycle storage and showers, provide connections to existing and planned facilities, dedicate land to expand existing facilities or provide new facilities such as sidewalks and/or bicycle lanes/paths, or share in the cost of improvements.*	Here, the Compliance Checklist states: "The project includes 19 enclosed bicycle storage spaces" (Appendix D, p. 8). However, this response is insufficient. While the Compliance Checklist indicates that the Project would include bicycle parking, it fails to mention showers, connections to existing and planned facilities, expansions of existing facilities, new facilities, or contributing to the cost of improvements as required by the measure. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***TR-8.5:*** *Promote participation in car share programs to minimize the need for parking spaces in new and existing development.*	The Compliance Checklist indicates that the Project is not consistent with this measure but fails to provide any justification or explanation. As such, the Project is inconsistent with this measure, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***MS-3.2:*** *Promote the use of green building technology or techniques that can help reduce the depletion of the City's potable water supply, as building codes permit. For example, promote the use of captured rainwater, graywater, or recycled water as the preferred source for non-potable water needs such as irrigation and building cooling, consistent with Building Codes or other regulations.*	Here, the Compliance Checklist states: "The project will implement sustainability measures equivalent to LEED Silver" (Appendix B, p. 9). However, this response is insufficient. Simply because the Project would meet LEED Silver standards does not guarantee that the Project would "help reduce the depletion of the City's potable water supply" or "promote the use of captured rainwater, graywater, or recycled water," as required by the measure. As such, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***MS-19.4:*** *Require the use of recycled water wherever feasible*	The Compliance Checklist indicates that the Project is not consistent with this measure but fails to provide any justification or explanation. As such, the Project is inconsistent with this measure, and the less-than-significant impact conclusion should not be relied upon.

and cost-effective to serve existing and new development.	
4. Water Conservation and Urban Forestry Measures ***MS-21.3:*** *Ensure that San José's Community Forest is comprised of species that have low water requirements and are well adapted to its Mediterranean climate. Select and plant diverse species to prevent monocultures that are vulnerable to pest invasions. Furthermore, consider the appropriate placement of tree species and their lifespan to ensure the perpetuation of the Community Forest.*	Here, the Compliance Checklist states: "The project will incorporate plant species that have low water requirements that are resistant to pest invasions" (Appendix D, p. 9). However, this response is insufficient, as the SEIR fails to mention or support the claim that the Project would "incorporate plant species that have low water requirements that are resistant to pest invasions." As a result, we cannot confirm that this measure would be implemented, monitored, and enforced on the Project site. Thus, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***MS-21.3:*** *As a condition of new development, require the planting and maintenance of both street trees and trees on private property to achieve a level of tree coverage in compliance with and that implements City laws, policies or guidelines.*	Here, the Compliance Checklist states: "Street trees will be in compliance with City laws, policies and guidelines" (Appendix D, p. 9). However, this response is insufficient. Simply stating that the Project would comply with the City's laws, policies, and guidelines does not provide substantial evidence that this measure would be implemented, monitored, and enforced on the Project site. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***ER-8.7:*** *Encourage stormwater reuse for beneficial uses in existing infrastructure and future development through the installation of rain barrels, cisterns, or other water storage and reuse facilities.*	The Compliance Checklist indicates that the Project is not consistent with this measure but fails to provide any justification or explanation. As such, the Project is inconsistent with this measure, and the less-than-significant impact conclusion should not be relied upon.
Zero Waste Goal *4. Provide space for organic waste (e.g., food scraps, yard waste) collection containers, and/or Exceed the City's construction & demolition waste diversion requirement.*	Here, the Compliance Checklist states: "The project will provide space for organic waste and will exceed demolition waste diversion requirement" (Appendix D, p. 12). However, this response is insufficient, as the SEIR fails to mention or support the claims that the Project would "provide space for organic waste" and "exceed demolition waste diversion requirement." As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.

Water Conservation 1. *Install high-efficiency appliances/fixtures to reduce water use, and/or include water-sensitive landscape design, and/or* 2. *Provide access to reclaimed water for outdoor water use on the project site.*	Here, the Compliance Checklist states: "The project will include high-efficiency appliances/fixtures and will include water-sensitive landscape design" (Appendix D, p. 13). Furthermore, according to the SEIR, the Project "would include high-efficiency appliances/fixtures" (p. 73). However, these responses are insufficient for two reasons. First, the SEIR fails to mention or support the claim that the Project would incorporate "water-sensitive landscape." Second, according to the AEP *CEQA Portal Topic Paper* on mitigation measures: "While not "mitigation", a good practice is ***to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP).*** Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, ***it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact"*** (emphasis added).[33] As you can see in the excerpts above, project design features are not mitigation measures and ***may be eliminated from the Project's design.*** Here, the SEIR fails to require "high-efficiency appliances/fixtures" and "water-sensitive landscape design" through mitigation, we cannot guarantee that this measure would be implemented, monitored, and enforced on the Project site. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.

As the above table indicates, the SEIR fails to provide sufficient information and analysis to determine Project consistency with all of the measures required by the GHGRS. As a result, we cannot verify that the Project is consistent with the GHGRS, and the SEIR's less-than-significant GHG impact conclusion should not be relied upon. We recommend that an updated EIR include further information and analysis demonstrating the Project's consistency with the GHGRS.

Response E.14: See Response E.4.

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Comment E.15: Design Features Should Be Included as Mitigation Measures

Our analysis demonstrates that the Project would result in potentially significant health risk and GHG impacts that should be mitigated further. We recommend that the SEIR implement all project design

[33] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

features and regulatory compliance measures as formal mitigation measures. As a result, we could guarantee that these measures would be implemented, monitored, and enforced on the Project site. Including formal mitigation measures by properly committing to their implementation would result in verifiable emissions reductions that may help reduce emissions to less-than-significant levels.

Response E.15: See Response E.4.

Comment E.16: Disclaimer

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Response E.16: This comment does not address the adequacy of the analysis in the Draft EIR. No further CEQA analysis is required.

SECTION 6.0 DRAFT SEIR TEXT REVISIONS

This section contains revisions to the text of the Marriott Townplace Suites Project Draft SEIR dated March 2020. Revised or new language is underlined. All deletions are shown with a ~~line through the text~~.

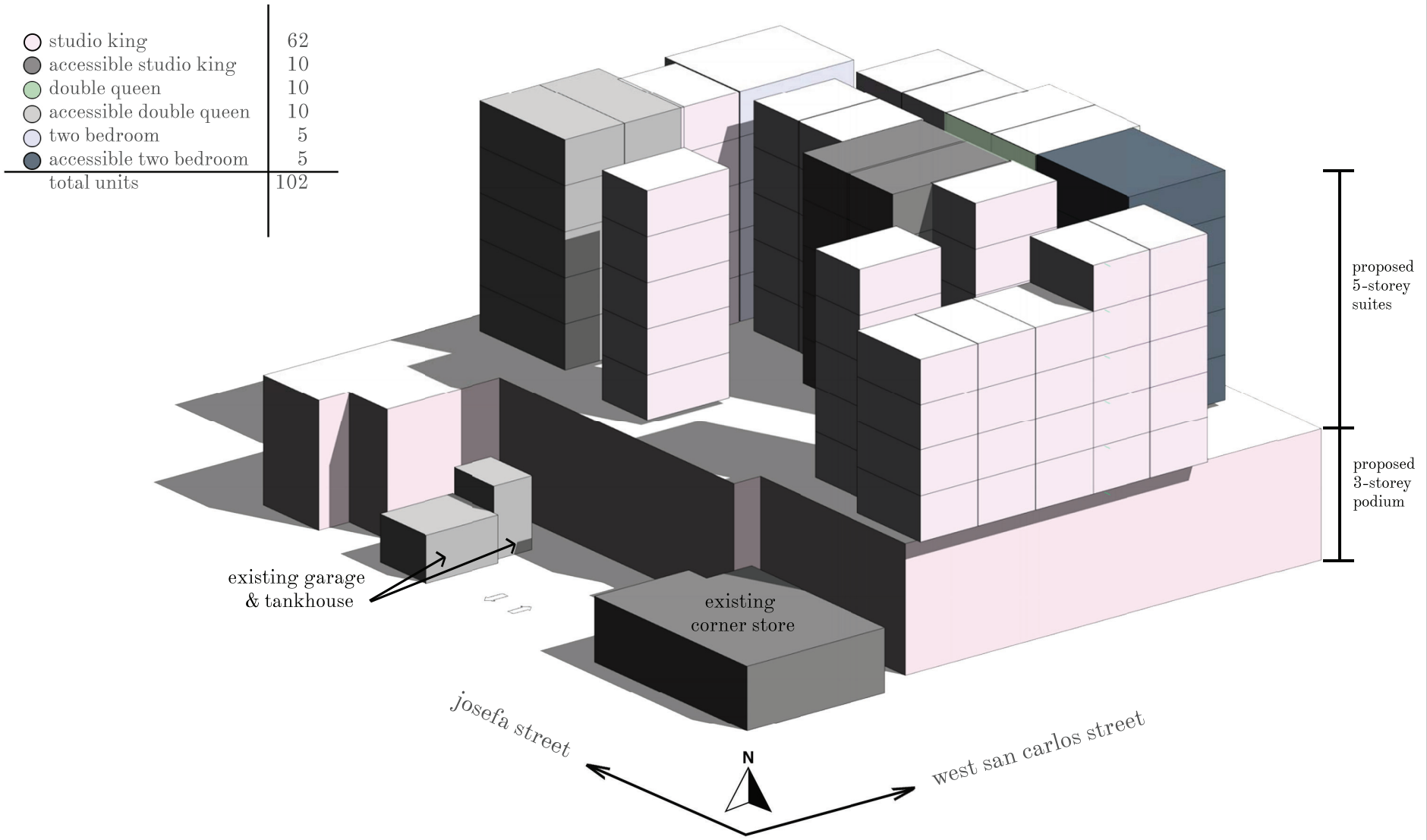
Appendix H — As per the Santa Clara Valley Transportation Authority's (VTA) comment letter, VTA recommends an update to Table 1 in Appendix H – Local Transportation Analysis as some routes have changed. Table 1 is **REVISED** to reflect the changes in bus routes as follows:

Table 1: Existing Bus Service Near the Project Site

Bus Route	Route Description	Nearest Stop	Headway[1]
Frequent Route 22	Palo Alto Transit Center to Eastridge Transit Center	Santa Clara/Cahill	15 min
Frequent Route 23	DeAnza College to Alum Rock Transit Center via Stevens Creek	San Carlos/Josefa	12-15 min
Local Route 64A	McKee & White to Ohlone-Chynoweth Station	Bird/San Carlos	30 min[2]
Local Route 64B	McKee & White to Almaden Expressway & Camden	Diridon Transit Center	30 min[2]
Frequent Route 68	San José Diridon Station to Gilroy Transit Center	Diridon Transit Center	15-20 min
Express Route ~~168~~568	Gilroy/Morgan Hill to San José Diridon Station	Diridon Transit Center	~~15-40~~ 30 min
~~Express Route 181~~	~~San José Diridon Station to Warm Springs BART~~	~~Diridon Transit Center~~	~~15-20 min~~
Rapid Route 500	San José Diridon Station to Downtown San José	Diridon Transit Center	15-20 min
Rapid Route 522	Palo Alto Transit Center to Eastridge Transit Center	Santa Clara/Cahill	10-15 min
Rapid Route 523	Berryessa BART to ~~Lockheed Martin via De Anza College~~ Downtown San José at 7th and Santa Clara Streets	San Carlos/Bird	15-20 min
Hwy 17 Express (Route 970)	Downtown Santa Cruz / Scotts Valley to Downtown San José	Bird/San Carlos	20-35 min

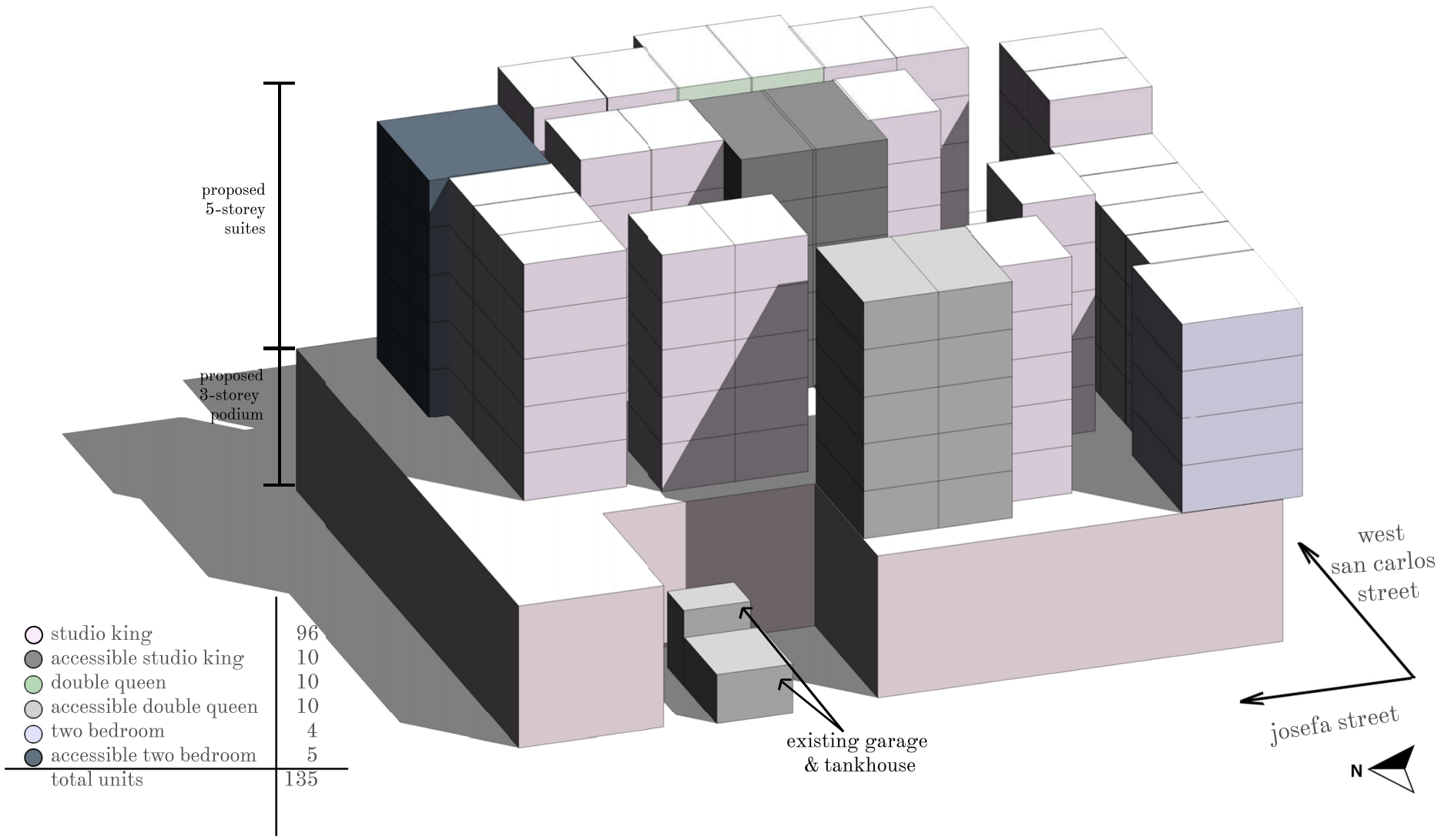
[1]Approximate headways during peak commute periods
[2] Local Routes 64A and 64B provide frequent service between San José Diridon Station and McKee/White, with approximately 15-minute headways during peak commute periods.

Pages 117,119 & 121 — As per the comment letter received from Preservation Action Council of San José, Figures 7.4-1 through 7.4-3 are **REVISED** to add street names, cardinal directions and correct labeling to all figures as below:



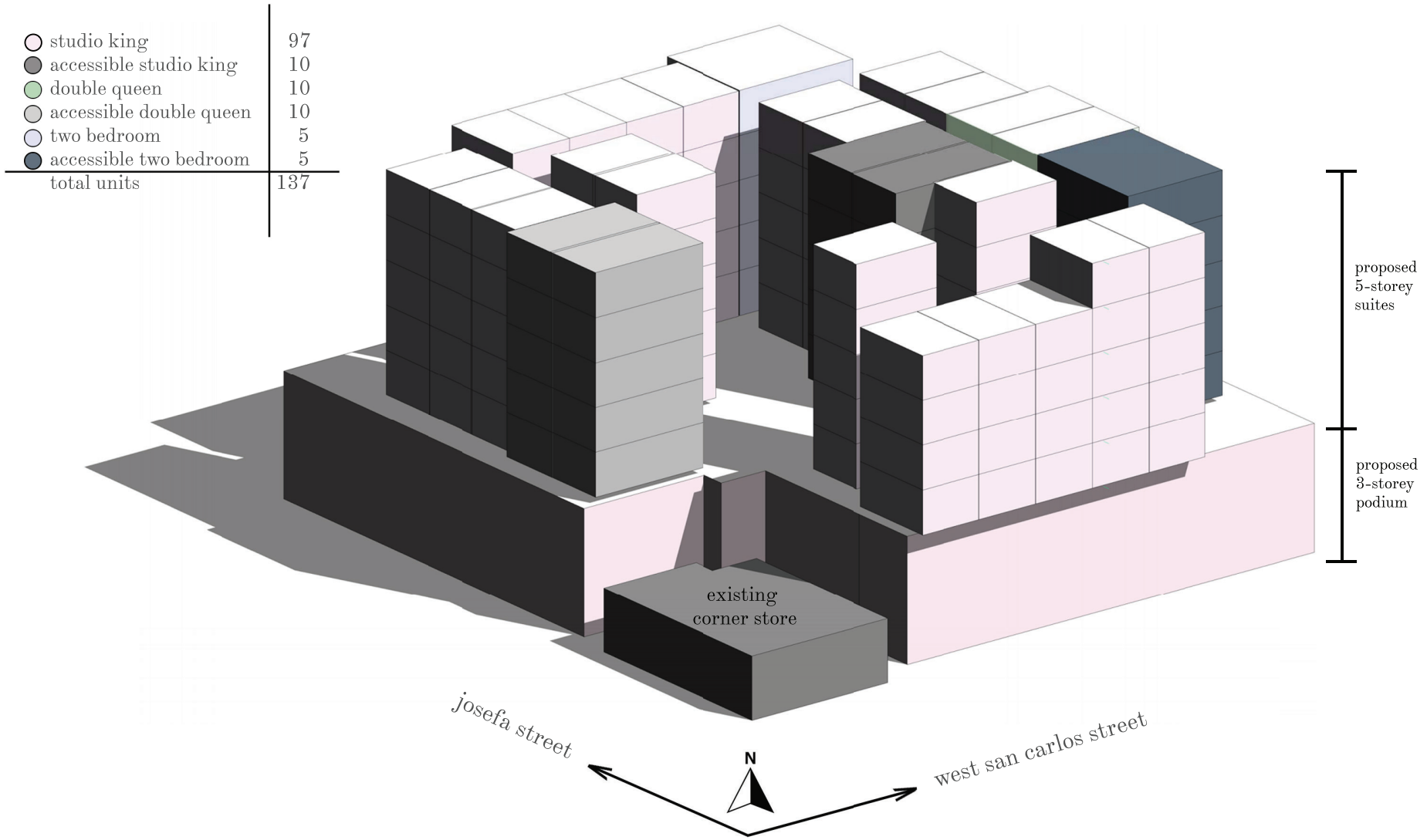
Source: Studio Current.

PRESERVATION ALTERNATIVE 4 RENDERING | FIGURE 7.4-1



Source: Studio Current.

PRESERVATION ALTERNATIVE 5 RENDERING | FIGURE 7.4-2



Source: Studio Current.

PRESERVATION ALTERNATIVE 6 RENDERING

FIGURE 7.4-3

Attachment A — As suggested by the Lozeau Drury LLP comment letter, project traffic modeling is provided as **ATTACHEMENT A** to this document.

A modeling scenario was computed using the project type and size along with the CalEEMod default assumptions which are included as Attachment A to this document.

Page 50 — In the Cultural Resources section under Existing Conditions (Section 3.3.1.2), Prehistoric Subsurface Resources, the EIR states that a literature review was completed for the adjacent apartment complex. That document was not cited and is being **ADDED** as below.

The ~~L~~literature review completed for the adjacent apartment complex identified the area to be archaeologically sensitive.[34]

[34] Archaeological Resource Service. *Results of Archaeological Monitoring of the Villages at Museum Park, San José, Santa Clara County, California*. May 2003.

