Final Environmental Impact Report

777 West Middlefield Road Project

State Clearinghouse #2018032072

Prepared by:
ICF

Prepared for:
City of Mountain View

March 2019

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Prepared for:

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March 2019

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Acronyms and Abbreviations

CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
EIR	Environmental Impact Report
hp	horsepower
ITE	Institute of Transportation Engineers
Project	Proposed 777 West Middlefield Road Project
TACs	toxic air contaminants
TNC	transportation network company

Chapter 1
Introduction

This document, together with the Draft Environmental Impact Report (Draft EIR), constitutes the Final Environmental Impact Report (Final EIR) for the 777 West Middlefield Road Project (Project).

1.1 Purpose of the Final EIR

In conformance with the California Environmental Quality Act (CEQA) and CEQA Guidelines, this Final EIR provides objective information regarding the environmental consequences of the proposed project. The Final EIR also examines mitigation measures and alternatives to the project intended to reduce or eliminate significant environmental impacts. The Final EIR is intended to be used by the City of Mountain View in making decisions regarding the Project. The CEQA Guidelines advise that, while the information in the Final EIR does not control the agency's ultimate discretion on a project, the agency must respond to each significant effect identified in the EIR by making written findings for each of those significant effects.

According to the State Public Resources Code Section 21081, no public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant effects on the environment would occur if a project is approved or carried out unless both of the following occur:

(a) The public agency makes one or more of the following findings with respect to each significant effect:

    (1) Changes or alterations have been required in, or incorporated into, the project which will mitigate or avoid the significant effect on the environment.

    (2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.

    (3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities of highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report.

(b) With respect to significant effects which were subject to a finding under paragraph (3) of subdivision (a), the public agency finds that specific overriding economic, legal, social, technological, or other benefits of the project outweigh the significant effects on the environment.

1.2 Contents of the Final EIR

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

a) The Draft EIR or a revision of the Draft;

b) Comments and recommendations received on the Draft EIR either verbatim or in summary;

c) A list of persons, organizations, and public agencies commenting on the Draft EIR;

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, 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 City of Mountain View's Community Development Department, City Hall, 1st Floor, 500 Castro Street, Mountain View on weekdays during normal business hours. The Final EIR is also available on the City's website: https://www.mountainview.gov/depts/comdev/planning/activeprojects/777_w_middlefield_road.asp.

Chapter 2
Summary of the Draft EIR Public Review Process

The Draft EIR for the 777 West Middlefield Road Project, dated November 2018, was circulated to affected public agencies and interested parties for a 45-day review period from November 6, 2018 through December 21, 2018. The City granted an extension for one commenter, Adams Broadwell Joseph & Cardoza, to January 11, 2019. The City undertook the following actions to inform the public of the availability of the Draft EIR:

- A Notice of Availability was published on the City's website (https://www.mountainview.gov/depts/comdev/planning/activeprojects/777_w_middlefield_road.asp);
- Notification of the availability of the Draft EIR was mailed to Project-area residents and other members of the public who had indicated interest in the Project;
- The Draft EIR was delivered to the State Clearinghouse on October 31, 2018 as well as sent to various governmental agencies, organizations, businesses, and individuals (see Chapter 3, *Agencies, Organizations, Business, and Individuals that Received the Draft EIR*, of this Final EIR for a list of agencies, organizations, businesses, and individuals that received the Draft EIR);
- The Draft EIR was published on the City's website (https://www.mountainview.gov/depts/comdev/planning/activeprojects/777_w_middlefield_road.asp); and
- Copies of the Draft EIR were made available at the City of Mountain View Community Development Department, 500 Castro Street, 1st Floor, Mountain View, during business hours, Monday to Friday, 8:00 a.m. to 4:00 p.m. and at the Mountain View Public Library, 585 Franklin Street, Mountain View.

Chapter 3

Agencies, Organizations, Business, and Individuals that Received Notice of the Draft EIR

CEQA Guidelines Section 15086 requires that a local Lead Agency consult with and request comments on the Draft EIR 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, businesses, organizations, and individuals received notice of the Draft EIR from the City or via the State Clearinghouse:

Agencies

- Air Resources Board
- Association of Bay Area Governments and Metro Transportation Commission
- Bay Area Air Quality Management District
- California Department of Fish and Wildlife, Region 3
- California Department of Transportation, District 4
- California Highway Patrol
- California Regional Water Quality Control Board, Region 2
- Peninsula Corridor Joint Powers Board
- Caltrans Planning
- City of Los Altos
- City of Palo Alto
- City of Sunnyvale
- Department of Toxic Substances Control
- Department of Water Resources
- Los Altos School District
- Metropolitan Transportation Commission
- Mountain View Library
- Mountain View/ Los Altos Union School District
- Mountain View/ Whisman School District
- NASA Ames Research
- Native American Heritage Commission
- Office of Historic Preservation
- Santa Clara County Roads and Airports

- Santa Clara Valley Habitat Agency
- Santa Clara Valley Transportation Authority
- Santa Clara Valley Water District

Businesses, Organizations, and Individuals

- Adams Broadwell Joseph & Cardozo
- Building Industry Association of the Bay Area
- Campaign for Local Jobs 104
- Carpenters Union
- Counties Confirmation Board for Local 405
- Moffett Boulevard Neighborhood Association
- North Whisman Neighborhood Association
- Northern California Carpenters, Local 405
- Rex Manor Neighborhood Association

Chapter 4
Draft EIR Comments and Responses

In accordance with CEQA Guidelines Section 15088, this document includes written responses to comments received by the City of Mountain View on the Draft EIR.

Comment letters 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 Mountain View are included in their entirety in Chapter 6, *Copies of the Comment Letters Received on the Draft EIR*, of this Final EIR. Comment letters received on the Draft EIR are listed below.

Comment Letter and Commenter **Page**

Federal and State Agencies 4-2

A. State Clearinghouse (dated December 21, 2018) 4-2

B. California Department of Fish and Wildlife (dated December 14, 2018) 4-2

Regional and Local Agencies 4-13

Organizations, Businesses, and Individuals 4-14

C. Adams Broadwell Joseph & Cardozo, Mountain View Residents for Responsible Development (dated November 16, 2018) 4-14

D. Adams Broadwell Joseph & Cardozo, Mountain View Residents for Responsible Development (dated December 7, 2018) 4-15

E. Beate Fromm (dated December 16, 2018) 4-16

F. Lozeau Drury, LLP, Laborers International Union of North America, Local Union No. 270 (dated December 20, 2018) 4-17

G. Adams Broadwell Joseph & Cardozo, Mountain View Residents for Responsible Development (dated December 7, 2018) 4-18

Comment letters were received from two public agencies and from two organizations and one individual (including three comment letters from the same organization).

Footnotes included in comment letters do not raise any environmental issues that require a response. Thus, the comment letter footnotes are not reproduced in this chapter to maintain the clarity of the comments. As discussed above, the original comment letters (including footnotes) received on the Draft EIR are included in Chapter 6 of this Final EIR.

Federal and State Agencies

A. State Clearinghouse (dated December 21, 2018)

Comment A.1

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on December 20, 2018, and the comments from the responding agency(ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 2 1104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Response A.1

The comment informs the City that the State Clearinghouse received the Draft EIR and submitted it to select agencies for review. The comment does not raise any issues about the adequacy of the EIR; therefore, no further response is required.

B. California Department of Fish and Wildlife (dated December 14, 2018)

Comment B.1

The California Department of Fish and Wildlife (CDFW) received the draft Environmental Impact Report (EIR) from the City of Mountain View (City) for the 777 West Middlefield Road Project (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife resources. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is a Trustee Agency with responsibility pursuant to CEQA for commenting on projects that could directly or indirectly impact biological resources. CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (i.e. biological resources). As a Trustee Agency, CDFW is responsible for providing, as available, biological expertise to review and comment upon environmental documents and impacts arising from project activities (CEQA Guidelines, § 15386; Fish and Game Code, § 1802).

CDFW is also considered a Responsible Agency under CEQA §15381 if a project requires discretionary approval, such as under the California Endangered Species Act, the Native Plant Protection Act, the Lake and Streambed Alteration Agreement, or other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources.

Response B.1

The comment summarizes the role of the California Department of Fish and Wildlife. The comment does not raise any issues about the adequacy of the EIR; therefore, no further response is required.

Comment B.2

PROJECT DESCRIPTION SUMMARY

Objective: The Project would take place on a 9.84-acre site. The Project includes demolition of 208 multi-family units within 21 buildings (totaling approximately 226,086 square feet) and 406 surface parking spaces. The draft EIR states that the Project would remove 173 trees, 4 of which are proposed to be transplanted. The Project includes building of 716 dwelling units in three buildings and an underground parking area. In addition, there would be 482 landscape trees planted.

Location: 777 West Middlefield Road, City of Mountain View, Santa Clara County, CA 94043; APN# 153-24-005.

Timeframe: Construction of the Project would commence in April 2020 and end in March 2023

Response B.2

The comment summarizes the Project, as described in Chapter 2, *Project Description*, of the Draft EIR. The comment does not raise any issues about the adequacy of the EIR; therefore, no further response is required.

Comment B.3

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the City in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on wildlife (biological) resources.

<u>Section 3.3.3.4 Impacts and Mitigation Measures, Impact BIO-1 and Impact BIO-2, Page 3.3-14.</u> As stated above, the Project proposes to remove 173 trees, including 127 heritage trees. The draft EIR

Section 3.3.2.3 (Page 3.3-3) defines a heritage tree according to City of Mountain View Municipal Code, as, in summary and in part, any species with a trunk circumference of 48 inches or more, or any oak (*Quercus* spp.), redwood (*Sequoia* spp.) or cedar (*Cedrus* spp.) tree with a circumference of 12 inches or more (circumference measured at 54 inches above natural grade).

The draft EIR describes various City Standard Conditions of Approval in relation to landscaping plans and tree removal. One of these Standard Conditions of Approval is PL-90 (Replacement), which requires replacement of trees. The draft EIR states that the 482 landscape trees will compensate for tree removal and that this, in addition to compliance with the Standard Conditions of Approval, results in less-than-significant impact and no mitigation is required.

However, the draft EIR does not sufficiently describe the mitigation in enough detail to support a determination that impacts are less-than-significant. The draft EIR does not provide information pertaining to the species and diameter of trees to be removed. The draft EIR does not provide specific information regarding the requirements of the Standard Conditions of Approval, most importantly the PL-90 that requires tree replacement.

CDFW considers mature native tree habitat types, especially oak woodlands, as important to a wide range of wildlife species with high levels of biodiversity. For example, oak woodlands provide habitat for nearly half of the 632 terrestrial vertebrates species found in California.

Acorns are a key resource for deer, squirrels, turkeys, jays, quail and bear. Standing dead trees provide an important habitat resource for raptors, bats, salamanders, and lizards. Coarse woody tree material lying on the ground, particularly large logs, is a very important wildlife habitat element because they retain moisture in a relatively dry ecosystem. Oak woodlands near riparian resources like creeks, rivers or lakes support the greatest number of wildlife species.

CDFW therefore recommends that the EIR include a detailed description of the trees to be removed (i.e. species and diameter) and the requirements for tree replacement. The EIR should fully describe how tree removal will be reduced or mitigated to less-than-significant levels.

CDFW recommends that the EIR include the following tree mitigation measures and replacement ratios for native trees removed: 3:1 for trees 4 - 6 inches diameter at breast height (dbh) and 6:1 for trees greater than 6 inches dbh. Oak trees greater than 24 inches dbh should be replaced at a 10:1 ratio. Trees planted should be of the same species of tree that was removed. Non-native trees greater than 3 inches in diameter shall be replaced at a 1:1 ratio with a native tree species.

Response B.3

The comment states that the Draft EIR does not sufficiently describe the biological resources mitigation measures in enough detail and recommends that the EIR include a detailed description of the trees to be removed due to the Project. In addition, the comment recommends tree mitigation measures and replacement ratios for the Draft EIR.

Table 4-1 lists the trees species, trunk diameter, Heritage Tree status, and native or non-native species status of each tree that is to be removed or relocated as part of the Project.

Table 4-1. Summary of Proposed Tree Removal or Relocation at the Project Site

Tree Species	Trunk Diameter (inches)	Heritage Tree?	Native	Non-Native
European white birch *(Betula pendula)*	9	No		X
European white birch	8	No		X
European white birch	8	No		X
Silk oak (*Grevillea robusta*)	20	Yes		X
Silk oak	24	Yes		X
Monterey pine (*Pinus radiata*) [1]	21	Yes		X
Bottlebrush (*Callistemon* spp.)	7,5	No		X
Purpleleaf plum (*Prunus cerasifera*)	10	No		X
Olive (*Olea eurpoaea*)	16	Yes		X
Monterey pine	26	Yes		X
Olive - relocate	12,9,8,6,6	Yes		X
Silver dollar gum *(Eucalyptus polyanthemos)*	15	Yes		X
Olive	8,7,5,5,2	No		X
Silver dollar gum	29	Yes		X
Silver dollar gum	15	Yes		X
Hollyleaf cherry *(Prunus ilicifolia)*	10	No	X	
Canary Island pine *(Pinus canariensis)*	27	Yes		X
Olive	12, 8	Yes		X
Italian stone pine *(Pinus pinea)*	40	Yes		X
Olive	12, 11,9	Yes		X
Olive	13, 8, 7	Yes		X
Italian stone pine	40	Yes		X
Olive	15,10,10,9	Yes		X
Olive - relocate	14,14,12	Yes		X
Olive - relocate	29,15	Yes		X
European white birch	8	No		X
European white birch	7	No		X
European white birch	16	Yes		X
European white birch	16	Yes		X
Olive	17,16	Yes		X
Olive	16,13	Yes		X
Olive	15,14,11	Yes		X
Carob	20	Yes		X
Hollywood juniper (*Juniperus chinensis*)	18	Yes		X
Purpleleaf plum	11,9	No		X
African fern pine (*Afrocarpus falcatus*)	21	Yes		X
African fern pine	27	Yes		X
African fern pine	22	Yes		X
African fern pine	26	Yes		X
Glossy privet (*Ligustrum lucidum*)	24	Yes		X
Coast redwood (*Sequoia sempervirens*)	16	Yes	X	
Coast redwood	9	Yes	X	

[1] Monterey pines are native to California and are listed as a special-status species by the California Native Plant Society. However, ornamental plantings in the Bay Area outside of their native range in Central California are treated as non-native species.

Tree Species	Trunk Diameter (inches)	Heritage Tree?	Native	Non-Native
Coast redwood	14	Yes	X	
Coast redwood	20	Yes	X	
Coast redwood	15	Yes	X	
Coast redwood	9	Yes	X	
Monterey pine	34	Yes		X
Olive	14,10,9,9	Yes		X
Coast redwood	21	Yes	X	
Southern magnolia (*Magnolia grandiflora*)	17	Yes		X
Silver maple (*Acer saccharinum*)	24	Yes		X
Japanese maple *(Acer palmatum)*	6	No		X
Silver maple	28,20	Yes		X
Olive	20	Yes		X
Italian stone pine	35	Yes		X
Monterey pine	18	Yes		X
Silk oak	21	Yes		X
Silk oak	23	Yes		X
Canary Island pine	22	Yes		X
Canary Island pine	20	Yes		X
Canary Island pine	20	Yes		X
Evergreen ash	32	Yes		X
Monterey pine	11	No		X
Sweetgum (*Liquidambar* spp.)	17	Yes		X
Hollywood juniper	10	No		X
Hollywood juniper	19	Yes		X
Hollywood juniper	13	No		X
Bronze loquat *(Eriobotrya deflexa)*	6	No		X
Sweetgum (*Liquidambar* spp.)	17	Yes		X
Carob *(Ceratonia silique)*	12	No		X
Sweetgum	19	Yes		X
Olive	12,11,9	Yes		X
Hollywood juniper	19,12,12	Yes		X
Hollywood juniper	22,10,9,5,5	Yes		X
Red ironbark (*Eucalyptus sideroxylon*)	18	Yes		X
Canary Island pine	23	Yes		X
Canary Island pine	21	Yes		X
Red ironbark	21	Yes		X
Red ironbark	26	Yes		X
Coast redwood	11	Yes	X	
Coast redwood	16	Yes	X	
Olive	11,10,6	Yes		X
Olive	13,12,11,10,9	Yes		X
Olive	11,10,10	Yes		X
Sweetgum	20	Yes		X
Canary Island pine	25	Yes		X
Monterey pine	19	Yes		X
Sweetgum	11	No		X
Italian stone pine	37	Yes		X
Sweetgum	14	No		X