Attachment A: Default CalEEMod Modeling Output and Project Operation Dispersion Modeling Inputs and Risk Calculations

Marriott Suites Using Defaults

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	175.00	Room	0.60	114,577.00	0
Enclosed Parking with Elevator	123.00	Space	0.00	62,690.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	210	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2017 rate

Land Use - Project Size

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	254,100.00	114,577.00
tblLandUse	LandUseSquareFeet	49,200.00	62,690.00
tblLandUse	LotAcreage	5.83	0.60
tblLandUse	LotAcreage	1.11	0.00

tblProjectCharacteristics	CO2IntensityFactor	641.35	210

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.6733	0.6245	0.5605	1.3500e-003	0.0411	0.0266	0.0677	0.0113	0.0246	0.0359	0.0000	122.5039	122.5039	0.0204	0.0000	123.0145
Maximum	**0.6733**	**0.6245**	**0.5605**	**1.3500e-003**	**0.0411**	**0.0266**	**0.0677**	**0.0113**	**0.0246**	**0.0359**	**0.0000**	**122.5039**	**122.5039**	**0.0204**	**0.0000**	**123.0145**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.6733	0.6245	0.5605	1.3500e-003	0.0411	0.0266	0.0677	0.0113	0.0246	0.0359	0.0000	122.5038	122.5038	0.0204	0.0000	123.0145
Maximum	**0.6733**	**0.6245**	**0.5605**	**1.3500e-003**	**0.0411**	**0.0266**	**0.0677**	**0.0113**	**0.0246**	**0.0359**	**0.0000**	**122.5038**	**122.5038**	**0.0204**	**0.0000**	**123.0145**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-4-2021	4-3-2021	0.3691	0.3691
2	4-4-2021	7-3-2021	0.9254	0.9254
		Highest	0.9254	0.9254

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5128	2.0000e-005	2.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3200e-003	5.3200e-003	1.0000e-005	0.0000	5.6700e-003
Energy	0.0274	0.2489	0.2091	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	389.0805	389.0805	0.0215	8.3400e-003	392.1044
Mobile	0.2753	1.0042	2.9873	0.0103	0.9712	8.1400e-003	0.9794	0.2600	7.5800e-003	0.2676	0.0000	945.4122	945.4122	0.0313	0.0000	946.1941
Waste						0.0000	0.0000		0.0000	0.0000	19.4486	0.0000	19.4486	1.1494	0.0000	48.1830
Water						0.0000	0.0000		0.0000	0.0000	1.4084	2.4525	3.8608	0.1450	3.4900e-003	8.5243
Total	**0.8155**	**1.2531**	**3.1991**	**0.0118**	**0.9712**	**0.0271**	**0.9983**	**0.2600**	**0.0265**	**0.2865**	**20.8569**	**1,336.9505**	**1,357.8074**	**1.3472**	**0.0118**	**1,395.0115**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5128	2.0000e-005	2.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3200e-003	5.3200e-003	1.0000e-005	0.0000	5.6700e-003

Energy	0.0274	0.2489	0.2091	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	389.0805	389.0805	0.0215	8.3400e-003	392.1044
Mobile	0.2753	1.0042	2.9873	0.0103	0.9712	8.1400e-003	0.9794	0.2600	7.5800e-003	0.2676	0.0000	945.4122	945.4122	0.0313	0.0000	946.1941
Waste						0.0000	0.0000		0.0000	0.0000	19.4486	0.0000	19.4486	1.1494	0.0000	48.1830
Water						0.0000	0.0000		0.0000	0.0000	1.4084	2.4525	3.8608	0.1450	3.4900e-003	8.5243
Total	**0.8155**	**1.2531**	**3.1991**	**0.0118**	**0.9712**	**0.0271**	**0.9983**	**0.2600**	**0.0265**	**0.2865**	**20.8569**	**1,336.9505**	**1,357.8074**	**1.3472**	**0.0118**	**1,395.0115**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	6/17/2021	6/23/2021	5	5	
2	Building Construction	Building Construction	1/21/2021	6/9/2021	5	100	
3	Demolition	Demolition	1/4/2021	1/15/2021	5	10	
4	Grading	Grading	1/19/2021	1/20/2021	5	2	
5	Paving	Paving	6/10/2021	6/16/2021	5	5	
6	Site Preparation	Site Preparation	1/16/2021	1/18/2021	5	1	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 171,866; Non-Residential Outdoor: 57,289; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	74.00	29.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6105					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5000e-004	3.8200e-003	4.5400e-003	1.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394
Total	**0.6111**	**3.8200e-003**	**4.5400e-003**	**1.0000e-005**		**2.4000e-004**	**2.4000e-004**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**0.6383**	**0.6383**	**4.0000e-005**	**0.0000**	**0.6394**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	8.0000e-005	8.6000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2462	0.2462	1.0000e-005	0.0000	0.2463
Total	**1.2000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**3.0000e-004**	**0.0000**	**3.0000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2462**	**0.2462**	**1.0000e-005**	**0.0000**	**0.2463**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	0.6105					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5000e-004	3.8200e-003	4.5400e-003	1.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394
Total	**0.6111**	**3.8200e-003**	**4.5400e-003**	**1.0000e-005**		**2.4000e-004**	**2.4000e-004**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**0.6383**	**0.6383**	**4.0000e-005**	**0.0000**	**0.6394**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	8.0000e-005	8.6000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2462	0.2462	1.0000e-005	0.0000	0.2463
Total	**1.2000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**3.0000e-004**	**0.0000**	**3.0000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2462**	**0.2462**	**1.0000e-005**	**0.0000**	**0.2463**

3.3 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0388	0.3993	0.3632	5.7000e-004		0.0224	0.0224		0.0206	0.0206	0.0000	50.0410	50.0410	0.0162	0.0000	50.4456
Total	**0.0388**	**0.3993**	**0.3632**	**5.7000e-004**		**0.0224**	**0.0224**		**0.0206**	**0.0206**	**0.0000**	**50.0410**	**50.0410**	**0.0162**	**0.0000**	**50.4456**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7300e-003	0.1490	0.0397	3.9000e-004	9.5400e-003	3.3000e-004	9.8700e-003	2.7600e-003	3.2000e-004	3.0700e-003	0.0000	37.5593	37.5593	1.6400e-003	0.0000	37.6002
Worker	0.0114	7.8900e-003	0.0846	2.7000e-004	0.0294	1.8000e-004	0.0295	7.8000e-003	1.7000e-004	7.9700e-003	0.0000	24.2921	24.2921	5.5000e-004	0.0000	24.3059
Total	**0.0161**	**0.1569**	**0.1243**	**6.6000e-004**	**0.0389**	**5.1000e-004**	**0.0394**	**0.0106**	**4.9000e-004**	**0.0110**	**0.0000**	**61.8513**	**61.8513**	**2.1900e-003**	**0.0000**	**61.9060**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0388	0.3993	0.3632	5.7000e-004		0.0224	0.0224		0.0206	0.0206	0.0000	50.0410	50.0410	0.0162	0.0000	50.4456
Total	**0.0388**	**0.3993**	**0.3632**	**5.7000e-004**		**0.0224**	**0.0224**		**0.0206**	**0.0206**	**0.0000**	**50.0410**	**50.0410**	**0.0162**	**0.0000**	**50.4456**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7300e-003	0.1490	0.0397	3.9000e-004	9.5400e-003	3.3000e-004	9.8700e-003	2.7600e-003	3.2000e-004	3.0700e-003	0.0000	37.5593	37.5593	1.6400e-003	0.0000	37.6002
Worker	0.0114	7.8900e-003	0.0846	2.7000e-004	0.0294	1.8000e-004	0.0295	7.8000e-003	1.7000e-004	7.9700e-003	0.0000	24.2921	24.2921	5.5000e-004	0.0000	24.3059
Total	**0.0161**	**0.1569**	**0.1243**	**6.6000e-004**	**0.0389**	**5.1000e-004**	**0.0394**	**0.0106**	**4.9000e-004**	**0.0110**	**0.0000**	**61.8513**	**61.8513**	**2.1900e-003**	**0.0000**	**61.9060**

3.4 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.9800e-003	0.0363	0.0379	6.0000e-005		2.0400e-003	2.0400e-003		1.9400e-003	1.9400e-003	0.0000	5.2047	5.2047	9.7000e-004	0.0000	5.2289
Total	**3.9800e-003**	**0.0363**	**0.0379**	**6.0000e-005**		**2.0400e-003**	**2.0400e-003**		**1.9400e-003**	**1.9400e-003**	**0.0000**	**5.2047**	**5.2047**	**9.7000e-004**	**0.0000**	**5.2289**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.1000e-004	1.1400e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3283	0.3283	1.0000e-005	0.0000	0.3285
Total	**1.5000e-004**	**1.1000e-004**	**1.1400e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3283**	**0.3283**	**1.0000e-005**	**0.0000**	**0.3285**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.9800e-003	0.0363	0.0379	6.0000e-005		2.0400e-003	2.0400e-003		1.9400e-003	1.9400e-003	0.0000	5.2047	5.2047	9.7000e-004	0.0000	5.2289
Total	**3.9800e-003**	**0.0363**	**0.0379**	**6.0000e-005**		**2.0400e-003**	**2.0400e-003**		**1.9400e-003**	**1.9400e-003**	**0.0000**	**5.2047**	**5.2047**	**9.7000e-004**	**0.0000**	**5.2289**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.1000e-004	1.1400e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3283	0.3283	1.0000e-005	0.0000	0.3285
Total	**1.5000e-004**	**1.1000e-004**	**1.1400e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3283**	**0.3283**	**1.0000e-005**	**0.0000**	**0.3285**

3.5 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005		4.1000e-004	4.1000e-004		3.9000e-004	3.9000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458
Total	**8.0000e-004**	**7.2500e-003**	**7.5700e-003**	**1.0000e-005**	**7.5000e-004**	**4.1000e-004**	**1.1600e-003**	**4.1000e-004**	**3.9000e-004**	**8.0000e-004**	**0.0000**	**1.0409**	**1.0409**	**1.9000e-004**	**0.0000**	**1.0458**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0657	0.0657	0.0000	0.0000	0.0657
Total	**3.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0657**	**0.0657**	**0.0000**	**0.0000**	**0.0657**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005		4.1000e-004	4.1000e-004		3.9000e-004	3.9000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458
Total	**8.0000e-004**	**7.2500e-003**	**7.5700e-003**	**1.0000e-005**	**7.5000e-004**	**4.1000e-004**	**1.1600e-003**	**4.1000e-004**	**3.9000e-004**	**8.0000e-004**	**0.0000**	**1.0409**	**1.0409**	**1.9000e-004**	**0.0000**	**1.0458**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0657	0.0657	0.0000	0.0000	0.0657
Total	**3.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0657**	**0.0657**	**0.0000**	**0.0000**	**0.0657**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8000e-003	0.0168	0.0177	3.0000e-005		8.8000e-004	8.8000e-004		8.2000e-004	8.2000e-004	0.0000	2.3481	2.3481	6.8000e-004	0.0000	2.3652

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.8000e-003**	**0.0168**	**0.0177**	**3.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.3481**	**2.3481**	**6.8000e-004**	**0.0000**	**2.3652**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.0300e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2954	0.2954	1.0000e-005	0.0000	0.2956
Total	**1.4000e-004**	**1.0000e-004**	**1.0300e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.2954**	**0.2954**	**1.0000e-005**	**0.0000**	**0.2956**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8000e-003	0.0168	0.0177	3.0000e-005		8.8000e-004	8.8000e-004		8.2000e-004	8.2000e-004	0.0000	2.3481	2.3481	6.8000e-004	0.0000	2.3652
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.8000e-003**	**0.0168**	**0.0177**	**3.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.3481**	**2.3481**	**6.8000e-004**	**0.0000**	**2.3652**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.0300e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2954	0.2954	1.0000e-005	0.0000	0.2956
Total	**1.4000e-004**	**1.0000e-004**	**1.0300e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.2954**	**0.2954**	**1.0000e-005**	**0.0000**	**0.2956**

3.7 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-004	3.9100e-003	2.0100e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310
Total	**3.2000e-004**	**3.9100e-003**	**2.0100e-003**	**0.0000**	**2.7000e-004**	**1.5000e-004**	**4.2000e-004**	**3.0000e-005**	**1.4000e-004**	**1.7000e-004**	**0.0000**	**0.4276**	**0.4276**	**1.4000e-004**	**0.0000**	**0.4310**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0164	0.0164	0.0000	0.0000	0.0164
Total	**1.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0164**	**0.0164**	**0.0000**	**0.0000**	**0.0164**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-004	3.9100e-003	2.0100e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310
Total	**3.2000e-004**	**3.9100e-003**	**2.0100e-003**	**0.0000**	**2.7000e-004**	**1.5000e-004**	**4.2000e-004**	**3.0000e-005**	**1.4000e-004**	**1.7000e-004**	**0.0000**	**0.4276**	**0.4276**	**1.4000e-004**	**0.0000**	**0.4310**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0164	0.0164	0.0000	0.0000	0.0164
Total	**1.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0164**	**0.0164**	**0.0000**	**0.0000**	**0.0164**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2753	1.0042	2.9873	0.0103	0.9712	8.1400e-003	0.9794	0.2600	7.5800e-003	0.2676	0.0000	945.4122	945.4122	0.0313	0.0000	946.1941
Unmitigated	0.2753	1.0042	2.9873	0.0103	0.9712	8.1400e-003	0.9794	0.2600	7.5800e-003	0.2676	0.0000	945.4122	945.4122	0.0313	0.0000	946.1941

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
Hotel	1,429.75	1,433.25	1041.25	2,611,930	2,611,930
Total	1,429.75	1,433.25	1,041.25	2,611,930	2,611,930

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Hotel	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	118.1574	118.1574	0.0163	3.3800e-003	119.5713
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	118.1574	118.1574	0.0163	3.3800e-003	119.5713
NaturalGas Mitigated	0.0274	0.2489	0.2091	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.9231	270.9231	5.1900e-003	4.9700e-003	272.5331
NaturalGas Unmitigated	0.0274	0.2489	0.2091	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.9231	270.9231	5.1900e-003	4.9700e-003	272.5331

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					

Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	5.07691e+006	0.0274	0.2489	0.2091	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.9231	270.9231	5.1900e-003	4.9700e-003	272.5331
Total		**0.0274**	**0.2489**	**0.2091**	**1.4900e-003**		**0.0189**	**0.0189**		**0.0189**	**0.0189**	**0.0000**	**270.9231**	**270.9231**	**5.1900e-003**	**4.9700e-003**	**272.5331**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	5.07691e+006	0.0274	0.2489	0.2091	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.9231	270.9231	5.1900e-003	4.9700e-003	272.5331
Total		**0.0274**	**0.2489**	**0.2091**	**1.4900e-003**		**0.0189**	**0.0189**		**0.0189**	**0.0189**	**0.0000**	**270.9231**	**270.9231**	**5.1900e-003**	**4.9700e-003**	**272.5331**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	367363	34.9930	4.8300e-003	1.0000e-003	35.4117
Hotel	873077	83.1644	0.0115	2.3800e-003	84.1596
Total		**118.1574**	**0.0163**	**3.3800e-003**	**119.5713**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	367363	34.9930	4.8300e-003	1.0000e-003	35.4117
Hotel	873077	83.1644	0.0115	2.3800e-003	84.1596
Total		**118.1574**	**0.0163**	**3.3800e-003**	**119.5713**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5128	2.0000e-005	2.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3200e-003	5.3200e-003	1.0000e-005	0.0000	5.6700e-003
Unmitigated	0.5128	2.0000e-005	2.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3200e-003	5.3200e-003	1.0000e-005	0.0000	5.6700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4515					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.5000e-004	2.0000e-005	2.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3200e-003	5.3200e-003	1.0000e-005	0.0000	5.6700e-003
Total	**0.5128**	**2.0000e-005**	**2.7400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**5.3200e-003**	**5.3200e-003**	**1.0000e-005**	**0.0000**	**5.6700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4515					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.5000e-004	2.0000e-005	2.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3200e-003	5.3200e-003	1.0000e-005	0.0000	5.6700e-003
Total	**0.5128**	**2.0000e-005**	**2.7400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**5.3200e-003**	**5.3200e-003**	**1.0000e-005**	**0.0000**	**5.6700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.8608	0.1450	3.4900e-003	8.5243
Unmitigated	3.8608	0.1450	3.4900e-003	8.5243

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	4.43918 / 0.493243	3.8608	0.1450	3.4900e-003	8.5243
Total		**3.8608**	**0.1450**	**3.4900e-003**	**8.5243**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	4.43918 / 0.493243	3.8608	0.1450	3.4900e-003	8.5243

Total		**3.8608**	**0.1450**	**3.4900e-003**	**8.5243**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	19.4486	1.1494	0.0000	48.1830
Unmitigated	19.4486	1.1494	0.0000	48.1830

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Hotel	95.81	19.4486	1.1494	0.0000	48.1830
Total		**19.4486**	**1.1494**	**0.0000**	**48.1830**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Hotel	95.81	19.4486	1.1494	0.0000	48.1830
Total		**19.4486**	**1.1494**	**0.0000**	**48.1830**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 2: Project Operation Dispersion Modeling Inputs and Risk Calculations

File Name:	Marriott Towneplace Santa Clara (SF) - 2023 - Annual.EF
CT-EMFAC2017 Version:	1.0.2.27401
Run Date:	6/11/2020 10:35
Area:	Santa Clara (SF)
Analysis Year:	2023
Season:	Annual

==========

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.026	0.487	0.513
Truck 2	0.036	0.938	0.047
Non-Truck	0.938	0.014	0.958

==========

Road Type:	Major/Collector		
Silt Loading Factor:	CARB	0.032 g/m2	
Precipitation Correction:	CARB	P = 64 days	N = 365 days

==========

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	50 mph	60 mph
PM2.5	0.009457	0.006198	0.004236	0.003051	0.002336	0.001907	0.001664	0.001551	0.001611	0.001995
TOG	0.200703	0.131848	0.088154	0.062068	0.046876	0.037363	0.031255	0.027433	0.02444	0.026546
Diesel PM	0.001333	0.001078	0.000832	0.000664	0.000572	0.000533	0.000535	0.000575	0.000756	0.001062

==========

Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
TOG	1.369896

==========

Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.002188

==========

Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.017348

==========

Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.016823

==========END==========

ADT = 738

Link	% Traffic	ADT
Josefa St - north	50%	369
Josefa St - south	0%	0
W. San Carlos - west	30%	221
W. San Carlos - east	20%	148

Marriott Towneplace Hotel - Offsite Residential
Project Operation - Josefa Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2023

Road Link	Description	Link Side	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_SL_JO	Josefa Street South Link	SL	2	0.0	0.00	13.3	43.7	3.4	25	0
DPM_NL_JO	Josefa Street North Link	NL	2	157.5	0.10	13.3	43.7	3.4	25	369
									Total	369

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	25			
Emissions per Vehicle (g/VMT)	0.00057			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_NL_JO

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.91%	14	2.24E-07	9	6.50%	24	3.73E-07	17	5.58%	21	3.20E-07
2	2.59%	10	1.48E-07	10	7.36%	27	4.22E-07	18	3.28%	12	1.88E-07
3	2.88%	11	1.65E-07	11	6.33%	23	3.63E-07	19	2.36%	9	1.35E-07
4	3.34%	12	1.91E-07	12	6.84%	25	3.93E-07	20	0.92%	3	5.28E-08
5	2.19%	8	1.25E-07	13	6.15%	23	3.53E-07	21	2.99%	11	1.72E-07
6	3.39%	13	1.95E-07	14	6.15%	23	3.53E-07	22	4.14%	15	2.38E-07
7	5.98%	22	3.43E-07	15	5.23%	19	3.00E-07	23	2.47%	9	1.42E-07
8	4.66%	17	2.67E-07	16	3.91%	14	2.24E-07	24	0.86%	3	4.95E-08
								Total		369	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - Josefa Street
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_SL_JO	Josefa Street South Link	SL	2	0.0	0.00	13.3	44	1.3	25	0
PM2.5_NL_JO	Josefa Street North Link	NL	2	157.5	0.10	13.3	44	1.3	25	369
									Total	369

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	25			
Emissions per Vehicle (g/VMT)	0.002336			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_NL_JO

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	4	2.70E-07	9	7.11%	26	1.67E-06	17	7.38%	27	1.73E-06
2	0.42%	2	9.78E-08	10	4.39%	16	1.03E-06	18	8.17%	30	1.91E-06
3	0.41%	2	9.55E-08	11	4.66%	17	1.09E-06	19	5.70%	21	1.33E-06
4	0.26%	1	6.17E-08	12	5.89%	22	1.38E-06	20	4.27%	16	1.00E-06
5	0.50%	2	1.17E-07	13	6.15%	23	1.44E-06	21	3.26%	12	7.64E-07
6	0.90%	3	2.12E-07	14	6.04%	22	1.41E-06	22	3.30%	12	7.73E-07
7	3.79%	14	8.89E-07	15	7.01%	26	1.64E-06	23	2.46%	9	5.76E-07
8	7.76%	29	1.82E-06	16	7.14%	26	1.67E-06	24	1.86%	7	4.37E-07
								Total		369	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - Josefa Street
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_SL_JO	Josefa Street South Link	SL	2	0.0	0.00	13.3	44	1.3	25	0
TEXH_NL_JO	Josefa Street North Link	NL	2	157.5	0.10	13.3	44	1.3	25	369
									Total	369