Tree Species	Trunk Diameter (inches)	Heritage Tree?	Native	Non-Native
Hollywood juniper	14	No		X
Sweetgum	18	Yes		X
Sweetgum	10,9,9	Yes		X
Mexican fan palm (*Washingtonia robusta*)	24	Yes		X
Italian stone pine	30	Yes		X
Sweetgum	19	Yes		X
Olive	12,11	Yes		X
Coast redwood	17	Yes	X	
Queen palm (*Syagrus romanzoffiana*)	13	No		X
Olive	14,9	Yes		X
Crape myrtle (*Lagerstroemia spp.)*	5	No		X
Hollywood juniper	12	No		X
Silver dollar gum	21	Yes		X
Coast redwood	9	Yes	X	
Italian stone pine	33	Yes		X
Canary Island pine	27	Yes		X
Monterey pine	29	Yes		X
Sweetgum	16	Yes		X
Sweetgum	21	Yes		X
Coast redwood	36	Yes	X	
Sweetgum	19	Yes		X
Coast redwood	32	Yes	X	
Coast redwood	33	Yes	X	
Coast redwood	30	Yes	X	
African fern pine	14	No		X
Monterey pine	30	Yes		X
Olive	8,7,6	No		X
Siberian elm (*Ulmus pumila*)	36	Yes		X
Sweetgum	14	No		X
Bronze loquat	5	No		X
Italian stone pine	26	Yes		X
Silver dollar gum	25	Yes		X
Monterey pine	20	Yes		X
Monterey pine	25	Yes		X
Southern magnolia	19	Yes		X
Italian stone pine	33	Yes		X
Italian stone pine	32	Yes		X
Sweetgum	19	Yes		X
Sweetgum	24	Yes		X
Sweetgum	23	Yes		X
Hollywood juniper	15	Yes		X
Hollywood juniper	14,9	Yes		X
Strawberry tree (*Arbutus marina*)	6	No		X
Italian alder *(Alnus cordata)*	8	No		X
Aleppo pine (*Pinus halepensis*)	26	Yes		X
Silk oak	19	Yes		X
Evergreen ash	34	Yes		X
Hollywood juniper	10	No		X

Tree Species	Trunk Diameter (inches)	Heritage Tree?	Native	Non-Native
Evergreen ash	65	Yes		X
Olive - relocate	14,11,9,9,8	Yes		X
Olive	16,14	Yes		X
Olive	14,11,10	Yes		X
Olive	11,11,9	Yes		X
Italian stone pine	27	Yes		X
Italian stone pine	18	Yes		X
Italian stone pine	27	Yes		X
European white birch	18,14	Yes		X
European white birch	18	Yes		X
Mexican fan palm	20	Yes		X
Mexican fan palm	21	Yes		X
Coast redwood	19	Yes	X	
Callery pear (*Pyrus calleryana*)	15	Yes		X
European white birch	9	No		X
European white birch	13	No		X
European white birch	7	No		X
European white birch	8	No		X
Sweetgum	20	Yes		X
Sweetgum	13	No		X
Sweetgum	22	Yes		X
Olive	16,15,12	Yes		X
Hollywood juniper	16,14	Yes		X
Hollywood juniper	12	No		X
Sweetgum	14	No		X
Sweetgum	17	Yes		X
Italian stone pine	35	Yes		X
Italian stone pine	34	Yes		X
Carrot wood (*Cupaniopsis anacardioides*)	11	No		X
Carrot wood	11	No		X
Carrot wood	14,12,10	Yes		X
Strawberry tree	5	No		X
Strawberry tree	6	No		X
Strawberry tree	5	No		X
Strawberry tree	6	No		X
European white birch	7	No		X
European white birch	6	No		X
European white birch	6	No		X
European white birch	5	No		X
TOTAL	**172**	**127 Heritage 45 Non-Heritage**	**17**	**155**

Source: FortBay 2018.

Subsequent to the publication of the Draft EIR, the applicant refined the list of existing trees proposed for removal from 173 to 172. This text change to the Draft EIR is documented in Chapter 5, *Draft EIR Text Revisions*. Of the 127 Heritage Trees that would be removed as part of the Project, 17 are native trees, including 16 coast redwoods and 1 hollyleaf cherry tree. All other trees to be removed as part of the Project are non-native ornamental trees.

As discussed under Impact BIO-2 in Section 3.3, *Biological Resources*, of the Draft EIR, the Project would be required to adhere to the City of Mountain View's Standard Conditions of Approval. It is the City's position that adherence to these Standard Conditions would avoid significant impacts to trees. Standard Conditions of Approval PL-80 through PL-86 outline the City's standard requirements related to landscaping plans and tree removal. The Project also includes a request for a Heritage Tree Removal Permit, which is subject to City review and approval with conditions. Standard Conditions of Approval PL-89 to PL-98 outline the requirements related to Heritage Trees. The text of Standard Conditions of Approval PL-90 and PL-93, which are specifically mentioned in the comment, are provided below for reference. Standard Condition of Approval PL-90 has been updated with Project-specific information to identify the number of replacement trees.

- PL-90: The applicant shall offset the loss of each heritage tree with 2 replacement trees, for a total of 254 replacement trees. Each replacement tree shall be no smaller than a 24-inch box and shall be noted on the landscape plan as heritage replacement trees.
- PL-93: The applicant shall develop a tree mitigation and preservation plan to avoid impacts on regulated trees and mitigate for the loss of trees that cannot be avoided. Routine monitoring for the first five years and corrective actions for trees that consistently fail the performance standards will be included in the tree mitigation and preservation plan. The tree mitigation and preservation plan will be developed in accordance with Chapter 32, Articles I and II, of the City Code, and subject to approval of the Zoning Administrator prior to removal or disturbance of any heritage trees resulting from project activities, including site preparation activities.

Adherence to the Standard Conditions of Approval would ensure that the Project would comply with the City's regulations of the removal of trees. In addition, a Tree Removal Permit is part of the Project application and would be processed pursuant to the policies and objectives set forth in the City's ordinance. Thus, the Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. As stated in the Draft EIR, with adherence to these requirements, this impact would be less than significant and no mitigation is required.

The comment also recommends tree mitigation and replacement measures for inclusion in the EIR. It should be noted that the site is an infill site that is currently developed with existing apartment buildings and the trees on-site are mature landscape trees. As indicated in Table 4-1, there are no native trees at the Project site with a 4- to 6-inch diameter at breast height; thus, the recommended mitigation measure related to trees of this size would not apply to the Project. In addition, there are no native oak trees at the Project site; thus, the recommended mitigation measure related to oak trees would not apply to the Project, as it is likely that the California Department of Fish and Wildlife's mitigation measure is intended to apply to native oak species. As previously mentioned, the Project would require the removal of 17 native trees, including 16 coast redwoods and 1 hollyleaf cherry tree. Based on the tree mitigation measures and replacement ratios for native tree removal recommended in the comment, the Project would be

required to plant 96 coast redwoods (6:1 ratio) and 6 hollyleaf cherry trees (6:1 ratio). In addition, the Project would require the removal of 155 non-native trees. Based on the applicable tree mitigation measures and replacement ratios recommended by the California Department of Fish and Wildlife for non-native trees (1:1 ratio of non-native to native replacement), the Project would be required to plant 155 native trees due to the removal of non-native trees. In total, based on the California Department of Fish and Wildlife's applicable mitigation measures and recommended replacement ratios, the Project would be required to plant 257 trees (96 coast redwoods, 6 hollyleaf cherry trees, and 155 native trees).

Overall, the Project would plant approximately 482 trees, which exceeds the total number of trees (257) that would be required by the recommended tree mitigation measures and replacement measures recommended in the comment. The species of the proposed trees that would be planted at the Project site would include a mixture of native and non-native trees. Under the Project, approximately 52 native tree species in 24-inch or 36-inch boxes would be planted at the Project site, including California buckeye (*Aesculus californica*), Western redbud (*Cercis occidentalis*), hollyleaf cherry, coast live oak (*Quercus agrifolia*), and California fan palm (*Washingtonia filifera*). The Project would plant more trees than required by the City and the Project would comply with Standard Planning Division Conditions PL-90 and PL-93. Therefore, the Project would comply with the California Department of Fish and Wildlife's applicable mitigation measures and recommended replacement ratios.