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	25			
Emissions per Vehicle (g/VMT)	0.04688			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_NL_JO

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	4	5.42E-06	9	7.11%	26	3.34E-05	17	7.38%	27	3.47E-05
2	0.42%	2	1.96E-06	10	4.39%	16	2.07E-05	18	8.17%	30	3.84E-05
3	0.41%	2	1.92E-06	11	4.66%	17	2.19E-05	19	5.70%	21	2.68E-05
4	0.26%	1	1.24E-06	12	5.89%	22	2.77E-05	20	4.27%	16	2.01E-05
5	0.50%	2	2.35E-06	13	6.15%	23	2.89E-05	21	3.26%	12	1.53E-05
6	0.90%	3	4.25E-06	14	6.04%	22	2.84E-05	22	3.30%	12	1.55E-05
7	3.79%	14	1.78E-05	15	7.01%	26	3.30E-05	23	2.46%	9	1.16E-05
8	7.76%	29	3.65E-05	16	7.14%	26	3.36E-05	24	1.86%	7	8.76E-06
								Total		369	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - Josefa Street
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_SL_JO	Josefa Street South Link	SL	2	0.0	0.00	13.3	44	1.3	25	0
TEVAP_NL_JO	Josefa Street North Link	NL	2	157.5	0.10	13.3	44	1.3	25	369
									Total	369

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	25			
Emissions per Vehicle per Hour (g/hour)	1.36990			
Emissions per Vehicle per Mile (g/VMT)	0.05480			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_NL_JO

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	4	6.33E-06	9	7.11%	26	3.91E-05	17	7.38%	27	4.06E-05
2	0.42%	2	2.29E-06	10	4.39%	16	2.41E-05	18	8.17%	30	4.49E-05
3	0.41%	2	2.24E-06	11	4.66%	17	2.56E-05	19	5.70%	21	3.13E-05
4	0.26%	1	1.45E-06	12	5.89%	22	3.24E-05	20	4.27%	16	2.35E-05
5	0.50%	2	2.75E-06	13	6.15%	23	3.38E-05	21	3.26%	12	1.79E-05
6	0.90%	3	4.97E-06	14	6.04%	22	3.32E-05	22	3.30%	12	1.81E-05
7	3.79%	14	2.08E-05	15	7.01%	26	3.85E-05	23	2.46%	9	1.35E-05
8	7.76%	29	4.27E-05	16	7.14%	26	3.92E-05	24	1.86%	7	1.02E-05
								Total		369	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - Josefa Street
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_SL_JO	Josefa Street South Link	SL	2	0.0	0.00	13.3	44	1.3	25	0
FUG_NL_JO	Josefa Street North Link	NL	2	157.5	0.10	13.3	44	1.3	25	369
									Total	369

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	25			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00219			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01735			
Road Dust - Emissions per Vehicle (g/VMT)	0.01682			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03636			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_NL_JO

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	4	4.20E-06	9	7.11%	26	2.59E-05	17	7.38%	27	2.69E-05
2	0.42%	2	1.52E-06	10	4.39%	16	1.60E-05	18	8.17%	30	2.98E-05
3	0.41%	2	1.49E-06	11	4.66%	17	1.70E-05	19	5.70%	21	2.08E-05
4	0.26%	1	9.60E-07	12	5.89%	22	2.15E-05	20	4.27%	16	1.56E-05
5	0.50%	2	1.83E-06	13	6.15%	23	2.24E-05	21	3.26%	12	1.19E-05
6	0.90%	3	3.30E-06	14	6.04%	22	2.20E-05	22	3.30%	12	1.20E-05
7	3.79%	14	1.38E-05	15	7.01%	26	2.56E-05	23	2.46%	9	8.97E-06
8	7.76%	29	2.83E-05	16	7.14%	26	2.60E-05	24	1.86%	7	6.80E-06
								Total		369	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - W. San Carlos St
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2023

Road Link	Description	Link Side	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_WL_WSC	W. San Carlos Street West Link	WL	4	297.9	0.19	20.6	67.7	3.4	35	221
DPM_EL_WSC	W. San Carlos Street East Link	EL	4	357.9	0.22	20.6	67.7	3.4	35	148
									Total	369

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00054			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and DPM Emissions - DPM_WL_WSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.91%	9	2.38E-07	9	6.50%	14	3.95E-07	17	5.58%	12	3.39E-07
2	2.59%	6	1.57E-07	10	7.36%	16	4.47E-07	18	3.28%	7	1.99E-07
3	2.88%	6	1.75E-07	11	6.33%	14	3.85E-07	19	2.36%	5	1.43E-07
4	3.34%	7	2.03E-07	12	6.84%	15	4.16E-07	20	0.92%	2	5.59E-08
5	2.19%	5	1.33E-07	13	6.15%	14	3.74E-07	21	2.99%	7	1.82E-07
6	3.39%	7	2.06E-07	14	6.15%	14	3.74E-07	22	4.14%	9	2.52E-07
7	5.98%	13	3.64E-07	15	5.23%	12	3.18E-07	23	2.47%	5	1.50E-07
8	4.66%	10	2.83E-07	16	3.91%	9	2.38E-07	24	0.86%	2	5.24E-08
								Total		221	

2023 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_EL_WSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.91%	6	1.91E-07	9	6.50%	10	3.18E-07	17	5.58%	8	2.73E-07
2	2.59%	4	1.27E-07	10	7.36%	11	3.60E-07	18	3.28%	5	1.60E-07
3	2.88%	4	1.41E-07	11	6.33%	9	3.09E-07	19	2.36%	3	1.15E-07
4	3.34%	5	1.63E-07	12	6.84%	10	3.35E-07	20	0.92%	1	4.50E-08
5	2.19%	3	1.07E-07	13	6.15%	9	3.01E-07	21	2.99%	4	1.46E-07
6	3.39%	5	1.66E-07	14	6.15%	9	3.01E-07	22	4.14%	6	2.03E-07
7	5.98%	9	2.93E-07	15	5.23%	8	2.56E-07	23	2.47%	4	1.21E-07
8	4.66%	7	2.28E-07	16	3.91%	6	1.91E-07	24	0.86%	1	4.22E-08
								Total		148	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - W. San Carlos St
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_WL_WSC	W. San Carlos Street West Link	WL	4	297.9	0.19	20.6	68	1.3	35	221
PM2.5_EL_WSC	W. San Carlos Street East Link	EL	4	357.9	0.22	20.6	68	1.3	35	148
									Total	369

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001664			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_WL_WSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	2.18E-07	9	7.11%	16	1.34E-06	17	7.38%	16	1.40E-06
2	0.42%	1	7.89E-08	10	4.39%	10	8.31E-07	18	8.17%	18	1.55E-06
3	0.41%	1	7.71E-08	11	4.66%	10	8.82E-07	19	5.70%	13	1.08E-06
4	0.26%	1	4.98E-08	12	5.89%	13	1.11E-06	20	4.27%	9	8.08E-07
5	0.50%	1	9.47E-08	13	6.15%	14	1.16E-06	21	3.26%	7	6.16E-07
6	0.90%	2	1.71E-07	14	6.04%	13	1.14E-06	22	3.30%	7	6.24E-07
7	3.79%	8	7.17E-07	15	7.01%	15	1.33E-06	23	2.46%	5	4.65E-07
8	7.76%	17	1.47E-06	16	7.14%	16	1.35E-06	24	1.86%	4	3.52E-07
								Total		221	

2023 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_EL_WSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	2	1.75E-07	9	7.11%	11	1.08E-06	17	7.38%	11	1.12E-06
2	0.42%	1	6.35E-08	10	4.39%	7	6.68E-07	18	8.17%	12	1.24E-06
3	0.41%	1	6.20E-08	11	4.66%	7	7.10E-07	19	5.70%	8	8.67E-07
4	0.26%	0	4.00E-08	12	5.89%	9	8.96E-07	20	4.27%	6	6.50E-07
5	0.50%	1	7.62E-08	13	6.15%	9	9.36E-07	21	3.26%	5	4.96E-07
6	0.90%	1	1.38E-07	14	6.04%	9	9.18E-07	22	3.30%	5	5.02E-07
7	3.79%	6	5.77E-07	15	7.01%	10	1.07E-06	23	2.46%	4	3.74E-07
8	7.76%	11	1.18E-06	16	7.14%	11	1.09E-06	24	1.86%	3	2.84E-07
								Total		148	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - W. San Carlos St
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_WL_WSC	W. San Carlos Street West Link	WL	4	297.9	0.19	20.6	68	1.3	35	221
TEXH_EL_WSC	W. San Carlos Street East Link	EL	4	357.9	0.22	20.6	68	1.3	35	148
									Total	369

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.03126			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_WL_WSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	4.09E-06	9	7.11%	16	2.53E-05	17	7.38%	16	2.62E-05
2	0.42%	1	1.48E-06	10	4.39%	10	1.56E-05	18	8.17%	18	2.90E-05
3	0.41%	1	1.45E-06	11	4.66%	10	1.66E-05	19	5.70%	13	2.02E-05
4	0.26%	1	9.35E-07	12	5.89%	13	2.09E-05	20	4.27%	9	1.52E-05
5	0.50%	1	1.78E-06	13	6.15%	14	2.18E-05	21	3.26%	7	1.16E-05
6	0.90%	2	3.21E-06	14	6.04%	13	2.14E-05	22	3.30%	7	1.17E-05
7	3.79%	8	1.35E-05	15	7.01%	15	2.49E-05	23	2.46%	5	8.74E-06
8	7.76%	17	2.76E-05	16	7.14%	16	2.53E-05	24	1.86%	4	6.62E-06
								Total		221	

2023 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_EL_WSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	2	3.29E-06	9	7.11%	11	2.03E-05	17	7.38%	11	2.11E-05
2	0.42%	1	1.19E-06	10	4.39%	7	1.26E-05	18	8.17%	12	2.34E-05
3	0.41%	1	1.16E-06	11	4.66%	7	1.33E-05	19	5.70%	8	1.63E-05
4	0.26%	0	7.52E-07	12	5.89%	9	1.68E-05	20	4.27%	6	1.22E-05
5	0.50%	1	1.43E-06	13	6.15%	9	1.76E-05	21	3.26%	5	9.31E-06
6	0.90%	1	2.58E-06	14	6.04%	9	1.73E-05	22	3.30%	5	9.43E-06
7	3.79%	6	1.08E-05	15	7.01%	10	2.00E-05	23	2.46%	4	7.03E-06
8	7.76%	11	2.22E-05	16	7.14%	11	2.04E-05	24	1.86%	3	5.33E-06
								Total		148	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - W. San Carlos St
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_WL_WSC	W. San Carlos Street West Link	WL	4	297.9	0.19	20.6	68	1.3	35	221
TEVAP_EL_WSC	W. San Carlos Street East Link	EL	4	357.9	0.22	20.6	68	1.3	35	148
									Total	369

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	1.36990			
Emissions per Vehicle per Mile (g/VMT)	0.03914			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_WL_WSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	5.12E-06	9	7.11%	16	3.16E-05	17	7.38%	16	3.28E-05
2	0.42%	1	1.86E-06	10	4.39%	10	1.95E-05	18	8.17%	18	3.63E-05
3	0.41%	1	1.81E-06	11	4.66%	10	2.07E-05	19	5.70%	13	2.53E-05
4	0.26%	1	1.17E-06	12	5.89%	13	2.62E-05	20	4.27%	9	1.90E-05
5	0.50%	1	2.23E-06	13	6.15%	14	2.74E-05	21	3.26%	7	1.45E-05
6	0.90%	2	4.02E-06	14	6.04%	13	2.69E-05	22	3.30%	7	1.47E-05
7	3.79%	8	1.69E-05	15	7.01%	15	3.12E-05	23	2.46%	5	1.09E-05
8	7.76%	17	3.45E-05	16	7.14%	16	3.17E-05	24	1.86%	4	8.29E-06
								Total		221	

2023 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_EL_WSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	2	4.12E-06	9	7.11%	11	2.54E-05	17	7.38%	11	2.64E-05
2	0.42%	1	1.49E-06	10	4.39%	7	1.57E-05	18	8.17%	12	2.92E-05
3	0.41%	1	1.46E-06	11	4.66%	7	1.67E-05	19	5.70%	8	2.04E-05
4	0.26%	0	9.42E-07	12	5.89%	9	2.11E-05	20	4.27%	6	1.53E-05
5	0.50%	1	1.79E-06	13	6.15%	9	2.20E-05	21	3.26%	5	1.17E-05
6	0.90%	1	3.24E-06	14	6.04%	9	2.16E-05	22	3.30%	5	1.18E-05
7	3.79%	6	1.36E-05	15	7.01%	10	2.51E-05	23	2.46%	4	8.80E-06
8	7.76%	11	2.78E-05	16	7.14%	11	2.55E-05	24	1.86%	3	6.67E-06
								Total		148	

Marriott Towneplace Hotel - Offsite Residential
Project Operation - W. San Carlos St
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_WL_WSC	W. San Carlos Street West Link	WL	4	297.9	0.19	20.6	68	1.3	35	221
FUG_EL_WSC	W. San Carlos Street East Link	EL	4	357.9	0.22	20.6	68	1.3	35	148
									Total	369

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00219			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01735			
Road Dust - Emissions per Vehicle (g/VMT)	0.01682			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03636			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_WL_WSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	3	4.76E-06	9	7.11%	16	2.94E-05	17	7.38%	16	3.05E-05
2	0.42%	1	1.72E-06	10	4.39%	10	1.81E-05	18	8.17%	18	3.38E-05
3	0.41%	1	1.68E-06	11	4.66%	10	1.93E-05	19	5.70%	13	2.35E-05
4	0.26%	1	1.09E-06	12	5.89%	13	2.43E-05	20	4.27%	9	1.77E-05
5	0.50%	1	2.07E-06	13	6.15%	14	2.54E-05	21	3.26%	7	1.35E-05
6	0.90%	2	3.74E-06	14	6.04%	13	2.49E-05	22	3.30%	7	1.36E-05
7	3.79%	8	1.57E-05	15	7.01%	15	2.90E-05	23	2.46%	5	1.02E-05
8	7.76%	17	3.21E-05	16	7.14%	16	2.95E-05	24	1.86%	4	7.70E-06
								Total		221	

2023 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_EL_WSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	2	3.83E-06	9	7.11%	11	2.36E-05	17	7.38%	11	2.45E-05
2	0.42%	1	1.39E-06	10	4.39%	7	1.46E-05	18	8.17%	12	2.72E-05
3	0.41%	1	1.35E-06	11	4.66%	7	1.55E-05	19	5.70%	8	1.89E-05
4	0.26%	0	8.75E-07	12	5.89%	9	1.96E-05	20	4.27%	6	1.42E-05
5	0.50%	1	1.66E-06	13	6.15%	9	2.04E-05	21	3.26%	5	1.08E-05
6	0.90%	1	3.01E-06	14	6.04%	9	2.01E-05	22	3.30%	5	1.10E-05
7	3.79%	6	1.26E-05	15	7.01%	10	2.33E-05	23	2.46%	4	8.18E-06
8	7.76%	11	2.58E-05	16	7.14%	11	2.37E-05	24	1.86%	3	6.20E-06
								Total		148	

Marriott Towneplace Hotel, San Jose, CA - Project Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Cancer Risk and PM2.5 MEI Receptors

Emission Year	2023
Receptor Information	
Number of Receptors	2 at construction MEI locations
Receptor Height	1.5 meters for PM2.5 & 7.6 meters for cancer risk
Receptor Distances	Construction MEI locations
Meteorological Conditions	
BAAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Winf Direction	Variable

Construction Cancer Risk MEI - Maximum Concentrations

Meteorological Data Years	2023 Concentration (µg/m3)*			
	DPM	Exhaust TOG	Evaporative TOG	
2013-2017	0.00005	0.00284	0.00338	1st floor
2013-2017	0.00002	0.00143	0.0017	3rd floor

* Concentrations at construction cancer risk MEI receptor

Construction PM2.5 Concentration MEI - Maximum Concentrations

Meteorological Data Years	2023 Concentration (µg/m3)*			
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5	
2013-2017	0.00264	0.00249	0.00015	1st floor
2013-2017	0.00131	0.00124	0.00007	3rd floor

* Concentrations at construction PM2.5 MEI receptor

Marriott Towneplace Hotel, San Jose, CA
Maximum DPM Cancer Risk Calculations From - Project Traffic Emissions
Impacts at Total PM2.5 MEI - 1.5 meter receptor height

Cancer Risk Calculation Method

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

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2023	10	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
1	1	0 - 1	2023	10	0.0001	0.0028	0.0034	0.008	0.003	0.0002	0.01
2	1	1 - 2	2024	10	0.0001	0.0028	0.0034	0.008	0.003	0.0002	0.01
3	1	2 - 3	2025	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
4	1	3 - 4	2026	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
5	1	4 - 5	2027	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
6	1	5 - 6	2028	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
7	1	6 - 7	2029	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
8	1	7 - 8	2030	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
9	1	8 - 9	2031	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
10	1	9 - 10	2032	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
11	1	10 - 11	2033	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
12	1	11 - 12	2034	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
13	1	12 - 13	2035	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
14	1	13 - 14	2036	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
15	1	14 - 15	2037	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
16	1	15 - 16	2038	3	0.0001	0.0028	0.0034	0.001	0.000	0.0000	0.00
17	1	16-17	2039	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
18	1	17-18	2040	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
19	1	18-19	2041	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
20	1	19-20	2042	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
21	1	20-21	2043	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
22	1	21-22	2044	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
23	1	22-23	2045	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
24	1	23-24	2046	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
25	1	24-25	2047	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
26	1	25-26	2048	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
27	1	26-27	2049	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
28	1	27-28	2050	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
29	1	28-29	2051	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
30	1	29-30	2052	1	0.0001	0.0028	0.0034	0.000	0.000	0.0000	0.000
Total Increased Cancer Risk								0.04	0.012	0.001	**0.05**

* Third trimester of pregnancy

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00001	0.002	0.003

Marriott Towneplace Hotel, San Jose, CA
Maximum DPM Cancer Risk Calculations From - Project Traffic Emissions
Impacts at Cancer Risk MEI - 7.6 meter receptor height

Cancer Risk Calculation Method

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

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2023	10	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.00
1	1	0 - 1	2023	10	0.0000	0.0014	0.0017	0.003	0.001	0.0001	0.00
2	1	1 - 2	2024	10	0.0000	0.0014	0.0017	0.003	0.001	0.0001	0.00
3	1	2 - 3	2025	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
4	1	3 - 4	2026	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
5	1	4 - 5	2027	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
6	1	5 - 6	2028	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
7	1	6 - 7	2029	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
8	1	7 - 8	2030	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
9	1	8 - 9	2031	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
10	1	9 - 10	2032	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
11	1	10 - 11	2033	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
12	1	11 - 12	2034	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
13	1	12 - 13	2035	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
14	1	13 - 14	2036	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
15	1	14 - 15	2037	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
16	1	15 - 16	2038	3	0.0000	0.0014	0.0017	0.001	0.000	0.0000	0.00
17	1	16-17	2039	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
18	1	17-18	2040	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
19	1	18-19	2041	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
20	1	19-20	2042	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
21	1	20-21	2043	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
22	1	21-22	2044	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
23	1	22-23	2045	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
24	1	23-24	2046	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
25	1	24-25	2047	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
26	1	25-26	2048	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
27	1	26-27	2049	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
28	1	27-28	2050	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
29	1	28-29	2051	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
30	1	29-30	2052	1	0.0000	0.0014	0.0017	0.000	0.000	0.0000	0.000
Total Increased Cancer Risk								0.01	0.006	0.000	**0.02**

Maximum Hazard Index	Fugitive PM2.5	Total PM2.5
0.000004	0.001	0.001

* Third trimester of pregnancy

Marriott Towneplace Hotel, San Jose, CA - Project Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at MAX Receptors

Emission Year	2023
Receptor Information	
Number of Receptors	1
Receptor Height	1.5
Receptor Distances	at max

Meteorological Conditions	
BAAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Winf Direction	Variable

Construction Cancer Risk MEI - Maximum Concentrations

Meteorological Data Years	2023 Concentration (µg/m3)*			
	DPM	Exhaust TOG	Evaporative TOG	
2013-2017	0.00011	0.01206	0.01415	1st floor
2013-2017	0.00005	0.00221	0.00261	3rd floor

* Concentrations at construction cancer risk MEI receptor

Construction PM2.5 Concentration MEI - Maximum Concentrations

Meteorological Data Years	2023 Concentration (µg/m3)*			
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5	
2013-2017	0.01022	0.00962	0.0006	1st floor
2013-2017	0.00198	0.00187	0	3rd floor

* Concentrations at construction PM2.5 MEI receptor

Marriott Towneplace Hotel, San Jose, CA
Maximum DPM Cancer Risk Calculations From - Project Traffic Emissions
Impacts at Total PM2.5 MEI - 1.5 meter receptor height