Comment B.4

Both native and non-native trees provide nesting habitat for birds. The draft EIR does provide measures for nesting birds. However, the bird nest survey measure does not provide enough information on how the potential impacts of Project construction will be reduced to less-than-significant levels. The draft EIR also does not describe whether avoidance of nesting birds would be possible with the establishment of a buffer sufficient to protect any active nests from Project-related construction.

CDFW therefore recommends that the three following mitigation measures be included in the EIR:

1. Nesting Bird Surveys: If Project-related work is scheduled during the nesting season (typically February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), CDFW recommends that a qualified biologist conduct two surveys for active nests of such birds within 14 days prior to the beginning of Project construction, with a final survey conducted within 48 hours prior to construction. Appropriate minimum survey radii surrounding the work area are typically the following: i) 250 feet for passerines; ii) 500 feet for small raptors such as accipiters; and iii) 1,000 feet for larger raptors such as buteos. Surveys should be conducted at the appropriate times of day and during appropriate nesting times.

2. Active Nest Buffers: If the qualified biologist documents active nests within the Project area or in nearby surrounding areas, an appropriate buffer between the nest and active construction should be established, as explained below. The buffer should be clearly marked, and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist should conduct baseline monitoring of the nest to characterize "normal" bird behavior and establish a buffer distance which allows the birds to exhibit normal behavior. The qualified biologist should monitor the nesting birds daily during construction activities and increase the

buffer if the birds show signs of unusual or distressed behavior (e.g. defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist or construction foreman should have the authority to cease all construction work in the area until the young have fledged and the nest is no longer active.

Response B.4

The comment recommends mitigation measures related to nesting bird surveys and active nest buffers for the Draft EIR. Standard Condition of Approval PL-121 is provided below for reference.

- PL-121: Preconstruction Nesting Bird Survey: To the extent practicable, vegetation removal and construction activities shall be performed from September 1 through January 31 to avoid the general nesting period for birds. If construction or vegetation removal cannot be performed during this period, preconstruction surveys will be performed no more than two days prior to construction activities to locate any active nests as follows:
- The applicant shall be responsible for the retention of a qualified biologist to conduct a survey of the project site and surrounding 500' for active nests—with particular emphasis on nests of migratory birds—if construction (including site preparation) will begin during the bird nesting season, from February 1 through August 31. If active nests are observed on either the project site or the surrounding area, the project applicant, in coordination with the appropriate City staff, shall establish no-disturbance buffer zones around the nests, with the size to be determined in consultation with the California Department of Fish and Wildlife (usually 100' for perching birds and 300' for raptors). The no-disturbance buffer will remain in place until the biologist determines the nest is no longer active or the nesting season ends. If construction ceases for two days or more and then resumes during the nesting season, an additional survey will be necessary to avoid impacts on active bird nests that may be present.

As discussed under Impact BIO-1 in Section 3.3, *Biological Resources*, of the Draft EIR, Standard Condition of Approval PL-121 (Preconstruction Nesting Bird Survey) requires, to the extent practicable, that vegetation removal and construction activities be performed from September 1 through January 31 to avoid the general nesting period for birds. If construction occurs during the nesting bird season, preconstruction nesting bird surveys will be performed 2 days before construction begins. Appropriate buffers will be established around active nests and a biologist will monitor the nest. Adherence to Standard Conditions of Approval PL-121 would ensure that the Project would not disturb any active nests during construction. Therefore, this impact would be less than significant. Standard Condition of Approval PL-121 is largely consistent with the recommendations of the California Department of Fish and Wildlife. Although the Standard Condition of Approval PL-121 does not include daily monitoring during construction, the standard condition of approval is generally consistent with applicable requirements related to nesting birds, and it is the City's position that adherence to these Standard Conditions will avoid significant impacts.

Comment B.5

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a data base which may be used to make subsequent or supplemental environmental determinations. [Pub. Resources Code, § 21003, subd. (e)]. Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting- Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

The Project, as proposed, will have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish and Game Code, § 711.4; Pub. Resources Code, § 21089).

CONCLUSION

CDFW appreciates the opportunity to comment on the draft EIR to assist the City of Mountain View in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Ms. Kristin Garrison, Environmental Scientist, at (707) 944-5534 or Kristin.Garrison@wildlife.ca.gov; or Ms. Brenda Blinn, Senior Environmental Scientist (Supervisory), at (707) 944-5541 or Brenda.Blinn@widlife.ca.gov.

Response B.5

The comment requests that reports of special-status species and natural communities be reported to the California Natural Diversity Database and required filing fees. The Project site is an infill site that is currently developed with existing apartment buildings. No special-status species or natural communities have been found or recorded on the site. In the event that any such species are found, they will be reported as required. The comment does not raise any issues about the adequacy of the EIR; therefore, no further response is required.

Regional and Local Agencies

Organizations, Businesses, and Individuals

C. Adams Broadwell Joseph & Cardozo, Mountain View Residents for Responsible Development (dated November 16, 2018)

As previously stated, the footnotes included in comment letters do not raise any environmental issues that require a response. Thus, the footnotes are not reproduced in this chapter to maintain the clarity of the comments. The original comment letters (including footnotes) received on the Draft EIR are provided in Chapter 6, *Copies of the Comment Letters Received on the Draft EIR*.

Comment C.1

We are writing on behalf of Mountain View Residents for Responsible Development ("Mountain View Residents") to request ***immediate access*** to any and all documents referenced or relied upon in the Draft Environmental Impact Report ("DEIR") prepared for the 777 West Middlefield Road Project, SCH#2018032072, ("Project) proposed by FortBay, LLC. This request *excludes* any documents that are otherwise available on the City of Mountain View's Planning Department website as of today's date.

Our request for all documents referenced or relied upon in the DEIR is made pursuant to the California Environmental Quality Act ("CEQA"), which requires that all documents referenced in an environmental review document be made available to the public for the entire comment period.[2]

Pursuant to Government Code section 6253.9, if the requested documents are in electronic format, please send them using a file transfer program such as Dropbox. If the electronic files are 10 MB or less (or can be easily broken into chunks of 10 MB or less), they can be emailed to me as attachments. If any of the requested items are available on the Internet, we request that the City direct us to the appropriate electronic link(s) for accessing the documents.

My email and U.S. Mail information is:

Janet Laurain
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037
jlaurain@adamsbroadwell.com

I will be calling you to arrange for duplication/transmission of the documents. If you have any questions, please call me at (650) 589-1660. Thank you for your assistance with this matter.

Response C.1

The comment requests a portion of the administrative record for the Project. The Mountain View City Attorney's office provided the commenter with the requested documents on December 12, 2018. Please note that the footnote in this comment, which is reproduced in its entirety in Chapter 6, *Copies of the Comment Letters Received on the Draft EIR,* refers to a City of San Jose website rather than the City of Mountain View's website.

D. Adams Broadwell Joseph & Cardozo, Mountain View Residents for Responsible Development (dated December 7, 2018)

Comment D.1

We are writing on behalf of Mountain View Residents for Responsible Development ("Mountain View Residents") to respectfully request that the City of Mountain View ("City") extend the public review and comment period for the Draft Environmental Impact Report ("DEIR") prepared for the 777 West Middlefield Road Project ("Project), SCH #2018032072, proposed by FortBay, LLC by at least 30 days due to the City's failure to provide timely access to all documents referenced in the DEIR.

This request is made pursuant to the California Environmental Quality Act, Public Resources Code section 21092(b)(1), which requires that all documents referenced in an environmental review document be made available to the public for the entire comment period.

On November 16, 2018, our office submitted a request on behalf of Mountain View Residents for immediate access to any and all documents referenced or relied upon in the DEIR, as well as all documents referring or related to the Project. As the City knows, public records related to the Project include all documents in actual or constructive possession of the City, which includes the City's consultants' files.

In response, on November 26, 2018 the City provided electronic access to the DEIR Appendices and five planning file documents pertaining to the Project. The City noted that copies of other documents referenced or relied upon in the DEIR would be made available upon request, and suggested that additional responsive files may exist and would be provided on a "rolling basis."

In a follow-up email on December 5, 2018, Janet Laurain of our office requested that the City provide the 21 documents referenced in the DEIR that are not otherwise available online, and specifically requested prompt access to the Phase I and Phase II Environmental Site Assessments for the Project.

We have not yet received a definitive answer from the City regarding our request for these DEIR reference documents. Without access to all documents underlying the DEIR's analysis, Mountain View Residents' members and other members of the public are unable to fully evaluate and comment on the accuracy of the City's analysis and conclusions regarding the Project's impacts. We expect that several of these references documents will be voluminous and will require adequate time to review and analyze.