Cancer Risk Calculation Method

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

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2023	10	0.0001	0.0121	0.0142	0.001	0.001	0.0001	0.00
1	1	0 - 1	2023	10	0.0001	0.0121	0.0142	0.018	0.011	0.0008	0.03
2	1	1 - 2	2024	10	0.0001	0.0121	0.0142	0.018	0.011	0.0008	0.03
3	1	2 - 3	2025	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
4	1	3 - 4	2026	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
5	1	4 - 5	2027	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
6	1	5 - 6	2028	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
7	1	6 - 7	2029	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
8	1	7 - 8	2030	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
9	1	8 - 9	2031	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
10	1	9 - 10	2032	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
11	1	10 - 11	2033	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
12	1	11 - 12	2034	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
13	1	12 - 13	2035	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
14	1	13 - 14	2036	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
15	1	14 - 15	2037	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
16	1	15 - 16	2038	3	0.0001	0.0121	0.0142	0.003	0.002	0.0001	0.00
17	1	16-17	2039	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
18	1	17-18	2040	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
19	1	18-19	2041	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
20	1	19-20	2042	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
21	1	20-21	2043	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
22	1	21-22	2044	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
23	1	22-23	2045	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
24	1	23-24	2046	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
25	1	24-25	2047	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
26	1	25-26	2048	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
27	1	26-27	2049	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
28	1	27-28	2050	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
29	1	28-29	2051	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
30	1	29-30	2052	1	0.0001	0.0121	0.0142	0.000	0.000	0.0000	0.001
Total Increased Cancer Risk								0.08	0.051	0.004	**0.14**

* Third trimester of pregnancy

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00002	0.01	0.01

Marriott Towneplace Hotel, San Jose, CA
Maximum DPM Cancer Risk Calculations From - Project Traffic Emissions
Impacts at Cancer Risk MEI - 7.6 meter receptor height

Cancer Risk Calculation Method

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

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2023	10	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
1	1	0 - 1	2023	10	0.0001	0.0022	0.0026	0.008	0.002	0.0001	0.01
2	1	1 - 2	2024	10	0.0001	0.0022	0.0026	0.008	0.002	0.0001	0.01
3	1	2 - 3	2025	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
4	1	3 - 4	2026	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
5	1	4 - 5	2027	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
6	1	5 - 6	2028	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
7	1	6 - 7	2029	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
8	1	7 - 8	2030	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
9	1	8 - 9	2031	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
10	1	9 - 10	2032	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
11	1	10 - 11	2033	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
12	1	11 - 12	2034	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
13	1	12 - 13	2035	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
14	1	13 - 14	2036	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
15	1	14 - 15	2037	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
16	1	15 - 16	2038	3	0.0001	0.0022	0.0026	0.001	0.000	0.0000	0.00
17	1	16-17	2039	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
18	1	17-18	2040	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
19	1	18-19	2041	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
20	1	19-20	2042	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
21	1	20-21	2043	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
22	1	21-22	2044	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
23	1	22-23	2045	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
24	1	23-24	2046	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
25	1	24-25	2047	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
26	1	25-26	2048	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
27	1	26-27	2049	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
28	1	27-28	2050	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
29	1	28-29	2051	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
30	1	29-30	2052	1	0.0001	0.0022	0.0026	0.000	0.000	0.0000	0.000
Total Increased Cancer Risk								0.04	0.009	0.001	**0.05**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00001	0.002	0.002

* Third trimester of pregnancy

Attachment B: Draft SEIR Comment Letters

Santa Clara Valley Transportation Authority

May 20, 2021

City of San José Department of Planning, Building, and Code Enforcement
200 E. Santa Clara St., 3rd Floor
San José, CA 95113

Attn: Reema Mahamood
By Email: reema.mahamood@sanjoseca.gov

Subject: City File Nos C19-051 & H19-053 Marriott Townplace Suites Project Draft Supplemental Environmental Impact Report

Dear Reema,

VTA appreciates the opportunity to comment on the Draft Supplemental Environmental Impact Report for the Marriott Townplace Suites project (C19-051 & H19-053). VTA has reviewed the document and has the following comments:

Existing (and Future) Transit Service
VTA recommends an update to Table 1 in Appendix H – Local Transportation Analysis (Existing Bus Service Near the Project Site) as some routes have changed. We have discontinued Express Route 181 and Express Route 168 will soon be replaced by Rapid Route 568, which will provide weekday service every 30 minutes throughout the day. Additionally, Rapid 523 now ends in Downtown San José at 7th and Santa Clara Streets.

Thank you again for the opportunity to review this project. If you have any questions, please do not hesitate to contact me at 408-321-5830 or lola.torney@vta.org.

Sincerely,

Lola Torney
Transportation Planner III

SJ2027

Mahamood, Reema

From: KKLLC Admin <admin@kanyonkonsulting.com>
Sent: Monday, April 5, 2021 1:20 PM
To: Mahamood, Reema
Subject: Planning File No. H19-053.

To Whom it may concern,

My name is Kanyon Sayers-Roods. I am writing this on behalf of the Indian Canyon Band of Costanoan Ohlone People as requested, responding to your letter dated : Aril 5,2021

As this project's Area of Potential Effect (APE) overlaps or is near the management boundary of a recorded and potentially eligible cultural site, we recommend that a Native American Monitor and an Archaeologist be present on-site at all times. The presence of a monitor and archaeologist will help the project minimize potential effects on the cultural site and mitigate inadvertent issues.

Kanyon Konsulting, LLC has numerous Native Monitors available for projects such as this, if applicable, along with Cultural Sensitivity Training at the beginning of each project. This service is offered to aid those involved in the project to become more familiar with the indigenous history of the peoples of this land that is being worked on.

Kanyon Konsulting, LLC believes in having a strong proponent of honoring truth in history, when it comes to impacting cultural resources and potential ancestral remains. We have seen that projects like these tend to come into an area to consult/mitigate and move on shortly after. Doing so has the strong potential to impact cultural resources and disturb ancestral remains. Because of these possibilities, we highly recommend that you receive a specialized consultation provided by our company as the project commences.

As previously stated, our goal is to **Honor Truth in History**. And as such we want to ensure that there is an effort from the project organizer to take strategic steps in ways that **#HonorTruthinHistory**. This will make all involved aware of the history of the indigenous communities whom we acknowledge as the first stewards and land managers of these territories.

Potential Approaches to Ingenious Culture Awareness/History:
--Signs or messages to the audience or community of the territory being developed. (ex. A commerable plaque or as advantageous as an Educational/Cultural Center with information about the history of the land)

-- Commitment to consultation with the native peoples of the territory in regards to presenting messaging about the natives/Indigenous history of the land (Land Acknowledgement on website, written material about the space/org/building/business/etc)

-- Advocation of supporting indigenous lead movements and efforts. (informing one's audience and/or community about local present Indigenous community)

We look forward to working with you.
Best Regards,
Kanyon Sayers-Roods
Creative Director/Tribal Monitor
Kanyon Konsulting, LLC

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Oakland, CA 94612
www.lozeaudrury.com
brian@lozeaudrury.com

VIA EMAIL ONLY

May 20, 2021

Reema Mahamood, Planner III
Department of Planning, Building and Code Enforcement
200 East Santa Clara Street, 3rd Floor Tower
San José, CA 95113
Email: Reema.Mahamood@sanjoseca.gov

Re: Draft SEIR Comment
Marriot Townplace Suites - San Jose (C19-051 & H19-053)

Dear Ms. Mahamood:

I am writing on behalf of Laborers International Union of North America, Local Union 270 and its members living or working in and around the City of San Jose ("LIUNA") regarding the draft supplemental environmental impact report ("draft SEIR") prepared for the Marriott Townplace Suites Project (C19-051 & H19-053) ("Project") in San Jose. After reviewing the draft SEIR, it is clear that the document fails to comply with the California Environmental Quality Act ("CEQA"), and fails to adequately analyze and mitigate the Project's significant environmental impacts.

Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH, has conducted a review of the Project, the draft SEIR, and relevant appendices regarding the Project's indoor air emissions. Mr. Offerman concludes that it is likely that the Project will expose future employees of the hotel to significant impacts related to indoor air quality, and in particular, emissions of the cancer-causing chemical formaldehyde. This impact has not been addressed in the DEIR. Mr. Offermann is one of the world's leading experts on indoor air quality and has published extensively on the topic. Mr. Offerman's expert comments and CV are attached hereto as Exhibit A.

A revised EIR should be prepared prior to Project approval to analyze all impacts and require implementation of all feasible mitigation measures, as described more fully below.

PROJECT DESCRIPTION

The 0.6-acre Project site is located at 491, 493, 495, 497, and 499 West San Carlos Street

and 270 and 280 Josefa Street (APN 259-47-013, -014, -015, and -016) on the northeast corner of West San Carlos Street and Josefa Street in the City of San José. The Project proposes to redevelop the project site with eight-story Marriott hotel building with up to 175 rooms. Some or all of the rooms could be extended stay. The maximum height of the building would be approximately 84.5 feet to the rooftop and 95 feet to top of the parapet. The first through third floors would consist of parking for hotel guests. The fourth through eighth floor of the building would have the hotel rooms. The building would be set back approximately six feet from the property lines along the street frontages to allow for a 15-foot wide public sidewalk on San Carlos Street and a 10-foot wide sidewalk on Josefa Street.

The Project site is currently developed with two commercial buildings, a tank house, a duplex, a mixed-use building, and one single-family residence, totaling approximately 26,233 square feet. The northernmost lot on Josefa Street (APN 259-47-016) is an asphalt-paved parking lot with no built structures. The project proposes to demolish the existing buildings and redevelop the site with the Project.

LEGAL STANDARD

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an environmental impact report ("EIR"), except in certain limited circumstances. (*e.g.*, Pub. Res. Code § 21100.) The EIR is the very heart of CEQA. (*Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (*Communities for a Better Envt. v. Calif. Resources Agency* (2002) 103 Cal.App.4th 98, 109.)

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project. (14 CCR 15002(a)(1).) "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'" (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.) The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return." *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal.App.4th 1344, 1354 (*Berkeley Jets*); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.)

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures. (14 CCR § 15002(a)(2), (3); *see also*, *Berkeley Jets*, *supra*, 91 Cal.App.4th 1344, 1354; *Citizens of Goleta Valley*, *supra*, 52 Cal.3d at 564.) The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced." (14 CCR 15002(a)(2). If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant

effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns." (PRC § 21081; 14 CCR 15092(b)(2)(A), (B).) The lead agency may deem a particular impact to be insignificant only if it produces rigorous analysis and concrete substantial evidence justifying the finding. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 732.)

The EIR is the very heart of CEQA "and the integrity of the process is dependent on the adequacy of the EIR." (*Berkeley Jets*, *supra*, 91 Cal.App.4th at 1355.) CEQA requires that a lead agency analyze all potentially significant environmental impacts of its proposed actions in an EIR. (PRC § 21100(b)(1); 14 CCR 15126(a); *Berkeley Jets*, *supra*, 91 Cal.App.4th at 1354.) The EIR must not only identify the impacts, but must also provide "information about how adverse the impacts will be." (*Santiago County Water Dist. v. County of Orange* (1981) 118 Cal.App.3d 818, 831.) The lead agency may deem a particular impact to be insignificant only if it produces rigorous analysis and concrete substantial evidence justifying the finding. (*Kings County Farm Bureau*, *supra*, 221 Cal.App.3d at 732.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (*Communities for a Better Envt.*, *supra*, 103 Cal.App.4th at 109.)

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A 'clearly inadequate or unsupported study is entitled to no judicial deference.'" (*Berkeley Jets*, *supra*, 91 Cal.App.4th at 1355 [quoting *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 391, 409 n. 12].) A prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process." (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722; *Galante Vineyards v. Monterey Peninsula Water Mgmt. Dist.* (1997) 60 Cal.App.4th 1109, 1117; *County of Amador v. El Dorado Cnty. Water Agency* (1999) 76 Cal. App. 4th 931, 946.)

DISCUSSION

A. The Draft SEIR Fails to Discuss Indoor Air Quality Impacts Related to the Project.

The draft SEIR fails to discuss, disclose, analyze, and mitigate the significant health risks posed by the Project from formaldehyde, a toxic air contaminant ("TAC"). Certified Industrial Hygienist, Francis Offermann, PE, CIH, has conducted a review of the Project, the DEIR, and relevant documents regarding the Project's indoor air emissions. Mr. Offermann is one of the world's leading experts on indoor air quality, in particular emissions of formaldehyde, and has published extensively on the topic. As discussed below and set forth in Mr. Offermann's comments, the Project's emissions of formaldehyde to air will result in very significant cancer risks to future residents at the Project's apartments. Mr. Offermann's expert opinion demonstrates the Project's significant health risk impacts, which the City has a duty to

investigate, disclose, and mitigate in an EIR. Mr. Offermann's comment and curriculum vitae are attached as Exhibit A.

Formaldehyde is a known human carcinogen and listed by the State as a TAC. BAAQMD has established a significance threshold of health risks for carcinogenic TACs of 10 in a million and a cumulative health risk threshold of 100 in a million. The draft SEIR fails to acknowledge the significant indoor air emissions that will result from the Project. Specifically, there is no discussion of impacts or health risks, no analysis, and no identification of mitigations for significant emissions of formaldehyde to air from the Project.

Mr. Offermann explains that many composite wood products typically used in home and apartment building construction contain formaldehyde-based glues which off-gas formaldehyde over a very long time period. He states, "The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particle board. These materials are commonly used in residential, office, and retail building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims." (Ex. A, pp. 2-3.)

Mr. Offermann found that future employees of the hotel will be exposed to a cancer risk from formaldehyde of approximately 17.7 per million, ***even assuming that*** all materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure. (Ex. A, pp. 4-5.) This impacts exceeds BAAQMD's CEQA significance threshold of 10 per million. (*Id*.)

Mr. Offermann concludes that these significant environmental impacts must be analyzed in an EIR and mitigation measures should be imposed to reduce the risk of formaldehyde exposure. (Ex. A, pp. 5-6, 12-13.) He prescribes a methodology for estimating the Project's formaldehyde emissions in order to do a more project-specific health risk assessment. (*Id*., pp. 5-10.). Mr. Offermann also suggests several feasible mitigation measures, such as requiring the use of no-added-formaldehyde composite wood products, which are readily available. (*Id*., pp. 12-13.) Mr. Offermann also suggests requiring air ventilation systems which would reduce formaldehyde levels. (*Id*.) Since the EIR does not analyze this impact at all, none of these or other mitigation measures have been considered.

When a Project exceeds a duly adopted CEQA significance threshold, as here, this alone establishes substantial evidence that the project will have a significant adverse environmental impact. Indeed, in many instances, such air quality thresholds are the only criteria reviewed and treated as dispositive in evaluating the significance of a project's air quality impacts. (*See, e.g. Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 960 [County applies Air District's "published CEQA quantitative criteria" and "threshold level of cumulative significance"]; *see also Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 110-111 ["A 'threshold of significance' for a given environmental effect is simply that level at which the lead agency finds the effects of the project to be significant"].)

The California Supreme Court made clear the substantial importance that an air district significance threshold plays in providing substantial evidence of a significant adverse impact. (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 327 ["As the [South Coast Air Quality Management] District's established significance threshold for NOx is 55 pounds per day, these estimates [of NOx emissions of 201 to 456 pounds per day] constitute substantial evidence supporting a fair argument for a significant adverse impact."].) Since expert evidence demonstrates that the Project will exceed the SCAQMD's CEQA significance threshold, there is substantial evidence that an "unstudied, ***potentially significant environmental effect[]***" exists. (*See Friends of Coll. of San Mateo Gardens v. San Mateo Cty. Cmty. Coll. Dist.* (2016) 1 Cal.5th 937, 958 [emphasis added].) As a result, the City must prepare an EIR for the Project to address this impact and identify enforceable mitigation measures.

The failure of the draft SEIR to address the Project's formaldehyde emissions is contrary to the California Supreme Court's decision in *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 386 ("*CBIA*"). In that case, the Supreme Court expressly holds that potential adverse impacts to future users and residents from pollution generated by a proposed project ***must be addressed*** under CEQA. At issue in *CBIA* was whether the Air District could enact CEQA guidelines that advised lead agencies that they must analyze the impacts of adjacent environmental conditions on a project. The Supreme Court held that CEQA does not generally require lead agencies to consider the environment's effects on a project. (*CBIA*, 62 Cal.4th at 800-01.) However, to the extent a project may exacerbate existing environmental conditions at or near a project site, those would still have to be considered pursuant to CEQA. (*Id*. at 801.) In so holding, the Court expressly held that CEQA's statutory language required lead agencies to disclose and analyze "impacts on ***a project's users or residents*** that arise ***from the project's effects*** on the environment." (*Id*. at 800 [emphasis added].)

The carcinogenic formaldehyde emissions identified by Mr. Offermann are not an existing environmental condition. Those emissions to the air will be from the Project. People will be residing in and working in the Project's buildings once built and emitting formaldehyde. Once built, the Project will begin to emit formaldehyde at levels that pose significant direct and cumulative health risks. The Supreme Court in *CBIA* expressly finds that this type of air emission and health impact by the project on the environment and a "project's users and residents" must be addressed in the CEQA process. The existing TAC sources near the Project site would have to be considered in evaluating the cumulative effect on future residents of both the Project's TAC emissions as well as those existing off-site emissions.

The Supreme Court's reasoning is well-grounded in CEQA's statutory language. CEQA expressly includes a project's effects on human beings as an effect on the environment that must be addressed in an environmental review. "Section 21083(b)(3)'s express language, for example, requires a finding of a 'significant effect on the environment' (§ 21083(b)) whenever the 'environmental effects of a project will cause substantial adverse effects *on human beings,* either directly or indirectly.'" (*CBIA*, 62 Cal.4th at 800.) Likewise, "the Legislature has made clear—in declarations accompanying CEQA's enactment—that public health and safety are of great

importance in the statutory scheme." (*Id*. [citing e.g., PRC §§ 21000, 21001].) It goes without saying that the future residents and employees at the Project are human beings and their health and safety must be subject to CEQA's safeguards.

The City has a duty to investigate issues relating to a project's potential environmental impacts. (*See County Sanitation Dist. No. 2 v. County of Kern*, (2005) 127 Cal.App.4th 1544, 1597–98. ["[U]nder CEQA, the lead agency bears a burden to investigate potential environmental impacts."].) The proposed buildings will have significant impacts on air quality and health risks by emitting cancer-causing levels of formaldehyde into the air that will expose future residents and employees to cancer risks potentially in excess of BAAQMD's threshold of significance for cancer health risks of 10 in a million. Likewise, when combined with the risks posed by the nearby TAC sources, the health risks inside the project may exceed BAAQMD's cumulative health risk threshold of 100 cancers in a million. Currently, outside of Mr. Offermann's comments, the City does not have any idea what risks will be posed by formaldehyde emissions from the Project or the residences. As a result, the City must include an analysis and discussion in an updated draft SEIR which discloses and analyzes the health risks that the Project's formaldehyde emissions may have on future residents and employees and identifies appropriate mitigation measures.

CONCLUSION

For the foregoing reasons, the draft SEIR for the Project should be revised and circulated for public review and comment in accordance with CEQA. Thank you for considering these comments.

Sincerely,

Brian B. Flynn
Lozeau Drury LLP

EXHIBIT A

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Date: May 20, 2021

To: Brian Flynn
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From: Francis J. Offermann PE CIH

Subject: Indoor Air Quality: Marriott Townplace Suites, San Jose, CA.
(IEE File Reference: P-4459)

Pages: 19

Indoor Air Quality Impacts

Indoor air quality (IAQ) directly impacts the comfort and health of building occupants, and the achievement of acceptable IAQ in newly constructed and renovated buildings is a well-recognized design objective. For example, IAQ is addressed by major high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014). Indoor air quality in homes is particularly important because occupants, on average, spend approximately ninety percent of their time indoors with the majority of this time spent at home (EPA, 2011). Some segments of the population that are most susceptible to the effects of poor IAQ, such as the very young and the elderly, occupy their homes almost continuously. Additionally, an increasing number of adults are working from home at least some of the time during the workweek. Indoor air quality also is a serious concern for workers in hotels, offices and other business establishments.

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain

and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson, 2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

Indoor Formaldehyde Concentrations Impact. In the California New Home Study (CNHS) of 108 new homes in California (Offermann, 2009), 25 air contaminants were measured, and formaldehyde was identified as the indoor air contaminant with the highest cancer risk as determined by the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), No Significant Risk Levels (NSRL) for carcinogens. The NSRL is the daily intake level calculated to result in one excess case of cancer in an exposed population of 100,000 (i.e., ten in one million cancer risk) and for formaldehyde is 40 µg/day. The NSRL concentration of formaldehyde that represents a daily dose of 40 µg is 2 µg/m^3, assuming a continuous 24-hour exposure, a total daily inhaled air volume of 20 m^3, and 100% absorption by the respiratory system. All of the CNHS homes exceeded this NSRL concentration of 2 µg/m^3. The median indoor formaldehyde concentration was 36 µg/m^3, and ranged from 4.8 to 136 µg/m^3, which corresponds to a median exceedance of the 2 µg/m^3 NSRL concentration of 18 and a range of 2.3 to 68.

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 µg/m^3, is 180 per million as a result of formaldehyde alone. The CEQA significance threshold for airborne cancer risk is 10 per million, as established by the South Coast Air Quality Management District (BAAQMD, 2017).

Besides being a human carcinogen, formaldehyde is also a potent eye and respiratory irritant. In the CNHS, many homes exceeded the non-cancer reference exposure levels (RELs) prescribed by California Office of Environmental Health Hazard Assessment (OEHHA, 2017b). The percentage of homes exceeding the RELs ranged from 98% for the Chronic REL of 9 µg/m^3 to 28% for the Acute REL of 55 µg/m^3.

The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and

particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

In January 2009, the California Air Resources Board (CARB) adopted an airborne toxics control measure (ATCM) to reduce formaldehyde emissions from composite wood products, including hardwood plywood, particleboard, medium density fiberboard, and also furniture and other finished products made with these wood products (California Air Resources Board 2009). While this formaldehyde ATCM has resulted in reduced emissions from composite wood products sold in California, they do not preclude that homes built with composite wood products meeting the CARB ATCM will have indoor formaldehyde concentrations below cancer and non-cancer exposure guidelines.

A follow up study to the California New Home Study (CNHS) was conducted in 2016-2018 (Singer et. al., 2019), and found that the median indoor formaldehyde in new homes built after 2009 with CARB Phase 2 Formaldehyde ATCM materials had lower indoor formaldehyde concentrations, with a median indoor concentrations of 22.4 $\mu g/m^3$ (18.2 ppb) as compared to a median of 36 $\mu g/m^3$ found in the 2007 CNHS. Unlike in the CNHS study where formaldehyde concentrations were measured with pumped DNPH samplers, the formaldehyde concentrations in the HENGH study were measured with passive samplers, which were estimated to under-measure the true indoor formaldehyde concentrations by approximately 7.5%. Applying this correction to the HENGH indoor formaldehyde concentrations results in a median indoor concentration of 24.1 $\mu g/m^3$, which is 33% lower than the 36 $\mu g/m^3$ found in the 2007 CNHS.

Thus, while new homes built after the 2009 CARB formaldehyde ATCM have a 33% lower median indoor formaldehyde concentration and cancer risk, the median lifetime cancer risk is still 120 per million for homes built with CARB compliant composite wood products. This median lifetime cancer risk is more than 12 times the OEHHA 10 in a million cancer risk threshold (OEHHA, 2017a).

With respect to the Marriott Townplace Suites, San Jose, CA, the buildings consist of a hotel building.

The employees of the hotel building are expected to experience significant indoor exposures (e.g., 40 hours per week, 50 weeks per year). These exposures for employees are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in offices, warehouses, residences and hotels.

Because the hotel will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 24.1 $\mu g/m^3$ (Singer et. al., 2020)

Assuming that the hotel employees work 8 hours per day and inhale 20 m^3 of air per day, the formaldehyde dose per work-day at the offices is 161 µg/day.

Assuming that these employees work 5 days per week and 50 weeks per year for 45 years (start at age 20 and retire at age 65) the average 70-year lifetime formaldehyde daily dose is 70.9 µg/day.

This is 1.77 times the NSRL (OEHHA, 2017a) of 40 µg/day and represents a cancer risk of 17.7 per million, which exceeds the CEQA cancer risk of 10 per million. This impact should be analyzed in an environmental impact report ("EIR"), and the agency should impose all feasible mitigation measures to reduce this impact. Several feasible mitigation measures are discussed below and these and other measures should be analyzed in an EIR.

Appendix A, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, provides analyses that show utilization of CARB Phase 2 Formaldehyde ATCM materials will not ensure acceptable cancer risks with respect to formaldehyde emissions from composite wood products.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

The following describes a method that should be used, prior to construction in the environmental review under CEQA, for determining whether the indoor concentrations resulting from the formaldehyde emissions of specific building materials/furnishings selected exceed cancer and non-cancer guidelines. Such a design analyses can be used to identify those materials/furnishings prior to the completion of the City's CEQA review and project approval, that have formaldehyde emission rates that contribute to indoor concentrations that exceed cancer and non-cancer guidelines, so that alternative lower emitting materials/furnishings may be selected and/or higher minimum outdoor air ventilation rates can be increased to achieve acceptable indoor concentrations and incorporated as mitigation measures for this project.

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment

This formaldehyde emissions assessment should be used in the environmental review under CEQA to assess the indoor formaldehyde concentrations from the proposed loading of building materials/furnishings, the area-specific formaldehyde emission rate data for building materials/furnishings, and the design minimum outdoor air ventilation rates. This assessment allows the applicant (and the City) to determine, before the conclusion of the environmental review process and the building materials/furnishings are specified, purchased, and installed, if the total chemical emissions will exceed cancer and non-cancer guidelines, and if so, allow for changes in the selection of specific material/furnishings and/or the design minimum outdoor air ventilations rates such that cancer and non-cancer guidelines are not exceeded.

1.) Define Indoor Air Quality Zones. Divide the building into separate indoor air quality zones, (IAQ Zones). IAQ Zones are defined as areas of well-mixed air. Thus, each ventilation system with recirculating air is considered a single zone, and each room or group of rooms where air is not recirculated (e.g. 100% outdoor air) is considered a separate zone. For IAQ Zones with the same construction material/furnishings and design minimum outdoor air ventilation rates. (e.g. hotel rooms, apartments, condominiums, etc.) the formaldehyde emission rates need only be assessed for a single IAQ Zone of that type.

2.) Calculate Material/Furnishing Loading. For each IAQ Zone, determine the building material and furnishing loadings (e.g., m^2 of material/m^2 floor area, units of furnishings/m^2 floor area) from an inventory of all potential indoor formaldehyde sources, including flooring, ceiling tiles, furnishings, finishes, insulation, sealants, adhesives, and any products constructed with composite wood products containing urea-formaldehyde resins (e.g., plywood, medium density fiberboard, particleboard).

3.) Calculate the Formaldehyde Emission Rate. For each building material, calculate the formaldehyde emission rate (µg/h) from the product of the area-specific formaldehyde emission rate (µg/m^2-h) and the area (m^2) of material in the IAQ Zone, and from each furnishing (e.g. chairs, desks, etc.) from the unit-specific formaldehyde emission rate (µg/unit-h) and the number of units in the IAQ Zone.

NOTE: As a result of the high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014), most manufacturers of building materials furnishings sold in the United States conduct chemical emission rate tests using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers," (CDPH, 2017), or other equivalent chemical emission rate testing methods. Most manufacturers of building furnishings sold in the United States conduct chemical emission rate tests using ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions (BIFMA, 2018), or other equivalent chemical emission rate testing methods.

CDPH, BIFMA, and other chemical emission rate testing programs, typically certify that a material or furnishing does not create indoor chemical concentrations in excess of the maximum concentrations permitted by their certification. For instance, the CDPH emission rate testing requires that the measured emission rates when input into an office, school, or residential model do not exceed one-half of the OEHHA Chronic Exposure Guidelines (OEHHA, 2017b) for the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017). These certifications themselves do not provide the actual area-specific formaldehyde emission rate (i.e., $\mu g/m^2$-h) of the product, but rather provide data that the formaldehyde emission rates do not exceed the maximum rate allowed for the certification. Thus, for example, the data for a certification of a specific type of flooring may be used to calculate that the area-specific emission rate of formaldehyde is less than 31 $\mu g/m^2$-h, but not the actual measured specific emission rate, which may be 3, 18, or 30 $\mu g/m^2$-h. These area-specific emission rates determined from the product certifications of CDPH, BIFA, and other certification programs can be used as an initial estimate of the formaldehyde emission rate.

If the actual area-specific emission rates of a building material or furnishing is needed (i.e. the initial emission rates estimates from the product certifications are higher than desired), then that data can be acquired by requesting from the manufacturer the complete chemical emission rate test report. For instance if the complete CDPH emission test report is requested for a CDHP certified product, that report will provide the actual area-specific emission rates for not only the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017), but also all of the cancer and reproductive/developmental chemicals listed in the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), all of the toxic air contaminants (TACs) in the California Air Resources Board Toxic Air Contamination List (CARB, 2011), and the 10 chemicals with the greatest emission rates.

Alternatively, a sample of the building material or furnishing can be submitted to a chemical emission rate testing laboratory, such as Berkeley Analytical Laboratory (https://berkeleyanalytical.com), to measure the formaldehyde emission rate.

4.) Calculate the Total Formaldehyde Emission Rate. For each IAQ Zone, calculate the total formaldehyde emission rate (i.e. µg/h) from the individual formaldehyde emission rates from each of the building material/furnishings as determined in Step 3.

5.) Calculate the Indoor Formaldehyde Concentration. For each IAQ Zone, calculate the indoor formaldehyde concentration (µg/m^3) from Equation 1 by dividing the total formaldehyde emission rates (i.e. µg/h) as determined in Step 4, by the design minimum outdoor air ventilation rate (m^3/h) for the IAQ Zone.

$$C_{in} = \frac{E_{total}}{Q_{oa}} \quad \text{(Equation 1)}$$

where:

C_{in} = indoor formaldehyde concentration (µg/m^3)

E_{total} = total formaldehyde emission rate (µg/h) into the IAQ Zone.

Q_{oa} = design minimum outdoor air ventilation rate to the IAQ Zone (m^3/h)

The above Equation 1 is based upon mass balance theory, and is referenced in Section 3.10.2 "Calculation of Estimated Building Concentrations" of the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017).

6.) Calculate the Indoor Exposure Cancer and Non-Cancer Health Risks. For each IAQ Zone, calculate the cancer and non-cancer health risks from the indoor formaldehyde concentrations determined in Step 5 and as described in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2015).

7.) Mitigate Indoor Formaldehyde Exposures of exceeding the CEQA Cancer and/or Non-Cancer Health Risks. In each IAQ Zone, provide mitigation for any formaldehyde exposure risk as determined in Step 6, that exceeds the CEQA cancer risk of 10 per million or the CEQA non-cancer Hazard Quotient of 1.0.

Provide the source and/or ventilation mitigation required in all IAQ Zones to reduce the

health risks of the chemical exposures below the CEQA cancer and non-cancer health risks.

Source mitigation for formaldehyde may include:

1.) reducing the amount materials and/or furnishings that emit formaldehyde
2.) substituting a different material with a lower area-specific emission rate of formaldehyde

Ventilation mitigation for formaldehyde emitted from building materials and/or furnishings may include:

1.) increasing the design minimum outdoor air ventilation rate to the IAQ Zone.

NOTE: Mitigating the formaldehyde emissions through use of less material/furnishings, or use of lower emitting materials/furnishings, is the preferred mitigation option, as mitigation with increased outdoor air ventilation increases initial and operating costs associated with the heating/cooling systems.

Further, we are not asking that the builder "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers," (CDPH, 2017), and use the procedure described earlier above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Outdoor Air Ventilation Impact. Another important finding of the CNHS, was that the outdoor air ventilation rates in the homes were very low. Outdoor air ventilation is a very important factor influencing the indoor concentrations of air contaminants, as it is the primary removal mechanism of all indoor air generated contaminants. Lower outdoor air exchange rates cause indoor generated air contaminants to accumulate to higher indoor air

concentrations. Many homeowners rarely open their windows or doors for ventilation as a result of their concerns for security/safety, noise, dust, and odor concerns (Price, 2007). In the CNHS field study, 32% of the homes did not use their windows during the 24-hour Test Day, and 15% of the homes did not use their windows during the entire preceding week. Most of the homes with no window usage were homes in the winter field session. Thus, a substantial percentage of homeowners never open their windows, especially in the winter season. The median 24-hour measurement was 0.26 air changes per hour (ach), with a range of 0.09 ach to 5.3 ach. A total of 67% of the homes had outdoor air exchange rates below the minimum California Building Code (2001) requirement of 0.35 ach. Thus, the relatively tight envelope construction, combined with the fact that many people never open their windows for ventilation, results in homes with low outdoor air exchange rates and higher indoor air contaminant concentrations.

The Project is close to roads with moderate to high traffic (e.g., SR-87, I-280, West San Carlos Street, Josepha Street, Park Avenue, Bird Avenue etc.) as well as air traffic from San Jose International Airport and railroad traffic by Caltrain, the VTA, Amtrak, Union Pacific, and the Altamont Corridor Express.

According to Table 3.6-4 in the Supplemental Environmental Impact Report – Marriott Townplace Suites (City of San Jose, 2021), the future noise levels at the building façade range from 61-70 dBA DNL.

As a result of the high outdoor noise levels, the current project will require a mechanical supply of outdoor air ventilation to allow for a habitable interior environment with closed windows and doors. Such a ventilation system would allow windows and doors to be kept closed at the occupant's discretion to control exterior noise within building interiors.

$PM_{2.5}$ Outdoor Concentrations Impact. An additional impact of the nearby motor vehicle traffic associated with this project, are the outdoor concentrations of $PM_{2.5}$. According to the Supplemental Environmental Impact Report – Marriott Townplace Suites (City of San Jose, 2021), the Project is located in the San Francisco Bay Area Basin, which is a State and Federal non-attainment area for $PM_{2.5}$.

An air quality analyses should to be conducted to determine the concentrations of $PM_{2.5}$ in the outdoor and indoor air that people inhale each day. This air quality analyses needs to consider the cumulative impacts of the project related emissions, existing and projected future emissions from local $PM_{2.5}$ sources (e.g. stationary sources, motor vehicles, and airport traffic) upon the outdoor air concentrations at the Project site. If the outdoor concentrations are determined to exceed the California and National annual average $PM_{2.5}$ exceedence concentration of 12 $\mu g/m^3$, or the National 24-hour average exceedence concentration of 35 $\mu g/m^3$, then the buildings need to have a mechanical supply of outdoor air that has air filtration with sufficient removal efficiency, such that the indoor concentrations of outdoor $PM_{2.5}$ particles is less than the California and National $PM_{2.5}$ annual and 24-hour standards.

It is my experience that based on the projected high traffic noise levels, the annual average concentration of $PM_{2.5}$ will exceed the California and National $PM_{2.5}$ annual and 24-hour standards and warrant installation of high efficiency air filters (i.e. MERV 13 or higher) in all mechanically supplied outdoor air ventilation systems.

Indoor Air Quality Impact Mitigation Measures

The following are recommended mitigation measures to minimize the impacts upon indoor quality:

Indoor Formaldehyde Concentrations Mitigation. Use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins (CARB, 2009). CARB Phase 2 certified composite wood products, or ultra-low emitting formaldehyde (ULEF) resins, do not insure indoor formaldehyde concentrations that are below the CEQA cancer risk of 10 per million. Only composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

Alternatively, conduct the previously described Pre-Construction Building Material/Furnishing Chemical Emissions Assessment, to determine that the combination of formaldehyde emissions from building materials and furnishings do not create indoor formaldehyde concentrations that exceed the CEQA cancer and non-cancer health risks.

It is important to note that we are not asking that the builder "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), and use the procedure described above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Outdoor Air Ventilation Mitigation. Provide each habitable room with a continuous mechanical supply of outdoor air that meets or exceeds the California 2016 Building Energy Efficiency Standards (California Energy Commission, 2015) requirements of the greater of 15 cfm/occupant or 0.15 cfm/ft^2 of floor area. Following installation of the system conduct testing and balancing to insure that required amount of outdoor air is entering each habitable room and provide a written report documenting the outdoor airflow rates. Do not use exhaust only mechanical outdoor air systems, use only balanced outdoor air supply and exhaust systems or outdoor air supply only systems. Provide a manual for the occupants or maintenance personnel, that describes the purpose of the mechanical outdoor air system and the operation and maintenance requirements of the system.

$PM_{2.5}$ Outdoor Air Concentration Mitigation. Install air filtration with sufficient $PM_{2.5}$ removal efficiency (e.g. MERV 13 or higher) to filter the outdoor air entering the mechanical outdoor air supply systems, such that the indoor concentrations of outdoor $PM_{2.5}$ particles are less than the California and National $PM_{2.5}$ annual and 24-hour

standards. Install the air filters in the system such that they are accessible for replacement by the occupants or maintenance personnel. Include in the mechanical outdoor air ventilation system manual instructions on how to replace the air filters and the estimated frequency of replacement.

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APPENDIX A

INDOOR FORMALDEHYDE CONCENTRATIONS
AND THE
CARB FORMALDEHYDE ATCM

With respect to formaldehyde emissions from composite wood products, the CARB ATCM regulations of formaldehyde emissions from composite wood products, do not assure healthful indoor air quality. The following is the stated purpose of the CARB ATCM regulation - *The purpose of this airborne toxic control measure is to "reduce formaldehyde emissions from composite wood products, and finished goods that contain composite wood products, that are sold, offered for sale, supplied, used, or manufactured for sale in California"*. In other words, the CARB ATCM regulations do not "assure healthful indoor air quality", but rather "reduce formaldehyde emissions from composite wood products".

Just how much protection do the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products? Definitely some, but certainly the regulations do not "*assure healthful indoor air quality"* when CARB Phase 2 products are utilized. As shown in the Chan 2019 study of new California homes, the median indoor formaldehyde concentration was of 22.4 $\mu g/m^3$ (18.2 ppb), which corresponds to a cancer risk of 112 per million for occupants with continuous exposure, which is more than 11 times the CEQA cancer risk of 10 per million.

Another way of looking at how much protection the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products is to calculate the maximum number of square feet of composite wood product that can be in a residence without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy.

For this calculation I utilized the floor area (2,272 ft^2), the ceiling height (8.5 ft), and the number of bedrooms (4) as defined in Appendix B (New Single-Family Residence Scenario) of the Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers, Version 1.1, 2017, California

Department of Public Health, Richmond, CA. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

For the outdoor air ventilation rate I used the 2019 Title 24 code required mechanical ventilation rate (ASHRAE 62.2) of 106 cfm (180 m^3/h) calculated for this model residence. For the composite wood formaldehyde emission rates I used the CARB ATCM Phase 2 rates.

The calculated maximum number of square feet of composite wood product that can be in a residence, without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 15 ft^2 (0.7% of the floor area), or
Particle Board – 30 ft^2 (1.3% of the floor area), or
Hardwood Plywood – 54 ft^2 (2.4% of the floor area), or
Thin MDF – 46 ft^2 (2.0 % of the floor area).

For offices and hotels the calculated maximum amount of composite wood product (% of floor area) that can be used without exceeding the CEQA cancer risk of 10 per million for occupants, assuming 8 hours/day occupancy, and the California Mechanical Code minimum outdoor air ventilation rates are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 3.6 % (offices) and 4.6% (hotel rooms), or
Particle Board – 7.2 % (offices) and 9.4% (hotel rooms), or
Hardwood Plywood – 13 % (offices) and 17% (hotel rooms), or
Thin MDF – 11 % (offices) and 14 % (hotel rooms)

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry,

could be used without causing indoor formaldehyde concentrations that result in CEQA cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

If CARB Phase 2 compliant or ULEF composite wood products are utilized in construction, then the resulting indoor formaldehyde concentrations should be determined in the design phase using the specific amounts of each type of composite wood product, the specific formaldehyde emission rates, and the volume and outdoor air ventilation rates of the indoor spaces, and all feasible mitigation measures employed to reduce this impact (e.g. use less formaldehyde containing composite wood products and/or incorporate mechanical systems capable of higher outdoor air ventilation rates). See the procedure described earlier (i.e., Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Alternatively, and perhaps a simpler approach, is to use only composite wood products (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins.

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Francis (Bud) J. Offermann PE CIH

President: Indoor Environmental Engineering,
San Francisco, CA. December, 1981 - present.
e-mail: offermann@iee-sf.com

Education

- M.S. Mechanical Engineering Stanford University, Stanford, CA.
- Graduate Studies in Air Pollution Monitoring and Control University of California, Berkeley, CA.
- B.S. in Mechanical Engineering Rensselaer Polytechnic Institute, Troy, N.Y.

Professional Affiliations

ACGIH, AIHA, ASHRAE, CSI, ASTM, ISIAQ, PARMA, and USGBC

Work Experience

Mr. Offermann PE, CIH, has 36 years experience as an IAQ researcher, technical author, and workshop instructor. He is president of Indoor Environmental Engineering, a San Francisco based IAQ R&D consulting firm. As president of Indoor Environmental Engineering, Mr. Offermann directs an interdisciplinary team of environmental scientists, chemists, and mechanical engineers in indoor air quality building investigations. Under Mr. Offermann's supervision, IEE has developed both pro-active and reactive IAQ measurement methods and diagnostic protocols. He has supervised over 2,000 IAQ investigations in commercial, residential, and institutional buildings and conducted numerous forensic investigations related to IAQ.