The courts have held that the failure to provide even a few pages of a CEQA document for a portion of the CEQA review period invalidates the entire CEQA process, and that such a failure must be remedied by permitting additional public comment. It is also well settled that a CEQA document may not rely on hidden studies or documents that are not provided to the public. By failing to make all documents referenced in the DEIR "readily available" during the current comment period, the City is violating the procedural mandates of CEQA.

Accordingly, we request that:

1) The City immediately provide us with access to the missing documents requested in this letter.

2) The City extend the public review and comment period on the DEIR for at least 30 days from the date on which the County releases all the referenced documents for public review.

Given the short time before the current comment deadline, please contact me as soon as possible with your response to this request, but no later than Tuesday, December 11, 2018.

Thank you for your prompt attention and response to this matter.

Response D.1

The comment requests a portion of the administrative record for the Project and a 30-day extension of the Draft EIR comment period. The Mountain View City Attorney's office provided the commenter with the requested documents on December 12, 2018. In addition, the comment period was extended to January 11, 2019, for this commenter. Responses to each comment included in the January 11, 2019, letter submitted by this commenter are provided in Letter G.

E. Beate Fromm (dated December 16, 2018)

Comment E.1

Regarding this EIR I have the following comments:

After reading the report I found that the traffic report is incomplete. The two closest intersection on W Middlefield were left out of the traffic report. No counts were done at the intersection with Linda Vista and San Vernon, they were not even mentioned in the report. Westbound on W Middlefield at Linda Vista is an existing left turn (with allowed u turn) pocket that is used by anyone who need to get to their driveways on the south side of Middlefield. To put even more traffic in the left turn pocket at Shoreline will make it impossible to clear the pocket even after two cycles. For us living in Sterlin estates it will be impossible to make a left turn onto Linda Vista. The traffic if terrible right now and the report states it will not get worse. I don't believe that will be the case.

Response E.1

The comment states that the traffic report prepared for the Project is incomplete because traffic counts were not performed at the intersections of West Middlefield Road at Linda Vista Avenue and San Vernon Avenue. The two unsignalized intersections noted in the comment were not evaluated for the Project because the Project would not add trips to these streets. Additionally, field observations showed no operational or queuing issues for vehicles turning to and from Linda Vista Avenue and San Vernon Avenue, and the trips added by the Project on West Middlefield Road are not expected to cause or significantly worsen operational or queuing issues for vehicles turning to and from these streets. At San Vernon Avenue, due to the median on West Middlefield Road, vehicles can only make right turns to and from San Vernon Avenue. At Linda Vista Avenue, field observations indicate that there is no significant queueing or delay for vehicles turning to and from Linda Vista Avenue. Although the Project would add more traffic to the westbound left-turn pocket at the Shoreline Boulevard/Middlefield Road intersection, the City would improve the traffic operations of the intersection by adding a second left-turn lane to the eastbound and westbound approaches and modifying the

intersection signal as part of the Shoreline Boulevard bus lane improvement project, as discussed in Chapter 4, *Background Conditions*, of the Transportation Impact Analysis included as Appendix 3.13-1 of the Draft EIR. The improvement at the Shoreline Boulevard/Middlefield Road intersection would improve the westbound left-turn vehicle queuing issue at the intersection. Thus, the Transportation Impact Analysis prepared for the Project was adequate and complete.

Comment E.2

The density of this project concerns me greatly, the tall back buildings have no road access for fire and emergency vehicles. The developer thinks it's OK to have a medical emergency being wheeled through the complex to an ambulance, a lot of time minutes count.

Do not approve this project in the current form.

Response E.2

The comment expresses concern about emergency access within the Project Site due to the Project's proposed density. As discussed under Impact TRA-4 in Section 3.13, *Transportation and Circulation*, of the Draft EIR, during operation of the Project, emergency response vehicles would be able to access the Project site from the driveways off North Shoreline Boulevard and West Middlefield Road. The Project would adhere to the City of Mountain View's Standard Conditions of Approval related to emergency access, including FD-15 (Fire Apparatus Access Roads), FD-16 (Fire Apparatus Turnarounds), FD-17 (Fire Lane Markings), and FD-18 (All-Weather Fire Apparatus Access Roads). Thus, emergency access would be maintained and the potential impact on emergency access during operation of the Project would be less than significant.

The opposition to the Project indicated in this comment is noted and will be provided to decision makers for their consideration during the decision-making process. This portion of the comment does not raise an environmental issue that requires a response.

F. Lozeau Drury, LLP, Laborers International Union of North America, Local Union No. 270 (dated December 20, 2018)

Comment F.1

I am writing on behalf of Laborers International Union of North America, Local Union No. 270 and its members living in and around the City of Mountain View ("LIUNA") regarding the Draft Environmental Impact Report ("DEIR") prepared for the project known as 777 W. Middlefield Road Residential Project, aka SCH2018032072, including all actions related or referring to the demolition of the existing buildings and the development of up to 718 new residential units in three separate buildings, with subterranean parking under each building, on Parcel No: 153-24-005 in the City of Mountain View ("Project") .

After reviewing the DEIR, we conclude that the DEIR fails as an informational document and fails to impose all feasible mitigation measures to reduce the Project's impacts. LIUNA requests that the Community Development Department address these shortcomings in a revised draft environmental impact report ("RDEIR") and recirculate the RDEIR prior to considering approvals for the Project.

We reserve the right to supplement these comments during review of the Final EIR for the Project and at public hearings concerning the Project. Galante Vineyards v. Monterey Peninsula Water Management Dist., 60 Cal. App. 4th 1109, 1121 (1997).

Response F.1

The comment states that the Draft EIR fails to impose all feasible mitigation measures to reduce the Project's impacts. The comment does not identify any specific shortcomings of the Draft EIR analysis or mitigation measures, and no specific response is therefore possible or required. Furthermore, and contrary to the allegation in this comment, the Draft EIR complied fully with all of CEQA's requirements. The comment presents no substantial evidence to the contrary about any specific impact area. As provided in Section 15064(f)(5), unsubstantiated opinion or narrative does not constitute substantial evidence. Since the commenter provides no substantial evidence regarding the alleged inadequacy of the Draft EIR, the claims contained in the comment letter would provide no basis for changes to the Draft EIR. The general allegations in this comment will be forwarded to the decision makers for consideration.

G. Adams Broadwell Joseph & Cardozo, Mountain View Residents for Responsible Development (dated December 7, 2018)

Comment G.1

We are writing on behalf of Mountain View Residents for Responsible Development ("Mountain View Residents") to provide comments on the Draft Environmental Impact Report ("DEIR") prepared by the City of Mountain View ("City") for the 777 West Middlefield Road Project ("Project"). Fortbay Mountain View LLC ("Applicant") is proposing to demolish an existing 9.84-acre residential site containing 208 units, and construct a 716-unit apartment complex. The apartments would be distributed among three separate buildings, two of which would include subterranean parking garages containing 878 vehicle parking spaces. The total amount of new uses is approximately 782,512 square feet. The Project site is located on one parcel (APN 153-24-005) located between West Middlefield Road and North Shoreline Boulevard, at 777 West Middlefield Road.

The Applicant is requesting the following approvals for the Project: a General Plan Amendment to amend the site designation from Medium Density Residential to High Density Residential; a Zoning Map Amendment from R3-2 (Multiple- Family) to a new customized zoning designation of P (Planned Community); a Planned Community and Development Review Permit; a Heritage Tree Removal Permit for the removal of 127 Heritage Trees, a Site and Architectural Plan Review approval, a Demolition Permit, and a Subdivision Map.

Based on our review of the DEIR and related Project documents, we have determined that the DEIR does not comply with the requirements of the California Environmental Quality Act ("CEQA"). First, the City underestimates the Project's construction and operational emissions of criteria pollutants and thus lacks substantial evidence to support its conclusion that air quality impacts would be less than significant. Second, the City failed to properly disclose and analyze the Project's potential public health impacts to nearby sensitive receptors from exposure to emissions of toxic air contaminants ("TACs"), which substantial evidence shows will be significant. Third, the DEIR underestimates the

Project's traffic impacts and thus lacks substantial evidence to support its conclusion that traffic impacts would be less than significant. For each of these reasons, the City may not approve the Project until a revised DEIR is prepared and re-circulated for public review and comment.