Litigation Experience

Mr. Offermann has been qualified numerous times in court as an expert in the field of indoor air quality and ventilation for both plaintiffs and defendants. He has been deposed over 150 times in cases involving indoor air quality/ventilation issues in commercial, residential, and institutional buildings involving construction defects, and/or operation and maintenance problems. Examples of indoor air quality cases he has worked on are alleged personal injury and/or property damages from mold and bacterial contamination/moisture intrusion, building renovation activities, insufficient outdoor air ventilation, off gassing of volatile organic compounds from building materials and coatings, malfunctioning gas heaters and carbon monoxide poisoning, and applications of pesticides. Mr. Offermann has testified with respect to the scientific admissability of expert testimony regarding indoor air quality issues via Daubert and Kelly-Frye motions.

PRESERVATION ACTION
COUNCIL OF SAN JOSE
History Park
1650 Senter Road
San Jose, CA 95112
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May 20, 2021

VIA EMAIL: Reema.Mahamood@sanjoseca.gov

Reema Mahamood
Department of Planning, Building, and Code Enforcement
200 E. Santa Clara Street, T-3
San Jose, CA 95113

Re: Marriott Townplace Suites Project Draft SEIR (C19-051 and H19-053)

Dear Ms. Mahamood,

Thank you for the opportunity to provide comments on the Draft SEIR for the Marriott Townplace Suites Project, a proposed seven-story, 175-room hotel development on an 0.6-acre site in Downtown San Jose. As proposed, the project calls for the demolition of six existing structures fronting West San Carlos and Josepha Streets. PAC*SJ strongly concurs with the DSEIR findings that two of these structures qualify as Candidate City Landmarks, and should therefore be considered as qualified historic resources under CEQA.

In general, PAC*SJ appreciates the response to our Notice of Preparation comments and acknowledges that a good-faith effort was made to explore project alternatives that would avoid demolition of these resources. We also appreciate the inclusion of mitigation measures that will allow for complete digital recordation of the impacted sites (MM CUL-1.2) and a requirement for documenting selective deconstruction/reverse construction prior to demolition. As part of this required mitigation scope, we strongly encourage the City and applicant to investigate whether any elements of the historic storefront and signage visible in the circa-1920 photograph of 497-99 West San Carlos (Appendix C, Figure 20) have survived beneath later building alterations. If so, all effort should be made to salvage these elements.

We also suggest that the figures illustrating DSEIR Project Alternatives 4, 5, and 6 (Figures 7.4-1, 7.4-2, and 7.4-3) be further annotated. We believe Figures 7.4-2 and 7.4-3 are mislabeled, and we suggest adding street names and cardinal directions to all figures for ease of comparison. It appears that massing modules of different sizes are rendered in specific colors, but no explanation or key is included. Without this context, it is difficult to understand what these figures are intended to illustrate or analyze.

PAC*SJ
PRESERVATION ACTION COUNCIL OF SAN JOSE

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We again thank you for the opportunity to provide these comments and look forward to continued cooperation with the City and the project developer to address these issues through an appropriate and comprehensive mitigation strategy.

Sincerely,

Ben Leech
Executive Director
Preservation Action Council of San Jose

cc: Tom Holt (tholt@urbancatalyst.com)
Dana Peak (Dana.Peak@sanjoseca.gov)

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VIA EMAIL ONLY

May 27, 2021

Reema Mahamood, Planner III
Department of Planning, Building and Code Enforcement
200 East Santa Clara Street, 3rd Floor Tower
San José, CA 95113
Email: Reema.Mahamood@sanjoseca.gov

Re: Draft SEIR Comment Supplement
Marriot Townplace Suites - San Jose (C19-051 & H19-053)

Dear Ms. Mahamood:

I am writing on behalf of Laborers' International Union of North America, Local Union 270 and its members living or working in and around the City of San Jose ("LIUNA") to supplement LIUNA's previous May 20, 2021 comment regarding the draft supplemental environmental impact report ("draft SEIR") prepared for the Marriott Townplace Suites Project (C19-051 & H19-053) ("Project") in San Jose.

LIUNA's previous comment contained the analysis of Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH, regarding the Project's indoor air impacts. This comment includes the analysis of air quality experts Matt Hagemann, P.G., C.Hg., and Paul E. Rosenfeld, Ph.D., of the Soil/Water/Air Protection Enterprise ("SWAPE"). SWAPE's comment and CVs are attached as Exhibit A.

I. The draft SEIR underestimated the Project's emissions.

SWAPE found that the draft SEIR underestimated the Project's emissions and therefore cannot be relied upon to determine the significant of the Project's air quality impacts. The draft SEIR relies on emissions calculated from the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod"). (Ex. A, p. 1) This model, which is used to generate a project's construction and operational emissions, relies on recommended default values based on site specific information related to a number of factors (*Id.*, pp. 1-2.) CEQA requires that any changes to the default values must be justified by substantial evidence. (*Id.*)

SWAPE reviewed the Project's CalEEMod output files and found that the values input

into the model were inconsistent with information provided in the draft SEIR. (Ex. A, p. 2.) This results in an underestimation of the Project's emissions. (*Id*.) As a result, the draft SEIR's air quality analysis cannot be relied upon to estimate the Project's emissions.

Specifically, SWAPE found that the following values used in the draft SEIR's air quality analysis were either inconsistent with information provided in the draft SEIR or otherwise unjustified:

1. Unsubstantiated Construction Phase Lengths (Ex. A, pp. 2-3.)
2. Unsubstantiated Changes to Off-Road Equipment (Ex. A, pp. 3-5.)
3. Unsubstantiated Changes to Construction Trips (Ex. A, pp. 5-6.)
4. Unsubstantiated Changes to Wastewater Treatment System (Ex. A, pp. 6-7.)
5. Improper Application of Construction Mitigation Measures (Ex. A, pp. 7-9.)
6. Improper Application of Operational Mitigation Measures (Ex. A, pp. 9-11.)

As a result of these errors in the draft SEIR, the Project's construction and operational emissions are underestimated and cannot be relied upon to determine the significance of the Project's air quality impacts.

II. The draft SEIR inadequately analyzed the Project's impact on human health due to emissions of diesel particulate matter.

The draft SEIR concluded that the Project would result in a less-than-significant health risk impact based on quantified health risk assessment ("HRA"). However, SWAPE found that draft SEIR's HRAs were inadequate (Ex. A., p. 12.)

First, the draft SEIR's construction HRA relies on the same flawed air model discussed above. (Ex. A, p. 12.) Because the air model underestimated the Project's emissions, the HRA underestimated the Project's diel particulate matter ("DPM") emissions. As such, the HRA cannot be relied upon to estimate the Project's construction-related health risks. (*Id*.)

Second, the draft SEIR fails to include a quantified HRA to evaluates the Project's health risks to nearby sensitive receptors for the entirety of Project operation. (Ex. A, p. 12.) The Project would generate approximately 738.5 average daily vehicle trips, yet the draft SEIRvague does not disclose or discuss the concentrations at which such pollutants would trigger adverse health effects. (*Id*.) Thus, the draft SEIR is inconsistent with CEQA's requirement to correlate the increase in emissions generated by the Project with the potential adverse impacts on human health. (*Id*.)

Third, the failure of the draft SEIR to provide a quantified HRA is inconsistent with the most recent guidance of the Office of Environmental Health Hazard Assessment ("OEHHA"). OEHHA recommends that exposure from projects lasting more than 6 months 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"). (Ex. A, p. 12.) Therefore, the SEIR must include an analysis of health risks resulting from operation of

the Project. (*Id*.)

Lastly, the draft SEIR fails to sum the cancer risk calculated for each age group for the entirety of Project construction and operation together. (Ex. A, p. 13.) OEHHA guidance requires that "the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk at the receptor location." (*Id*.) As such, the draft SEIR should have quantified and summed the cancer risks from construction *and* operation of the Project.

III. The Project will result in a potentially significant impact to human health from emissions of diesel particulate matter.

SWAPE prepared a screening-level health risk assessment ("HRA") to evaluate potential DPM impacts from the construction and operation of the Project. (Ex. A, pp. 13-16.) SWAPE used AERSCREEN, the leading screening-level air quality dispersion model. (*Id*. at p. 13.) SWAPE used a sensitive receptor distance of 25 meters and analyzed impacts to individuals at different stages of life based on OEHHA and BAAQMD guidance. (*Id*. at pp. 14-16.)

SWAPE found that the excess cancer risk for adults, children, and infants, at the closest sensitive receptor located approximately 25 meters away, over the course of Project construction and operation, are approximately 17, 110, and 41 in one million, respectively. (Ex. A, p. 15.) Moreover, SWAPE found that the excess cancer risk over the course of a residential lifetime is approximately 240 in one million. (*Id*.) Thus, the infant, child, adult, and lifetime cancer risks all exceed the BAAQMD threshold of 10 in one million. Therefore, an updated SEIR must be prepared to disclose and mitigate the Project's significant health risk impact.

IV. The draft SEIR inadequately addresses the Arena Project's impacts on greenhouse gases.

The draft SEIR relies upon the Project's consistency with the City's 2030 Greenhouse Gas Reduction Strategy ("GHGRS") in order to conclude that the Project would result in a less-than-significant greenhouse gas ("GHG") impact. (Ex. A, p. 16.) As explained in the draft SEIR, ". . . a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the GHGRS." (Draft SEIR, App. D, p. 1.)

However, SWAPE found that the Project is inconsistent with numerous policies in the GHGRS (Ex. A, pp. 17-24.) For example, the draft SEIR claims that the Project is consistent with Policy MS-2.2 ("Encourage maximized use of on-site generation of renewable energy for all new and existing buildings") because "The project includes solar hot water." (Draft SEIR, App. D, p. 5.) However, as SWAPE notes, "heating water does <u>not</u> constitute 'on-site generation of renewable energy." (Ex. A, p. 17.) As another example, the draft SEIR claims the Project is consistent with Policy MS-3.2 ("Promote the use of green building technology or techniques that can help reduce the depletion of the City's potable water supply") because "The project will implement sustainability measures equivalent to LEED Silver." (Draft SEIR, App. D, p. 9.) However, as SWAPE notes, just because he Project meets LEED Silver standards, it ddoes not

necessarily follow that the Project would "help reduce the depletion of the City's potable water supply" or "promote the use of captured rainwater, graywater, or recycled water as required by Policy MS 3.2. (Ex. A, p. 22.)

By failing to demonstrate actual compliance with the GHGRS, the draft SIER's conclusions as to the Project's GHG impacts cannot be relied upon. In order to mitigate the project's GHG impacts, the City should ensure that all Project design features are included as formal mitigation measures to ensure that the measures will be implemented and enforceable. (Ex. A, p. 24.)

CONCLUSION

For the foregoing reasons and the reasons stated in LIUNA's May 20 comment, the draft SEIR for the Project should be revised and circulated for public review and comment in accordance with CEQA. Thank you for considering these comments.

Sincerely,

Brian B. Flynn
Lozeau Drury LLP

EXHIBIT A

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

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May 20, 2021

Brian Flynn
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Subject: Comments on the on the Marriott Townplace Suites (C19-051 & H19-053)

Dear Mr. Flynn,

We have reviewed the Supplemental Environmental Impact Report ("SEIR") for the Marriott Townplace Suites Project ("Project") located in the City of San Jose ("City"). The Project proposes to demolish 26,233-SF of existing buildings and construct a 114,577-SF, 175-room hotel, as well as 117 parking spaces within an on-site parking garage, on the 0.6-acre site.

Our review concludes that the SEIR fails to adequately evaluate the Project's air quality, health risk, and greenhouse gas impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An SEIR should be prepared to adequately assess and mitigate the potential air quality, health risk, and greenhouse gas impacts that the project may have on the surrounding environment.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The SEIR's air quality analysis relies on emissions calculated with CalEEMod.2016.3.2 (p. 4.3-6).[1] CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input

[1] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4.

project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence. Once all of the values are inputted into the model, the Project's construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters are utilized in calculating the Project's air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

When reviewing the Project's CalEEMod output files, provided in the Marriott Hotel 495 W. San Carlos Street Air Quality and Greenhouse Gas Assessment ("AQ & GHG Assessment") as Appendix B to the SEIR, we found that several model inputs were not consistent with information disclosed in the SEIR. As a result, the Project's construction and operational emissions are underestimated. As a result, an updated SEIR should be prepared to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Unsubstantiated Changes to Individual Construction Phase Lengths

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default individual construction phase lengths (see excerpt below) (Appendix B, pp. 43, 89).

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	94.00
tblConstructionPhase	NumDays	100.00	132.00
tblConstructionPhase	NumDays	10.00	39.00
tblConstructionPhase	NumDays	2.00	25.00
tblConstructionPhase	NumDays	5.00	63.00
tblConstructionPhase	NumDays	1.00	18.00

As a result, the model includes a construction schedule as follows (see excerpt below) (Appendix B, pp. 62-63).

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/4/2021	2/11/2021	7	39	
2	Site Preparation	Site Preparation	2/22/2021	3/11/2021	7	18	
3	Grading	Grading	3/22/2021	4/15/2021	7	25	
4	Trenching	Trenching	4/26/2021	8/5/2021	7	102	
5	Building Construction	Building Construction	8/24/2021	1/2/2022	7	132	
6	Architectural Coating	Architectural Coating	2/18/2022	5/22/2022	7	94	
7	Paving	Paving	5/24/2022	7/25/2022	7	63	

As you can see in the excerpt, the demolition phase was increased by approximately 290%, from the default value of 10 to 39 days; the site preparation phase was increased by approximately 1,700%, from the default value of 1 to 18 days; the grading phase was increased by approximately 1,150%, from the default value of 2 to 25 days; the building construction phase was increased by approximately 32%, from the default value of 100 to 132 days; the architectural coating phase was increased by approximately

1,780%, from the default value of 5 to 94 days; and the paving phase was increased by approximately 1,160%, from the default value of 5 to 63 days.

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[2] According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is: "provided construction schedule" (Appendix B, pp. 41, 87). Furthermore, the SEIR states:

> "Construction of the proposed project is estimated to start in Winter 2021 and would take approximately 19 months to complete" (p. 10).

However, while the SEIR provides the overall construction duration, it fails to justify or the provide the revised individual construction phase lengths. As a result, we cannot verify the revised individual construction phase lengths and the changes are unsubstantiated.

These unsubstantiated changes present an issue, as they improperly spread out construction emissions over a longer period of time than is anticipated for the Project. According to the CalEEMod User's Guide, each construction phase is associated with different emissions activities (see excerpt below).[3]

> ***Demolition*** involves removing buildings or structures.
>
> ***Site Preparation*** involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
>
> ***Grading*** involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.
>
> ***Building Construction*** involves the construction of the foundation, structures and buildings.
>
> ***Architectural Coating*** involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.
>
> ***Paving*** involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.

As such, by disproportionately altering individual construction phase lengths without proper justification, the models' calculations are altered and underestimate emissions. Thus, by including unsubstantiated changes to the default architectural coating and paving phase lengths, the model may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Off-Road Equipment Unit Amounts and Usage Hours

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default

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[2] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

[3] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 31.

off-road construction equipment unit amounts and usage values (see excerpt below) (Appendix B, pp. 44-45).

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	1.30
tblOffRoadEquipment	UsageHours	8.00	6.20
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	6.10
tblOffRoadEquipment	UsageHours	8.00	6.70
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	1.00	6.20
tblOffRoadEquipment	UsageHours	1.00	6.40
tblOffRoadEquipment	UsageHours	8.00	6.10
tblOffRoadEquipment	UsageHours	6.00	6.20
tblOffRoadEquipment	UsageHours	6.00	6.40
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	8.00	6.70

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[4] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "provided construction schedule" (Appendix B, pp. 41-42, 87-88). Furthermore, the AQ & GHG Assessment provides an equipment list, but states: "Equipment listed in this sheet is to provide an example of inputs" (Appendix B, pp. 39). However, these changes remain unsupported for two reasons.

First, the SEIR and associated documents fail to justify or provide the revised unit amounts and usage hours values whatsoever

Second, simply providing an example construction list does not justify the revised unit amounts and usage hours inputted into the model. Rather, according to the CalEEMod User's Guide:

[4] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

> "CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, *provided that the information is supported by substantial evidence as required by CEQA*." [5]

Thus, as the AQ & GHG Assessment fails to provide substantial evidence to support the revised equipment unit amounts and usage hours, we cannot verify the changes.

These unsubstantiated changes present an issue, as CalEEMod uses the off-road equipment unit amounts and usage hours to calculate emissions associated with off-road construction equipment.[6] By including unsubstantiated changes to the default off-road construction equipment unit amounts and usage hours, the models may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Construction Trip Lengths and Numbers

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default construction trip lengths and numbers (excerpt below) (Appendix B, pp. 45-46, 91-92).

Table Name	Column Name	Default Value	New Value
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripNumber	119.00	0.00
tblTripsAndVMT	HaulingTripNumber	125.00	0.00
tblTripsAndVMT	VendorTripNumber	29.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	74.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	0.00

As you can see in the excerpt above, the hauling trip length was decreased from the default value of 20- to 7.3-miles, and the hauling, vendor, and worker trip numbers were decreased to zero. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[7] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "0 trips EMFAC2017, 25tons pavement demo = 5 demo trips +119 = 124, building const = 350 total round cement truck trips" (Appendix B, pp. 42, 88). Furthermore, regarding the construction vehicle trip lengths, the AQ & GHG Assessment states:

---

[5] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 12.
[6] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 32.
[7] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

"Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and *20 miles for hauling*" (emphasis added) (Appendix B, p. 9).

However, these changes are unsupported for two reasons.

First, as the AQ & GHG Assessment claims the hauling trip length is based on the CalEEMod default length, the change to the default value is unsubstantiated.

Second, while the AQ & GHG Assessment discusses the vehicle mix, trip numbers, trip distances, and idling times of construction trips, it fails to demonstrate how the Project's on-road construction-related vehicle emissions were calculated (Appendix B, p. 9). Absent additional information regarding the AQ & GHG Assessment's analysis of the Project's on-road construction-related vehicle emissions, we cannot verify these changes and the less-than-significant air quality impact conclusion should not be relied upon.

These unsubstantiated changes present an issue, as CalEEMod uses hauling, vendor, and worker trip lengths and numbers to calculate the Project's construction-related emissions associated with on-road vehicles.[8] Thus, by including unsubstantiated changes to the default hauling, vendor, and worker trip lengths and numbers, the models may underestimate the Project's mobile-source construction-related emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Wastewater Treatment System Percentages

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include several changes to the default wastewater treatment system percentages (see excerpt below) (Appendix B, pp. 59-60, 105).

Table Name	Column Name	Default Value	New Value
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

As you can see in the excerpt above, the model assumes that the Project's wastewater would be treated 100% aerobically. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[9] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "WWTP 100% aerobic" (Appendix B, pp. 42, 88). Furthermore, according to the AQ & GHG Assessment, "[w]ater/wastewater use were changed to 100% aerobic conditions to represent treatment plant conditions" (Appendix B, p. 12). Finally, the SEIR states:

[8] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 34.
[9] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

> "CalEEMod defaults for energy use and emissions associated with solid waste generation and water/wastewater use were used" (p. 25).

However, these changes remain unsupported for two reasons. First, the SEIR fails to provide a source to support its claim that the treatment plan for the Project's wastewater would be 100% aerobic. Second, the AQ & GHG Assessment and CalEEMod models directly contradict the SEIR, which claims that CalEEMod defaults for water/wastewater were used. As a result, the revised wastewater treatment system percentages are unsubstantiated.

These unsubstantiated changes present an issue, as each type of wastewater treatment system is associated with different GHG emission factors, which are used by CalEEMod to calculate the Project's total GHG emissions.[10] Thus, by including unsubstantiated changes to the default wastewater treatment system percentages, the models may underestimate the Project's GHG emissions and should not be relied upon to determine Project significance.

Incorrect Application of Construction-Related Mitigation Measures

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include the following construction-related mitigation measures (see excerpt below) (Appendix B, pp. 64):

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment
Use Cleaner Engines for Construction Equipment
Use Soil Stabilizer
Replace Ground Cover
Water Exposed Area
Reduce Vehicle Speed on Unpaved Roads

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[11] According to the "User Entered Comments and Non-Default Data" table, the justification provided for the inclusion of these measures is: "BMPs, Tier 4 interim mitigation, electric stationary equip" (Appendix B, pp. 42, 88). Furthermore, the SEIR includes MM AIR-1.1, which states:

> "Prior to the issuance of any demolition, grading, or building permits (whichever occurs earliest), the project applicant shall submit a construction operations plan to the Director of Planning or Director's designee of the City of San José Department of Planning, Building and Code Enforcement that includes specifications of the equipment to be used during construction and that outlines how the mitigation measure will be achieved. The plan shall be accompanied by a

[10] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 45.
[11] CalEEMod User Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 2, 9.

letter signed by an air quality specialist, verifying that the equipment included in the plan meets the standards set forth below.

- For all construction equipment larger than 25 horsepower operating on-site for more than two days continuously or 20 hours total, use equipment that meets U.S. Environmental Protection Agency (EPA) Tier 4 particulate matter emissions standards.
- If Tier 4 equipment is not available, all construction equipment larger than 25 horsepower used at the site for more than two days continuously or 20 hours total shall use equipment that 1) meet the U.S. EPA emission standards for Tier 3 engines and include CARB-certified Level 3 Diesel Particulate Filters or equivalent that together achieve an 85 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment and/or 2) use alternatively-fueled equipment (e.g., nondiesel) that would meet this reduction requirement.
- Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment, such as generators, air compressors, and concrete/industrial saws" (p. iii – iv).

However, the inclusion of the "Use Alternative Fuel for Construction Equipment," "Use Soil Stabilizer Replace Ground Cover," "Water Exposed Area," and "Reduce Vehicle Speed on Unpaved Roads" construction-related mitigation measures remains unsupported.

First, simply because MM AIR-1.1 requires the Project to provide power lines during construction does not guarantee that electric construction equipment would be used. As a result, the inclusion of the "Use Alternative Fuel for Construction Equipment" construction-related mitigation measure is unsubstantiated.

Second, while best management practices ("BMPs") are recommended by the BAAQMD, they are not required. Specifically, the May 2017 BAAQMD CEQA Guidelines state:

> "For fugitive dust emissions, staff ***recommends*** following the current best management practices approach which has been a pragmatic and effective approach to the control of fugitive dust emissions. Studies have demonstrated (Western Regional Air Partnership, U.S.EPA) that the application of best management practices at construction sites have significantly controlled fugitive dust emissions. Individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent. In the aggregate best management practices will substantially reduce fugitive dust emissions from construction sites. These studies support staff's recommendation that ***projects implementing construction best management practices will reduce fugitive dust emissions to a less than significant level***."[12]

[12] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. D-47.

As you can see in the excerpt above, BMPs are recommended, but not required. Thus, the justification provided by the "User Entered Comments & Non-Default Data" table fails to justify the inclusion of BMPs. As a result, the inclusion of the "Use Soil Stabilizer Replace Ground Cover," "Water Exposed Area," and "Reduce Vehicle Speed on Unpaved Roads" construction-related mitigation measures remains unsupported. By incorrectly including a construction-related mitigation measure, the models underestimates the Project's construction-related emissions and should not be relied upon to determine Project significance.

Incorrect Application of Operational Mitigation Measures

Review of the CalEEMod output files demonstrates that the "Marriott Townplace Suites Hotel, San Jose" and "Marriott Townplace Suites Hotel, San Jose – 2030" models include the following energy-, water-, and waste-related operational mitigation measures (see excerpt below) (Appendix B, pp. 79, 83, 84, 108, 112, 113):

Energy-Related Operational Mitigation Measure:

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

Water-Related Operational Mitigation Measure:

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Waste-Related Operational Mitigation Measure:

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[13] According to the "User Entered Comments and Non-Default Data" table, the justification provided for the inclusion of this energy-related operational mitigation measures is: "SJCE 100% carbon free renewable energy," "Water conservation measures, on-site storage and low flow," and "Recycling and composting waste" (Appendix B, pp. 42, 88). Furthermore, according to the SEIR:

> "Climate Smart San José is a plan to reduce air pollution, save water, and create a stronger and healthier community. The City approved goals and milestones in February 2018 to ensure the City can substantially reduce GHG emissions through reaching the following goals and milestones: …

[13] CalEEMod User Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 2, 9.

- San Jose Clean Energy (SJCE) will provide 100-percent carbon-free base power by 2021" (p. 69).

Finally, the SEIR states:

> "The 2030 GHGRS identifies required General Plan policies and strategies to be implemented by development projects in the areas of green building/energy use, multimodal transportation, water conservation, and solid waste reduction" (p. 72).

However, the inclusion of these operational mitigation measures remains unsupported for three reasons.

First, the SEIR fails mention or require the Project to institute recycling and composting services whatsoever.

Second, simply because the Project's utility company would provide 100% carbon-free energy, does not mean that the proposed Project would implement any energy-related operational mitigation measures whatsoever.

Third, the inclusion of these operational mitigation measures, based on the Project's compliance with the 2030 GHGRS, is unsupported. According to the Association of Environmental Professionals' *CEQA Portal Topic Paper* on mitigation measures:

> "By definition, *mitigation measures are not part of the original project design*. Rather, mitigation measures are actions taken by the lead agency to reduce impacts to the environment resulting from the original project design. Mitigation measures are identified by the lead agency after the project has undergone environmental review and are *above-and-beyond existing laws, regulations, and requirements* that would reduce environmental impacts" (emphasis added).[14]

As you can see in the excerpt above, mitigation measures "are not part of the original project design" and are intended to go "above-and-beyond" existing regulatory requirements. As such, the inclusion of these measures, based solely on the Project's compliance with existing policies and regulations, is unsubstantiated.

Fourth, AEP guidance states:

> "While not "mitigation", a good practice is *to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP)*. Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, *it is easy for someone not involved in the original environmental process to approve a change to the project*

[14] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 5.

that could eliminate one or more of the design features without understanding the resulting environmental impact" (emphasis added).[15]

As you can see in the excerpts above, design features that are not formally included as mitigation measures may be eliminated from the Project's design altogether. Thus, as the above-mentioned energy-, water-, and waste-related operational measures are not formally included as mitigation measures, we cannot guarantee that they would be implemented, monitored, and enforced on the Project site. As a result, the inclusion of the above-mentioned operational mitigation measures in the model is incorrect. By incorrectly including several energy-, water-, and waste-related operational mitigation measures, without properly committing to their implementation, the models may underestimate the Project's operational emissions and should not be relied upon to determine Project significance.

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The SEIR concludes that the Project would result in a less-than-significant health risk impact based on a quantified health risk analyses ("HRA(s)") evaluating the impacts of Project construction and the proposed emergency generator. Specifically, the SEIR estimates that Project construction and the proposed emergency generator would result in a combined, mitigated excess cancer risk of 9.3 in one million, which would not exceed the BAAQMD threshold of 10 in one million (see excerpt below) (p. 34, Table 3.1-7).

Table 3.1-7: Cumulative Community Risk Impacts from Combined TAC Sources at MEI

Source	Maximum Cancer Risk* (per million)	$PM_{2.5}$ Concentration* ($\mu g/m^3$)	Hazard Index (HI)
Total/Maximum Project Risks (Years 0-30)			
Unmitigated	<112.0 (infant)	1.29	0.11
Mitigated	9.3 (infant)	0.27	0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>0.1***
Significant?			
Unmitigated	***Yes***	***Yes***	No
Mitigated	No	No	No

Regarding the potential health risk impacts associated with Project operation, the SEIR states:

"The project would generate some traffic, consisting mostly of light-duty vehicles that are not a source of substantial TACs or PM2.5. Based on the project's trip generation estimates provided by the traffic study, the project would add 738 maximum daily trips on Josefa Street. Even with the maximum project's trips included, the average daily traffic (ADT) on Josefa Street would be

[15] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

below 10,000 vehicles. Therefore, the project's increase in traffic would be a negligible source of TACs and PM2.5" (p. 28).

However, the SEIR's evaluation of the Project's potential health risk impacts, as well as the subsequent less-than-significant impact conclusion, is incorrect for three reasons.

First, the SEIR's construction HRA is incorrect, as it relies upon exhaust estimates from flawed air models, as discussed above (Appendix B, p. 14). Thus, the construction HRA utilizes an underestimated diesel particulate matter ("DPM") concentration to calculate the health risk associated with Project construction. As such, the SEIR's construction HRA, which relies upon an incorrect and unsubstantiated air model, should not be relied upon to determine the significance of the Project's health risk impacts.

Second, while the SEIR includes a quantified HRA for the proposed emergency generator, the SEIR fails to prepare a quantified HRA evaluating the potential impacts posed by *the entirety of Project operation* to nearby, existing sensitive receptors. This is incorrect, as the Project's CalEEMod output files indicate that the Project would generate approximately 738.5 average daily vehicle trips, which would generate additional exhaust emissions and continue to expose nearby sensitive receptors to DPM emissions (Appendix B, pp. 79, 107). However, the SEIR's vague discussion of the potential TAC emissions resulting from Project operation fails to indicate the concentrations at which such pollutants would trigger adverse health effects. Thus, without making a reasonable effort to connect the entirety of the Project's operational TAC emissions to the potential health risks posed to nearby receptors, the SEIR is inconsistent with CEQA's requirement to correlate the increase in emissions generated by the Project with the potential adverse impacts on human health.

Third, the SEIR's conclusion is also inconsistent with the most recent guidance published by the Office of Health Hazard Assessment ("OEHHA"). OEHHA, the organization responsible for providing guidance on conducting HRAs in California, released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments* in February 2015, as referenced by the AQ & GHG Assessment (Appendix B, p. 2).[16] The OEHHA document recommends that exposure from projects lasting more than 6 months 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").[17] 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, we recommend that health risk impacts from Project operation also be evaluated, as a 30-year exposure duration vastly exceeds the 6-month requirement set forth by OEHHA. These recommendations reflect the most recent state health risk policies, and as such, we recommend that an analysis of health risk impacts posed to nearby sensitive receptors from Project operation be included in an updated EIR for the Project.

[16] "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

[17] "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

Fourth, while the SEIR includes HRAs for Project construction and the proposed emergency generator, the SEIR fails to sum the cancer risk calculated for each age group for the *entirety of Project construction and operation together*. This is incorrect and, as a result, the SEIR's health risk impact evaluation and significance conclusion should not be relied upon. According to the OEHHA guidance, as referenced by the AQ & GHG Assessment, "the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk at the receptor location," as previously stated (Appendix B, p. 2).[18] Therefore, the HRA should have quantified and summed the Project's construction-related and operational cancer risks, as stated in the OEHHA guidance.

Screening-Level Assessment Indicates a Potentially Significant Health Risk Impact

In order to conduct our screening-level risk assessment we relied upon AERSCREEN, which is a screening level air quality dispersion model.[19] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[20] and the California Air Pollution Control Officers Associated ("CAPCOA")[21] 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 operational health risk impact to residential sensitive receptors using the annual PM_{10} exhaust estimates from the SEIR's CalEEMod output files. Consistent with recommendations set forth by OEHHA, we assumed residential exposure begins during the third trimester stage of life. Subtracting the 567-day construction period from the total residential duration of 30 years, we assumed that after Project construction, the sensitive receptor would be exposed to the Project's operational DPM for an additional 28.45 years, approximately. The Project's operational CalEEMod emissions indicate that operational activities will generate approximately 44 pounds of DPM per year throughout operation. To account for the variability in equipment usage and truck trips over Project operation, we calculated an average DPM emission rate by the following equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{44\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.00063\ g/s}$$

Using this equation, we estimated an operational emission rate of 0.00063 g/s. Construction and operational activity was simulated as a 0.6-acre rectangular area source in AERSCREEN with dimensions of 50 by 49 meters. A release height of three meters was selected to represent the height of exhaust stacks on operational equipment and other heavy-duty vehicles, and an initial vertical dimension of one

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[18] "Guidance Manual for preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 8-4

[19] U.S. EPA (April 2011) AERSCREEN Released as the EPA Recommended Screening Model, http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf

[20] "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

[21] CAPCOA (July 2009) Health Risk Assessments for Proposed Land Use Projects, http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf.

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 concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[22] According to the IS/MND, the nearest sensitive receptors are "adjacent multi-family residences approximately 10 feet [3.05 meters] to the north and east of the project site" (p. 23). Thus, the single-hour concentration for Project operation estimated by AERSCREEN is 4.163 µg/m^3 DPM at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.4163 µg/m^3 for Project operation at the MEIR.

We calculated the excess cancer risk to the MEIR using applicable HRA methodologies prescribed by OEHHA. Consistent with the 567-day construction schedule included in the Project's CalEEMod output files, the annualized average concentration for Project operation was used for the remainder of the 30-year exposure period, which makes up the remaining 0.7 years of the infantile stage of life, the entire child stage of life (2 – 16 years), and the entire the adult stage of life (16 – 30 years).

Consistent with the AQ & GHG Assessment's methodology, we used Age Sensitivity Factors ("ASF(s)") to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution (Appendix B, pp. 35). According to this guidance, the quantified cancer risk should be multiplied by a factor of ten during the third trimester of pregnancy and during the first two years of life (infant) as well as multiplied by a factor of three during the child stage of life (2 – 16 years). We also included the quantified cancer risk without adjusting for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution in accordance with older OEHHA guidance from 2003. This guidance utilizes a less health protective scenario than what is currently recommended by SCAQMD, the air quality district with jurisdiction over the City, and several other air districts in the state. Furthermore, in accordance with the guidance set forth by OEHHA, we used the 95th percentile breathing rates for infants.[23] 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

[22] "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." EPA, 1992, *available at*: http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf; *see also* "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 p. 4-36.

[23] "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act," July 2018, *available at:* http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588supplementalguidelines.pdf, p. 16.
"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

receptors.[24] We used a cancer potency factor of 1.1 (mg/kg-day)$^{-1}$ and an averaging time of 25,550 days. The results of our calculations are shown below.

The Maximally Exposed Individual at an Existing Residential Receptor					
Activity	**Duration (years)**	**Concentration (ug/m3)**	**Breathing Rate (L/kg-day)**	**ASF**	**Cancer Risk with ASFs***
Construction	0.25	*	361	10	*
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	
Construction	1.30	*	1090	10	*
Operation	0.70	0.4163	1090	10	4.1E-05
Infant Exposure Duration	***2.00***			***Infant Exposure***	***4.1E-05***
Operation	14.00	0.4163	572	3	1.1E-04
Child Exposure Duration	***14.00***			***Child Exposure***	***1.1E-04***
Operation	14.00	0.4163	261	1	1.7E-05
Adult Exposure Duration	***14.00***			***Adult Exposure***	***1.7E-05***
* Construction-related cancer risk calculated separately in the SEIR.					

As demonstrated in the table above, the excess cancer risks to adults, children, and infants at the MEIR located approximately 25 meters away, over the course of Project operation, are approximately 17, 110, and 41 in one million, respectively. When summing Project's operational cancer risk, as estimated by SWAPE, with the SEIR's mitigated cancer risk estimate of 9.3 in one million (for Project construction and the proposed emergency generator), we estimate an excess cancer risk of approximately in one million over the course of a residential lifetime (30 years) (p. 34, Table 3.1-7).[25] The infant, child, adult, and lifetime cancer risks exceed the BAAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not previously addressed or identified by the SEIR.

An agency must include an analysis of health risks that connects the Project's air emissions with the health risk posed by those emissions. Our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection. [26] The purpose of the screening-level construction and operational HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. Our screening-level HRA demonstrates that construction and operation of the Project could result in a potentially significant health risk impact,

[24] "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

[25] Calculated: 9.3 in one million + 41 in one million + 110 in one million + 17 in one million = 177.3 in one million.

[26] "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, p. 1-5

when correct exposure assumptions and up-to-date, applicable guidance are used. Therefore, since our screening-level HRA indicates a potentially significant impact, the City should prepare an updated EIR with an HRA which makes a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors. Thus, the City should prepare an updated, quantified air pollution model as well as an updated, quantified refined health risk assessment which adequately and accurately evaluates health risk impacts associated with both Project construction and operation.

Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

The SEIR relies upon the Project's consistency with the City's 2030 Greenhouse Gas Reduction Strategy ("GHGRS") in order to conclude that the Project would result in a less than significant impact with respect to greenhouse gases ("GHGs") (p. 72-73). Specifically, according to the Compliance Checklist, provided as Appendix D to the SEIR:

> "Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the GHGRS" (Appendix D, p. 1).

However, review of the City's GHGRS reveals that the Project is inconsistent with numerous measures, including but not limited to those listed below:

City of San Jose 2030 Greenhouse Gas Reduction Strategy Compliance Checklist[27]	
GHGRS Strategies Consistency	
Strategy 1: Energy & Water Efficient Buildings	
1. Consistency with the Land Use/Transportation Diagram (Land Use and Density)	Here, the Project's Compliance Checklist states that the Project would be: "consistent with the Land Use/Transportation Diagram because it locates commercial (and hotel) development on a downtown site within a designated Urban Village" (Appendix D, p. 4). However, this response is insufficient, as the Project fails to mention or address density whatsoever. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
2. Implementation of Green Building Measures ***MS-2.2:*** *Encourage maximized use of on-site generation of renewable energy for all new and existing buildings.*	Here, the Compliance Checklist states: "The project includes solar hot water" (Appendix D, p. 5). However, this response is insufficient for two reasons. First, solar hot water is only mentioned once in the SEIR, and the SEIR fails to elaborate, or discuss enforcement and implementation whatsoever. Second, heating water does *not* constitute "on-site generation of renewable energy," as solar water heaters do *not* generate energy, but rather passively heat water. Thus, we cannot verify that the Project will include any on-site renewable energy generation. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
2. Implementation of Green Building Measures ***MS-2.3:*** *Encourage consideration of solar orientation, including building placement, landscaping, design and construction techniques for new construction to minimize energy consumption.*	Here, the Compliance Checklist states: "The project is located on a corner site that will maximize solar orientation" (Appendix D, p. 5). However, this response is insufficient for two reasons. First, simply because the Project would be located on a corner site, does not mean that the Project would be oriented to minimize energy consumption through solar orientation. Second, the SEIR fails to mention this measure.

[27] "2030 Greenhouse Gas Reduction Strategy." City of San Jose, August 2020, *available at:* https://www.sanjoseca.gov/home/showpublisheddocument/63667/637347412207870000.

	As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
2. Implementation of Green Building Measures ***MS-2.7:*** *Encourage the installation of solar panels or other clean energy power generation sources over parking areas.*	The Compliance Checklist indicates that this measure is inapplicable to the proposed Project, stating: "Parking is located within a structured parking garage with landscaped area and hotel units above" (Appendix D, p. 5). However, this response is insufficient. Simply because there are hotel units above the parking garage does not mean that the Project would be unable to encourage the installation of solar panels or other clean energy power generation source. Absent additional information explaining why this measure is inapplicable to the proposed Project, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
2. Implementation of Green Building Measures ***MS-2.11:*** *Require new development to incorporate green building practices, including those required by the Green Building Ordinance. Specifically, target reduced energy use through construction techniques (e.g., design of building envelopes and systems to maximize energy performance), through architectural design (e.g., design to maximize cross ventilation and interior daylight) and through site design techniques (e.g., orienting buildings on sites to maximize the effectiveness of passive solar design).*	Here, the Compliance Checklist states: "The project will be LEED Silver-equivalent and SJ REACH Code compliant. The project will feature sustainable energy and water usage, natural ventilation, EV parking and reduced carbon footprint" (Appendix D, p. 5). However, this response is insufficient for three reasons. First, simply stating that the Project would "feature sustainable energy and water usage" fails to indicate any actual design features or measures being taken to reduce impact. Second, while the SEIR mentions "natural ventilation," this is never elaborated upon, and no actual measures or features have been articulated. Third, according to the AEP *CEQA Portal Topic Paper* on mitigation measures: "While not "mitigation", a good practice is *to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP)*. Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, *it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features*

	without understanding the resulting environmental impact" (emphasis added).[28] As you can see in the excerpts above, project design features are not mitigation measures and *may be eliminated from the Project's design*. Here, the SEIR fails to require any of the above-mentioned green building practices, we cannot guarantee that this measure would be implemented, monitored, and enforced on the Project site. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
2. Implementation of Green Building Measures ***MS-16.2:*** *Promote neighborhood-based distributed clean/renewable energy generation to improve local energy security and to reduce the amount of energy wasted in transmitting electricity over long distances.*	The Compliance Checklist indicates that this measure is inapplicable to the proposed Project (Appendix D, p. 5). However, the Compliance Checklist fails to "Describe how the project is consistent or why the measure is not applicable," as required. Absent additional information explaining why this measure is inapplicable to the proposed Project, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-2.1:*** *Promote the Circulation Goals and Policies in the Envision San Jose 2040 General Plan. Create streets that promote pedestrian and bicycle transportation by following applicable and policies in the Circulation section of the Envision San Jose 2040 General Plan.* ***a)*** *Design the street network for its safe shared use by pedestrians, bicyclists, and vehicles. Include elements that increase driver awareness.* ***b)*** *Create a comfortable and safe pedestrian environment by implementing wider sidewalks, shade structures, attractive street furniture, street trees, reduced traffic speeds, pedestrian-oriented lighting, mid-block pedestrian crossings, pedestrian-activated crossing lights, bulb-outs and curb extensions at intersections, and*	Here, the Compliance Checklist states: "The project has been designed to be safe for pedestrians, bicyclists and vehicles. The project includes 19 enclosed bicycle parking spaces to promote transportation alternatives to motor vehicles" (Appendix D, p. 6). However, this response is insufficient, as the Compliance Checklist fails to mention elements that increase driver awareness, wider sidewalks, shade structures attractive street furniture, street trees, reduced traffic speeds, pedestrian-oriented lighting, mid-block pedestrian crossings, pedestrian-activated crossing lights, bulb-outs and curb extensions at intersections, reduced parking requirements, Transportation Demand Management strategies, de-coupled parking, or on-street parking that buffers pedestrians from vehicles. Thus, by merely including bicycle parking spaces, the Project fails to demonstrate consistency with all aspects of this measure. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.