These comments were prepared with the assistance of technical experts Matt Hagemann and Kaitlyn Heck of Soil Water Air Protection Enterprise ("SWAPE"), and Daniel Smith of Smith Engineering & Management ("Smith Engineering"). SWAPE's comments and curriculum vitae are attached hereto as Attachment 1, and Smith Engineering's comments and curriculum vitae are attached hereto as Attachment 2. Their comments are fully incorporated in these comments and are submitted to the City in addition to the comments in this letter. Accordingly, the City must address and respond to the technical experts' comments separately.

I. STATEMENT OF INTEREST

Mountain View Residents is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential public health and environmental impacts associated with the Project. Mountain View Residents includes the International Brotherhood of Electrical Workers Local 332, Plumbers & Steamfitters Local 393, Sheet Metal Workers Local 104, Sprinkler Fitters Local 483, and their members and families, and other individuals that live and/or work in the City of Mountain View and Santa Clara County.

Individual members of Mountain View Residents include Jonathan R. Gonzales and Andrew R. Quiroz who work, recreate and raise their families in the City of Mountain View. They would be directly affected by the Project's adverse environmental and public health impacts. Individual members may also work on the Project itself and, therefore, will be first in line to be exposed to any health and safety hazards that exist onsite. Mountain View Residents have a strong interest in enforcing the State's environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for business and industry to expand in the City of Mountain View and Santa Clara County, and by making it less desirable for businesses to locate and people to live there.

II. LEGAL BACKGROUND

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an EIR, except in limited circumstances. The EIR is the very heart of CEQA. "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."

CEQA has two primary purposes. First, CEQA is designed to inform decisionmakers and the public about the potential, significant environmental effects of a project. CEQA's purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. In this respect, an EIR "protects not only the environment but also informed self-government." 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."

In furtherance of CEQA's purpose as an informational tool, the discussion of impacts in an EIR must be detailed, complete, and "reflect a good faith effort at full disclosure." CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project. In addition, an adequate EIR must contain the facts and analysis necessary to support its conclusions.

The second purpose of CEQA is to require public agencies to avoid or reduce environmental damage when possible by requiring appropriate mitigation measures and through the consideration of environmentally superior alter natives. 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. To that end, if an EIR identifies potentially significant impacts, it must then propose and evaluate mitigation measures to minimize those impacts. CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures. Without an adequate analysis and description of feasible mitigation measures, it would be impossible for agencies relying upon the EIR to meet this obligation.

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." As the courts have explained, "a prejudicial abuse of discretion" occurs "if the failure to include relevant information precludes informed decision-making and informed public participation, thereby thwarting the statutory goals of the EIR process."

Response G.1

The comment states that the Draft EIR does not comply with the requirements of CEQA, describes the commenter's statement of interest, and describes the legal background of CEQA. The comment states that the EIR's analysis of the Project's construction and operational emissions, the Project's potential public health impacts to nearby sensitive receptors from exposure to emissions of toxic air contaminants ("TACs"), and the analysis of the Project's traffic impacts are not adequate. These issues are discussed in more detail in the specific comments that follow. Therefore, detailed responses to the commenter's subsequent more specific comments are provided below.

Comment G.2

III. The DEIR's Conclusion that Air Quality Impacts Would be Less Than Significant Is Not Supported by Substantial Evidence

An EIR must fully disclose all potentially significant impacts of the project under consideration. Furthermore, when making a determination as to the significance of project impacts, the lead agency's determination must be supported by accurate scientific and factual data for each impact. An agency cannot conclude that an impact is less than significant unless it produces rigorous analysis and concrete substantial evidence justifying the finding.

A. The Input Parameters Used in the DEIR's Emissions Model Are Not Supported by Substantial Evidence

The DEIR states that the Project's construction and operational emissions were calculated using the California Emissions Estimator Model Version CalEEMod 2016.3.2 ("CalEEMod"). When modeling a project's emissions, CalEEMod provides the user with recommended default values based on information such as land use type, meteorological data, project type, and typical equipment associated with the project type. The user may then replace default values when more site-specific information is available; however, any changes to CalEEMod defaults must be supported by

substantial evidence. Once the model is run, CalEEMod generates "output files" for each model that reveal the parameters used in the model.

SWAPE reviewed the CalEEMod output files for the Project included in DEIR Appendix 3.2-1. In reviewing the CalEEMod output files, SWAPE found several of the input parameters used to calculate the Project's emissions are inconsistent with information provided in the DEIR. As SWAPE's comments explain, these changes are not supported by substantial evidence and resulted in an underestimation of the Project's emissions.

First, the Project's CalEEMod output files show that the number of vehicle parking spaces was underestimated in the air model. The Project description states that the subterranean parking garage would have "two levels with a total of 878 parking spaces". In reviewing the CalEEMod output files, however, SWAPE found that the air model was prepared assuming only 847 parking spaces would be constructed, which is less than the actual Project size. This discrepancy is significant because the land use type and size are used by CalEEMod to determine emission factors that go into the model's calculations. Thus, because the number of vehicle parking spaces in the air model is smaller than what is proposed for the actual Project, the construction and operational emissions are under estimated.

Second, SWAPE raises substantial questions about the feasibility and enforceability of Mitigation Measure MM AQ-1, which requires that all off-road diesel-powered construction equipment shall be equipped with EPA "Tier 4 Final" engines. These cleaner-burning engines were only recently phased in under EPA regulations that apply to newly manufactured construction equipment, not existing equipment. A recent study found that in the entire state of California only 4% of off- road diesel construction equipment is equipped with Tier 4 Final engines. Almost half of all equipment in the state does not have emission-reducing engines, and the vast majority of remaining equipment has Tier 2 or Tier 3 engines. It is unreasonable to assume that the Project Applicant will be able to procure an entire fleet of construction equipment with Tier 4 Final engines for this Project. Because the feasibility of MM AQ-1 is not supported, the DEIR cannot claim emissions reductions from this measure.

Third, SWAPE found that the number of vehicle trips made by construction workers and vendors was manually reduced in the model by a substantial amount, resulting in a significant underestimation of construction emissions without any factual justification. DEIR Appendix 3.2-1 includes a table listing the estimated vendor and worker trips during construction. However, SWAPE found that rather than inputting the presumed number of trips in the CalEEMod model as the CalEEMod User's Guide instructs, the Project emissions model was significantly modified to reduce those trips. In the case of vendor trips, the reduction was made from 420 trips to only 5 trips, and in the case of worker trips, the reduction was made from 2,138 trips to only 575 trips. The DEIR provides no justification for these reductions. SWAPE concludes that "these changes are completely unsubstantiated and significantly underestimate the Project's construction emissions."

Fourth, the number of pieces of construction equipment required to build the Project, and the horsepower of that construction equipment, were manually reduced in the model by a substantial amount, resulting in a further significant underestimation of construction emissions without any justification. DEIR Appendix 3.2-1 includes a table listing the estimated number and horsepower of off-road construction equipment. However, SWAPE found that rather than inputting the presumed number of trips in the CalEEMod model for a project of this size, as the CalEEMod User's Guide instructs, the Project emissions model was significantly modified to reduce both the number and

horsepower of equipment. The number of pieces of construction equipment in the model was manually reduced by 40, and the horsepower of equipment was significantly changed. The DEIR provides no justification for these reductions other than a note in Appendix 3.2-1 about a "AQ/GHG data request spreadsheet" that was not included in the DEIR appendices or reference documents. SWAPE concludes that "these changes are unreasonable and unsubstantiated, and they should not be used to estimate Project emissions."

Because the emissions calculations included in the DEIR were prepared using (1) assumptions that are inconsistent with the Project information provided in the DEIR; (2) mitigation that is notfeasible or enforceable; and (3) unsubstantiated changes in the CalEEMod emissions model, the DEIR consequently underestimated Project emissions. The City may not rely on these unsupported emissions calculations to determine the significance of the Project's air quality and public health impacts. The City lacks substantial evidence for the conclusions in the DEIR that air quality and public health impacts would be less than significant. Project emissions must be recalculated using data that is consistent with the Project description, feasible and enforceable construction mitigation, and supportable estimates of construction-related equipment and vehicle trips.

Response G.2

The comment summarizes the conclusions made by the commenter's technical consultant SWAPE. See responses to comments G.12 through G.27 for detailed responses to the specific comments prepared by SWAPE.

Comment G.3

B. The DEIR's Conclusion that Public Health Impacts on Nearby Receptors Would Be Less Than Significant Is Not Supported by Substantial Evidence

The City evaluated the Project's public health impacts on nearby receptors by preparing a health risk assessment ("HRA") that evaluates fine particulate matter emissions from Project construction activities. Relying on that HRA, the DEIR concludes that, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, the Project's TAC emissions would result in a less than significant impact on nearby sensitive receptors. The City did not prepare an HRA to evaluate the impacts of the Project's operational emissions on those sensitive receptors. Instead, the DEIR concludes that "the Project would not result in any appreciable increases in health risks" during operation because the use of diesel vehicles and equipment would be minimal.

As explained more fully in the attached SWAPE comments, the City's conclusion that the Project's health risk impacts on nearby sensitive receptors would be less than significant is not supported by substantial evidence for several reasons.

First, as discussed in section III(A) above, the City's HRA was prepared using a flawed CalEEMod emissions model which underestimated Project emissions. Because Project construction emissions are underestimated, and those emissions numbers are used to prepare the construction HRA, the HRA also underestimates the construction-related health risk to nearby sensitive receptors.

Second, SWAPE explains that the DEIR 's omission of a quantified HRA for the Project's operational emissions is inconsistent with the most recent guidance published by the Bay Area Air Quality Management District's ("BAAQMD") and by the California Office of Environmental Health Hazard Assessment (OEHHA), and therefore the City's conclusion that public health risks to nearby

receptors would be less than significant is unsupported. The BAAQMD recommends that an HRA assess community risks and hazards within 1,000 feet of the Project boundaries, and there are multiple residents who live immediately adjacent to the Project site. OEHHA's 2015 guidelines describe the types of projects that warrant preparation of a health risk assessment. The Guidelines recommend that exposure from projects lasting more than 6 months should be evaluated for the duration of the project.

Here, once the Project is operational, it will generate vehicle trips, which generate additional exhaust emissions, and will therefore continue to expose nearby receptors to emissions of TACs for the duration of the Project. Exposure to traffic-related emissions has been implicated with a variety of cancer as well as non-cancer health risks including acute and chronic respiratory disease, such as reduced lung function and increased asthma hospitalizations and heart attacks, as well as premature death in individuals with heart disease. While an expected duration was not provided in this case, it can reasonably be assumed the Project will operate for at least 30 years - much longer than the 6-month minimum in the OEHHA guidelines. For this reason, SWAPE concludes that the health risks from Project operations should have also been evaluated in the HRA.

Response G.3

The comment summarizes the conclusions made by the commenter's technical consultant SWAPE. See responses to comments G.12 through G.27 for detailed responses to the specific comments prepared by SWAPE.

Comment G.4

IV. Substantial Evidence Shows that the Project May Result in Significant Air Quality Impacts and a Significant Cancer Risk from the Project Exposing People to Toxic Air Contaminants

In an effort to demonstrate the impacts of the Project, SWAPE first prepared a corrected CalEEMod emissions analysis using an accurate number of vehicle parking spaces, an achievable mix of clean-burning construction equipment, and default values for worker and vendor trips and construction equipment numbers and equipment horsepower. The result of this corrected modeling shows that Project construction will exceed the BAAQMD's threshold for significant emissions of NOx pollutants.

Additionally, in an effort to demonstrate the potential risk posed by the Project to nearby sensitive receptors, SWAPE prepared a screening-level operational health risk assessment. The results of SWAPE's HRA provide substantial evidence that the Project's operational emissions of fine particulate matter will result in a significant health risk impact that was not disclosed in the DEIR. SWAPE used the AERSCREEN model for its screening level HRA. AERCREEN is a screening-level dispersion model recommended by OEHHA and the California Air Pollution Control Officers Association guidance as the appropriate dispersion model for level 2 health risk screening assessments.

The operational emissions estimates used in SWAPE's health risk screening assessment are based on SWAPE's updated CalEEMod air model for the Project, which corrected the inaccuracies in the City's model outlined in Section III(A) above. Consistent with the recommendations set forth by OEHHA, SWAPE used a residential exposure duration of 30 years. SWAPE's assumptions and formulas are explained more fully in the attached letter.

SWAPE's health risk analysis found that the excess cancer risk to adults, children, infants, and during the third trimester of pregnancy at a sensitive receptor located approximately 1 meter away in the adjacent residences, over the course of Project construction and operation, are approximately 7.3, 48, 66, and 2.7 in one million, respectively. The total (i.e., lifetime) excess operational cancer risk over the course of Project operation (30 years) is approximately 120 in one million. As SWAPE's analysis demonstrates, the infant, child, and lifetime cancer risk from Project operations alone greatly exceeds the BAAQMD threshold of 10 in one million.

As SWAPE notes, screening level health risk assessments are known to be more conservative and are aimed at health protection. However, the purpose of a screening-level health risk assessment is to determine whether a more refined HRA needs to be conducted.

The results of SWAPE's analyses provide substantial evidence that the Project will have significant and unmitigated emissions of NOx during construction. SWAPE provides a detailed discussion of mitigation measures that are available to reduce these construction-related Project emissions.SWAPE's analyses also provide substantial evidence that the Project's operational emissions of fine particulate matter may result in a significant health risk impact that was not disclosed in the DEIR. A more refined HRA needs to be conducted in this case in order to properly disclose, analyze, and mitigate the Project's potentially significant public health impacts. Accordingly, the City must revise and re-circulate the DEIR for public review and comment.

Response G.4

The comment summarizes the conclusions made by the commenter's technical consultant SWAPE. See responses to comments G.12 through G.27 for detailed responses to the specific comments prepared by SWAPE.

Comment G.5

V. The DEIR Fails to Adequately Disclose, Analyze, and Mitigate Traffic Impacts

The City's traffic impact analysis in the DEIR fails to comply with CEQA in several ways.

A. The DEIR Miscalculates the Environmental Baseline by Overestimating Existing Vehicle Trips at the Project Site

Smith Engineering reviewed the DEIR and concluded that it likely underestimates the Project's traffic impacts, by deducting from the traffic analysis a credit for traffic that was not actually representative of existing conditions at the Project site when the DEIR was prepared. According to the DEIR, residents who are leasing apartments on the Project site have been provided with a "notice of relocation" since 2016. This indicates that many tenants were motivated to move elsewhere, resulting in a high likelihood of substantial vacancy rates when the DEIR was prepared.

Rather than calculating the environmental baseline by counting the actual amount of traffic entering and leaving the Project site, or by disclosing the number of occupied units at the time the DEIR was prepared, the DEIR assumes that all 208 residential units were occupied and were generating traffic trips to and from the Project site at that time. Smith Engineering concludes that this assumption was invalid, leading to an inaccurate baseline and an underestimation of Project impacts. As a result, the City must revise the DEIR to include documentation of the number of units that were actually occupied at the time the DEIR was prepared.

Response G.5

The comment states that the traffic analysis overestimated the existing vehicle trips because of a high likelihood of substantial vacancy rates at the Project site after a "notice of relocation" was distributed in 2016. Based on the Institute of Transportation Engineers (ITE) Trip Generation Handbook, 3rd Edition, which is the industry-accepted guidance for this type of analysis, data collection for an apartment site should be at least 90 percent to be considered as fully occupied. According to the applicant, the average occupancy rate at the Project site in the past 3 years was approximately 96 percent.[2] Thus, the Project site is considered fully occupied based on ITE's criteria. Using a recent, three-year average occupancy rate captures any seasonal fluctuations and is a better overall representation of existing conditions. The existing trips for the Project site estimated using the ITE trip generation rates based on the number of total dwelling units included in Table 3.13-5 in Section 3.13, *Transportation and Circulation*, of the Draft EIR is adequate and not overestimated because the ITE rate already reflects a small vacancy rate in typical apartment buildings. Furthermore, the commenter has not provided any evidence of past or current vacancy rates.

Comment G.6

B. The DEIR Improperly Uses Different Trip Generation Rates for Existing and Proposed Residential Units on the Project Site

The DEIR incorrectly attempts to compare "apples to oranges" regarding the traffic that will be created by the existing and proposed residents who live on the Project site. The DEIR assumes that the existing residents create 7.32 daily vehicle trips per residential unit, and that future residents will only create 5.44 trips per unit, using estimated trip generation rates for "low-rise" and "mid-rise" apartments, respectively. As a result, the predicted traffic impacts are lessened, because more trips are subtracted as part of the existing baseline and fewer trips are added as part of the expected Project traffic.