[28] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

on-street parking that buffers pedestrians from vehicles. ***c)*** *Consider support for reduced parking requirements, alternative parking arrangements, and Transportation Demand Management strategies to reduce area dedicated to parking and increase area dedicated to employment, housing, parks, public art, or other amenities. Encourage de-coupled parking to ensure that the value and cost of parking are considered in real estate and business transactions.*	
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-2.1:*** *Integrate Green Building Goals and Policies of the Envision San José 2040 General Plan into site design to create healthful environments. Consider factors such as shaded parking areas, pedestrian connections, minimization of impervious surfaces, incorporation of stormwater treatment measures, appropriate building orientations, etc.*	Here, the Compliance Checklist states: "The project will be LEED Silver-equivalent and SJ REACH Code compliant. The project will feature sustainable energy and water usage, natural ventilation, EV parking and reduced carbon footprint" (Appendix D, p. 6). However, this response is insufficient for three reasons. First, while the Compliance Checklist states that the Project would "feature sustainable energy and water usage, natural ventilation, EV parking and reduced carbon footprint," it fails to indicate any mitigation measures that would be implemented. Second, according to the AEP *CEQA Portal Topic Paper* on mitigation measures: "While not "mitigation", a good practice is *to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP)*. Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, *it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact*" (emphasis added).[29]

[29] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

	As you can see in the excerpts above, project design features are not mitigation measures and *may be eliminated from the Project's design*. Here, the SEIR fails to require any of the above-mentioned green building practices, we cannot guarantee that this measure would be implemented, monitored, and enforced on the Project site. Third, the Compliance Checklist fails to mention stormwater treatment measures whatsoever. As a result, we are unable to verify the Project's supposed consistency with this aspect of the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-3.2:*** *Prioritize pedestrian and bicycle connections to transit, community facilities (including schools), commercial areas, and other areas serving daily needs. Ensure that the design of new facilities can accommodate significant anticipated future increases in bicycle and pedestrian activity.*	Here, the Compliance Checklist states: "The project is located in a transit centric location served by various modes of public transportation such as bikeways, VTA light rail and buses, and a planned BART extension. 19 bicycle parking spaces are included" (Appendix D, p. 7). However, this response is insufficient, as the SEIR fails to mention or support the conclusion that "pedestrian and bicycle connections to transit." As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***CD-3.4:*** *Encourage pedestrian cross-access connections between adjacent properties and require pedestrian and bicycle connections to streets and other public spaces, with particular attention and priority given to providing convenient access to transit facilities. Provide pedestrian and vehicular connections with cross-access easements within and between new and existing developments to encourage walking and minimize interruptions by parking areas and curb cuts.*	The Compliance Checklist indicates that this measure is inapplicable to the proposed Project (Appendix D, p. 7). However, the Compliance Checklist fails to "Describe how the project is consistent or why the measure is not applicable," as required. Absent additional information explaining why this measure is inapplicable to the proposed Project, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***LU-3.5:*** *Balance the need for parking to support a thriving Downtown with the need to minimize the impacts of parking upon a vibrant pedestrian and transit oriented urban environment. Provide for the needs of bicyclists and pedestrians, including adequate bicycle*	Here, the Compliance Checklist states: "The project includes 117 parking spaces for 175 hotel rooms as well as 19 enclosed bicycle parking spaces" (Appendix D, p. 7). However, this response is insufficient, as it fails to mention "design measures to promote bicyclist and pedestrian safety," as required by the measure. As a result, we are unable to

parking areas and design measures to promote bicyclist and pedestrian safety.	verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***TR-2.8:*** *Require new development to provide on-site facilities such as bicycle storage and showers, provide connections to existing and planned facilities, dedicate land to expand existing facilities or provide new facilities such as sidewalks and/or bicycle lanes/paths, or share in the cost of improvements.*	Here, the Compliance Checklist states: "The project includes 19 enclosed bicycle storage spaces" (Appendix D, p. 8). However, this response is insufficient. While the Compliance Checklist indicates that the Project would include bicycle parking, it fails to mention showers, connections to existing and planned facilities, expansions of existing facilities, new facilities, or contributing to the cost of improvements as required by the measure. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
3. Pedestrian, Bicycle & Transit Site Design Measures ***TR-8.5:*** *Promote participation in car share programs to minimize the need for parking spaces in new and existing development.*	The Compliance Checklist indicates that the Project is not consistent with this measure but fails to provide any justification or explanation. As such, the Project is inconsistent with this measure, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***MS-3.2:*** *Promote the use of green building technology or techniques that can help reduce the depletion of the City's potable water supply, as building codes permit. For example, promote the use of captured rainwater, graywater, or recycled water as the preferred source for non-potable water needs such as irrigation and building cooling, consistent with Building Codes or other regulations.*	Here, the Compliance Checklist states: "The project will implement sustainability measures equivalent to LEED Silver" (Appendix B, p. 9). However, this response is insufficient. Simply because the Project would meet LEED Silver standards does not guarantee that the Project would "help reduce the depletion of the City's potable water supply" or "promote the use of captured rainwater, graywater, or recycled water," as required by the measure. As such, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***MS-19.4:*** *Require the use of recycled water wherever feasible and cost-effective to serve existing and new development.*	The Compliance Checklist indicates that the Project is not consistent with this measure but fails to provide any justification or explanation. As such, the Project is inconsistent with this measure, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***MS-21.3:*** *Ensure that San José's Community Forest is comprised of species that have low water requirements and are well adapted to its Mediterranean climate. Select and plant diverse species to prevent monocultures that are vulnerable to pest invasions. Furthermore, consider the appropriate placement of tree species and their lifespan to*	Here, the Compliance Checklist states: "The project will incorporate plant species that have low water requirements that are resistant to pest invasions" (Appendix D, p. 9). However, this response is insufficient, as the SEIR fails to mention or support the claim that the Project would "incorporate plant species that have low water requirements that are resistant to pest invasions." As a result, we cannot confirm that this measure would be implemented, monitored,

ensure the perpetuation of the Community Forest.	and enforced on the Project site. Thus, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***MS-21.3:*** *As a condition of new development, require the planting and maintenance of both street trees and trees on private property to achieve a level of tree coverage in compliance with and that implements City laws, policies or guidelines.*	Here, the Compliance Checklist states: "Street trees will be in compliance with City laws, policies and guidelines" (Appendix D, p. 9). However, this response is insufficient. Simply stating that the Project would comply with the City's laws, policies, and guidelines does not provide substantial evidence that this measure would be implemented, monitored, and enforced on the Project site. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
4. Water Conservation and Urban Forestry Measures ***ER-8.7:*** *Encourage stormwater reuse for beneficial uses in existing infrastructure and future development through the installation of rain barrels, cisterns, or other water storage and reuse facilities.*	The Compliance Checklist indicates that the Project is not consistent with this measure but fails to provide any justification or explanation. As such, the Project is inconsistent with this measure, and the less-than-significant impact conclusion should not be relied upon.
Zero Waste Goal 1. *Provide space for organic waste (e.g., food scraps, yard waste) collection containers,* *and/or* 2. *Exceed the City's construction & demolition waste diversion requirement.*	Here, the Compliance Checklist states: "The project will provide space for organic waste and will exceed demolition waste diversion requirement" (Appendix D, p. 12). However, this response is insufficient, as the SEIR fails to mention or support the claims that the Project would "provide space for organic waste" and "exceed demolition waste diversion requirement." As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.
Water Conservation 1. *Install high-efficiency appliances/fixtures to reduce water use, and/or include water-sensitive landscape design,* *and/or* 2. *Provide access to reclaimed water for outdoor water use on the project site.*	Here, the Compliance Checklist states: "The project will include high-efficiency appliances/fixtures and will include water-sensitive landscape design" (Appendix D, p. 13). Furthermore, according to the SEIR, the Project "would include high-efficiency appliances/fixtures" (p. 73). However, these responses are insufficient for two reasons. First, the SEIR fails to mention or support the claim that the Project would incorporate "water-sensitive landscape." Second, according to the AEP *CEQA Portal Topic Paper* on mitigation measures:

	"While not "mitigation", a good practice is *to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP)*. Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, *it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact*" (emphasis added).[30] As you can see in the excerpts above, project design features are not mitigation measures and *may be eliminated from the Project's design*. Here, the SEIR fails to require "high-efficiency appliances/fixtures" and "water-sensitive landscape design" through mitigation, we cannot guarantee that this measure would be implemented, monitored, and enforced on the Project site. As a result, we are unable to verify the Project's consistency with the GHGRS, and the less-than-significant impact conclusion should not be relied upon.

As the above table indicates, the SEIR fails to provide sufficient information and analysis to determine Project consistency with all of the measures required by the GHGRS. As a result, we cannot verify that the Project is consistent with the GHGRS, and the SEIR's less-than-significant GHG impact conclusion should not be relied upon. We recommend that an updated EIR include further information and analysis demonstrating the Project's consistency with the GHGRS.

Design Features Should Be Included as Mitigation Measures

Our analysis demonstrates that the Project would result in potentially significant health risk and GHG impacts that should be mitigated further. We recommend that the SEIR implement all project design features and regulatory compliance measures as formal mitigation measures. As a result, we could guarantee that these measures would be implemented, monitored, and enforced on the Project site. Including formal mitigation measures by properly committing to their implementation would result in verifiable emissions reductions that may help reduce emissions to less-than-significant levels.

[30] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

Disclaimer

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

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

Paul E. Rosenfeld, Ph.D.

Attachment A:	SWAPE Project Health Risk Calculations
Attachment B:	SWAPE Project AERSCREEN Modeling
Attachment C:	Paul Rosenfeld CV
Attachment D:	Matt Hagemann CV

Operation	
Emission Rate	
Annual Emissions (tons/year)	0.022
Daily Emissions (lbs/day)	0.120547945
Emission Rate (g/s)	0.000632877
Release Height (meters)	3
Initial Vertical Dimension (meters)	1.5
Max Horizontal (meters)	50.0
Min Horizontal (meters)	49.0
Total Acreage	0.605407649
Setting	San Jose
Population	1,028,000
Total Pounds of DPM	
Total DPM (lbs)	44
Start Date	1/4/2021
End Date	7/25/2022
Total Years of Operation	28.45

The Maximally Exposed Individual at an Existing Residential Receptor

Activity	Duration (years)	Concentration (ug/m3)	Breathing Rate (L/kg-day)	ASF	Cancer Risk with ASFs*
Construction	0.25	*	361	10	*
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	
Construction	1.30	*	1090	10	*
Operation	0.70	0.4163	1090	10	4.1E-05
Infant Exposure Duration	***2.00***			***Infant Exposure***	***4.1E-05***
Operation	14.00	0.4163	572	3	1.1E-04
Child Exposure Duration	***14.00***			***Child Exposure***	***1.1E-04***
Operation	14.00	0.4163	261	1	1.7E-05
Adult Exposure Duration	***14.00***			***Adult Exposure***	***1.7E-05***

* Construction-related cancer risk calculated separately in the SEIR.

Start date and time 05/20/21 14:50:59

AERSCREEN 16216

Marriott Townplace Operation

Marriott Townplace Operation

---------- DATA ENTRY VALIDATION ----------

	METRIC	ENGLISH
** AREADATA **	---	---
Emission Rate:	0.633E-03 g/s	0.502E-02 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	50.00 meters	164.04 feet
Area Source Width:	49.00 meters	160.76 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	1028000	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u*): not adjusted

DEBUG OPTION ON

AERSCREEN output file:

2021.05.20_MarriottTownplace_Operation.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

****

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 05/20/21 14:51:48

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

```
**************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
**************************************************

Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  25

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   8

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  35

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   9

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  40

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector  10
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  45


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ******************************************


  Running AERMOD

 Processing Spring


Processing surface roughness sector  1


**************************************************

Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20


    ********   WARNING MESSAGES   ********
```

```
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   8

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  35

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
**************************************************

Processing wind flow sector   9

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  40

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************

Processing wind flow sector  10

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  45

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ****************************************

  Running AERMOD
 Processing Summer

Processing surface roughness sector  1

**************************************************

Processing wind flow sector   1
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   4
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  20

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  25

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  30
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   8


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  35


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   9


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  40


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector  10


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  45
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ****************************************


  Running AERMOD

 Processing Autumn


Processing surface roughness sector  1


**************************************************

Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5


    ********   WARNING MESSAGES   ********

               ***  NONE  ***
```

```
**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  20

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

***************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

***************************************************
Processing wind flow sector   8

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  35

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

***************************************************
Processing wind flow sector   9
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  40

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
Processing wind flow sector  10

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  45

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

FLOWSECTOR   ended 05/20/21 14:51:58

REFINE       started 05/20/21 14:51:58

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

REFINE       ended 05/20/21 14:51:58
```

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 05/20/21 14:52:00

```
 Concentration     Distance Elevation  Diag  Season/Month   Zo sector       Date
 H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS     HT
REF TA     HT
   0.28932E+01         1.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41630E+01        25.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
*  0.43652E+01        32.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24060E+01        50.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12997E+01        75.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.86867E+00       100.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.63861E+00       125.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49745E+00       150.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40293E+00       175.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33568E+00       200.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28574E+00       225.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24740E+00       250.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21713E+00       275.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19279E+00       300.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17272E+00       325.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15604E+00       350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.14198E+00       375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12994E+00       400.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11962E+00       425.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11063E+00       450.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10272E+00       475.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.95741E-01       500.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.89538E-01       525.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.84012E-01       550.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.79056E-01       575.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.74592E-01       600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.70557E-01       625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.66879E-01       650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.63507E-01       675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60408E-01       700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57562E-01       725.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54942E-01       750.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52534E-01       775.00      0.00  45.0        Winter       0-360   10011001
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-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.50299E-01   800.00   0.00 30.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.48220E-01   825.00   0.00 30.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.46489E-01   850.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.44673E-01   875.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.42976E-01   900.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.41387E-01   925.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.39898E-01   950.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.38499E-01   975.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.37183E-01   1000.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.35943E-01   1025.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.34773E-01   1050.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.33667E-01   1075.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.32621E-01   1100.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.31629E-01   1125.00   0.00 20.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.30689E-01   1149.99   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.29796E-01   1175.00   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0

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   0.28947E-01      1200.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28140E-01      1225.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27370E-01      1250.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26636E-01      1275.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25936E-01      1300.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25267E-01      1325.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24628E-01      1349.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24015E-01      1375.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23429E-01      1400.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22868E-01      1425.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22329E-01      1449.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21812E-01      1475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21315E-01      1500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20838E-01      1525.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20379E-01      1550.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19937E-01      1574.99      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19511E-01      1600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.19101E-01      1625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18705E-01      1650.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18323E-01      1674.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17955E-01      1700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17599E-01      1725.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17255E-01      1750.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16923E-01      1774.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16602E-01      1800.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16291E-01      1825.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15990E-01      1850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15699E-01      1875.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15416E-01      1900.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15143E-01      1924.99      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14877E-01      1950.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14620E-01      1975.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14370E-01      2000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14127E-01      2025.00      0.00   0.0        Winter       0-360   10011001
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-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.13892E-01   2050.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.13663E-01   2075.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.13441E-01   2100.00   0.00 20.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.13225E-01   2125.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.13014E-01   2150.00   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.12810E-01   2175.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.12611E-01   2200.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.12417E-01   2225.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.12229E-01   2250.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.12045E-01   2275.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.11866E-01   2300.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.11691E-01   2325.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.11521E-01   2350.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.11356E-01   2375.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.11194E-01   2399.99   0.00 35.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.11036E-01   2425.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0

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   0.10882E-01      2449.99      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10732E-01      2475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10585E-01      2500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10442E-01      2524.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10302E-01      2550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10165E-01      2575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10032E-01      2600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.99012E-02      2625.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.97735E-02      2650.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.96487E-02      2675.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.95265E-02      2700.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.94071E-02      2725.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.92902E-02      2749.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.91758E-02      2775.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.90638E-02      2800.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.89542E-02      2824.99      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.88468E-02      2850.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.87416E-02      2875.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.86386E-02      2900.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.85377E-02      2925.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.84388E-02      2950.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.83419E-02      2975.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.82469E-02      2999.99      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.81537E-02      3025.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.80624E-02      3050.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.79728E-02      3075.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.78849E-02      3100.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.77987E-02      3125.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.77141E-02      3150.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.76310E-02      3174.99      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.75496E-02      3199.99      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.74696E-02      3225.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.73910E-02      3250.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.73139E-02      3274.99      0.00  45.0        Winter       0-360   10011001
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-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.72382E-02   3300.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.71638E-02   3325.00   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.70907E-02   3350.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.70189E-02   3375.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.69484E-02   3400.00   0.00 20.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.68791E-02   3425.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.68109E-02   3450.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.67440E-02   3475.00   0.00 20.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.66781E-02   3500.00   0.00 20.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.66134E-02   3525.00   0.00 25.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.65497E-02   3550.00   0.00 25.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.64871E-02   3575.00   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.64256E-02   3600.00   0.00 20.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.63650E-02   3625.00   0.00 40.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.63054E-02   3650.00   0.00 25.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.62468E-02   3674.99   0.00 35.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0

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   0.61891E-02      3700.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.61323E-02      3724.99      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60764E-02      3750.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60214E-02      3775.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.59673E-02      3800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.59140E-02      3825.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.58615E-02      3849.99      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.58098E-02      3875.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57589E-02      3900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57088E-02      3925.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.56594E-02      3950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.56108E-02      3975.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.55628E-02      4000.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.55156E-02      4025.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54691E-02      4050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54232E-02      4075.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.53780E-02      4100.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.53335E-02      4125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52896E-02      4150.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52463E-02      4175.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52036E-02      4200.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.51615E-02      4225.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.51200E-02      4250.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50791E-02      4275.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50387E-02      4300.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49989E-02      4325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49597E-02      4350.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49209E-02      4375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48827E-02      4400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48450E-02      4425.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48078E-02      4449.99      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47711E-02      4475.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47349E-02      4499.99      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46991E-02      4525.00      0.00   0.0        Winter       0-360   10011001
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-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.46638E-02   4550.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.46290E-02   4575.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.45946E-02   4599.99   0.00 40.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.45607E-02   4625.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.45272E-02   4650.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.44941E-02   4675.00   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.44614E-02   4700.00   0.00 35.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.44291E-02   4725.00   0.00 25.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.43973E-02   4750.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.43658E-02   4775.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.43347E-02   4800.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.43041E-02   4825.00   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.42737E-02   4850.00   0.00   5.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.42438E-02   4875.00   0.00   0.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.42142E-02   4899.99   0.00 35.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0
   0.41850E-02   4924.99   0.00 15.0   Winter   0-360   10011001
-1.30 0.043 -9.000 0.020 -999.   21.   6.0 1.000   1.50   0.35   0.50   10.0
310.0   2.0

```
   0.41561E-02      4950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41275E-02      4975.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40993E-02      5000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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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 volatile organic compound 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 has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling operations, oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, and many other industrial and agricultural sources. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at dozens of sites and has testified as an expert witness on more than ten cases involving exposure to air contaminants from industrial sources.

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

Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P**., (2015) Modeling the Effect of Refinery Emission On Residential Property Value. Journal of Real Estate Research. 27(3):321-342

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.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

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Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution,* 123 (17), 319-327.

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.

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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.

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

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

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme For The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004.* New Orleans, October 2-6, 2004.

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.

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality.* 29, 1662-1668.

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 United States District Court For The Southern District of Illinois
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 3:19-cv-00302-SMY-GCS
Rosenfeld Deposition. 2-19-2020

In the Circuit Court of Jackson County, Missouri
Karen Cornwell, *Plaintiff,* vs. Marathon Petroleum, LP, *Defendant.*
Case No.: 1716-CV10006
Rosenfeld Deposition. 8-30-2019

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS "Conti Perdido" *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case: No 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In United States District Court For The Southern District of Mississippi
Guy Manuel vs. The BP Exploration et al., Defendants
Case: No 1:19-cv-00315-RHW
Rosenfeld Deposition, 4-22-2020

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

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

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

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Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

Geologic and Hydrogeologic Characterization
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
Industrial Stormwater Compliance
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, Matt has developed extensive client relationships and has managed complex projects that include consultation as an expert witness and a regulatory specialist, and a manager of projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2104, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 150 industrial facilities.
- Expert witness on numerous cases including, for example, perfluorooctanoic acid (PFOA) contamination of groundwater, MTBE litigation, air toxins at hazards at a school, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted

public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9.

Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific

principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt is currently a part time geology instructor at Golden West College in Huntington Beach, California where he taught from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations, 2009-2011.