The problem with this method, Smith Environmental explains, is that the two different trip generation rates were developed from observations of low- and mid-rise apartments in their typical contexts, with higher buildings set in environments that have more transportation infrastructure and community services that can be conveniently reached by walking. In the case of the Project, however, there is no difference in environmental context between the existing and proposed units. Smith Environmental concludes that "the choice to take advantage of this differential based on building heights alone unfairly favors the Project applicant and is an assumption that is not consistent with the good faith effort to disclose impacts that CEQA demands." The DEIR should be revised to use consistent traffic trip-generation rates for existing and proposed apartments on the same site.

Response G.6

The comment states that the traffic analysis improperly uses different trip generation rates for existing and proposed residential units on the Project site. Although both the existing and proposed uses on the Project site consist of residential uses, the Project would include a substantially different density, building design, site layout, and parking garage design compared

[2] Hariri, Perry. Miramar Capital. January 17, 2019—email to Jessica Viramontes, ICF.

to the existing low-rise residential uses. Therefore, the existing onsite apartments and the proposed apartments are different types of residential development. The existing trips for the Project site and the number of Project trips included in Table 3.13-5 in Section 3.13, *Transportation and Circulation*, of the Draft EIR are properly estimated using the ITE trip generation rates, which are the industry-accepted rates for this type of analysis, that best fit the existing and proposed uses at the Project site. Refer to Response G.5, above.

Comment G.7

C. The DEIR Does Not Fully Disclose the Project's Traffic Impacts at Key Locations

Smith Environmental reviewed the analysis of traffic impacts at various key intersections near the Project site, and concluded that there is a repeated failure to disclose the actual extent of those impacts. First, the DEIR's analysis of the intersection of North Shoreline Boulevard and the U.S. 101 northbound off-ramp, which already experiences the worst delays ("LOS F"), only considers those vehicles that make it through the intersection during peak commute hours, and not the impacts of vehicles that fail to make it through the intersection due to significant delays. This leads to an improper conclusion that the Project's traffic impacts will be less than significant.

Second, the DEIR fails to explain the effects of traffic delays at the intersection of Moffett Boulevard, Central Expressway and Castro Street, caused by the regular approaches and departures of the Caltrain rail line, which blocks the intersection for about 45 seconds and causes extended traffic queues at least 12 times during the peak commute hours. According to Smith Environmental, “this key intersection requires a sophisticated analysis and there is no indication that such an analysis has been done,” resulting in underestimated traffic impacts.

Response G.7

The comment states that the traffic analysis prepared for the Project does not fully disclose the Project's traffic impacts at the North Shoreline Boulevard/US 101 northbound off-ramp intersection and the intersection of Moffett Boulevard, Central Expressway, and Castro Street.

At the North Shoreline Boulevard/US 101 northbound off-ramp intersection, the traffic analysis acknowledges the existing unacceptable LOS F operating conditions at the intersection. The analysis, which was completed according to the VTA methodology for Santa Clara County, shows that the Project would result in a less-than-significant impact because the Project would add only a few trips to the critical movements (6 or fewer trips to the northbound and southbound through movements), which would not cause an increase in critical movement delay or volume-to-capacity ratio that would exceed the significance threshold, as discussed under Impact TRA-1 in Section 3.13, *Transportation and Circulation*, of the Draft EIR.

At the Moffett Boulevard/Central Expressway/Castro Street intersection, the analysis was performed using signal timing provided by the Santa Clara County Roads & Airports Department, which is required when analyzing intersections on expressways. The signal timing corresponds to the date and peak hour of the traffic counts. The signal timing reflects the Caltrain train crossing during the peak hours. When Caltrain crosses the intersection, the whole intersection does not shut down. Only certain movements are restricted. Other traffic movements continue to run when trains are present. The analysis shows that the Project would result in a less-than-significant impact because the Project would add only a few trips to the

critical movements and the movements that would be affected by the train crossing (4 or fewer trips to the northbound left and through movements and the southbound through movement).

Based on the above and as described in Section 3.13, *Transportation and Circulation*, of the Draft EIR, the Project trips would not cause an increase in critical movement delay or volume-to-capacity ratio that would exceed the significance thresholds. Thus, the traffic analysis adequately identified the Project's traffic impacts at key intersections, including the intersections noted in the comment.

Comment G.8

D. The DEIR Fails to Analyze the Effects of Parking Space Limitations, Unbundled Parking, and Transportation Network Company Services

The Project would provide only 1.226 parking spaces per residential unit, and parking would be "unbundled," or paid for separately from the apartment rent rather than included as part of the rent. Although this approach of providing minimal and unbundled parking might suppress car ownership at more urban projects, this Project site is not located in a "walkable" neighborhood. The site is separated by more than a half-mile distance and an at-grade crossing of a busy expressway from the Mountain View transit center and the activities and attractions of the Castro Street area, which makes it unattractive to walk or bike to transit or activities at those locations.

There is also available curb parking on nearby neighborhood streets. Smith Environmental concludes that Project residents who own more than one car, or who wish to avoid paying extra for unbundled parking, will simply find ways to park in nearby neighborhoods. ·The City has already identified neighborhood parking as a topic of significant concern among nearby residents, and yet the DEIR does not even address this controversial issue. Residents have identified environmental impacts that they already associate with increasing competition for street parking in the vicinity of the Project site, including human safety and sanitation impacts. As one resident who lives nearby explained:

> "[I]f insufficient parking is provided onsite, public streets will inevitably be used instead. Living near San Veron Ave., we constantly see cars overflowing from the San Veron Apartments. This impacts safety (cars block visibility when exiting driveways) and sanitation (cars aren't moved on street sweeping days). I hope that the EIR will consider a realistic estimate of the number of cars which will accompany the planned expansion based on statistics for similar apartment complexes nearby."

The DEIR also fails to address the predictable rise in activity of transportation network companies (TNCs), or ride sharing services, like Uber and Lyft, which will contribute to traffic impacts. A recent study found that in certain areas, travel by TNCs caused double the vehicle miles traveled (VMT) than would otherwise be present. Smith Environmental concludes that "[p]articularly at a parking-starved complex that is considerably offset from transit hubs and activity centers, such as this Project, TNC usage may become prevalent and considerably add to traffic impacts, because for every passenger trip served, there is an extra trip circulating to access the next service call." The DEIR must address the issue of TNC contributions to Project traffic impacts.

Response G.8

The comment states that the traffic analysis fails to analyze the effects of parking space limitations, unbundled parking, and the rise of transportation network company (TNC) services. As discussed under Impact TRA-7 in Section 3.13, *Transportation and Circulation*, of the Draft EIR, the Project would meet the City "model parking standard" for the market-rate units as well as the moderate and low income units. Thus, the proposed parking supply would be adequate to serve the residents of the Project based on established City standards and the Project's impact on the parking supply would be less than significant. According to CEQA, the CEQA Guidelines, and recent case law, competition for street parking is not considered an environmental impact under CEQA. The comment does not provide any evidence that the Project, which would include 878 unbundled (unassigned) parking spaces, would increase the demand for parking offsite in a way that would result in significant impacts under CEQA.

For the effects of the rise of TNC services, the recent study cited in the comment is for the San Francisco central business district area and is not relevant or applicable to the Project, which is a residential project located in the suburban City of Mountain View. The number of Project trips included in Table 3.13-5 in Section 3.13, *Transportation and Circulation*, of the Draft EIR is estimated using ITE trip generation rates, which reflect typical vehicle activities for multifamily housing in general urban/suburban areas (similar to the Project), including the vehicle trips related to TNC services.

Comment G.9

E. Construction Traffic Impacts Are Not Adequately Addressed

Smith Environmental concluded that the DEIR does not present reasonable estimates of the volume of construction haul traffic that will occur; and the proposed construction traffic mitigation measures are inadequate to reduce potentially significant impacts to a below-significant level. The Project would involve hauling 226,220 square feet of demolition materials and 195,000 cubic feet of excavation materials (soil). First, the calculation of a hauling trip rate for demolition materials is insufficient to determine the number of truckloads that will be required, because truckloads are calculated in cubic feet or cubic yards, not by the square footage of the area to be demolished. The density and thickness of the demolished materials must be considered when determining the haul rate, and not just the square footage of the demolition area. Because of this omission in the DEIR, the number of truckloads hauling demolition materials may be greatly underestimated.

Second, the excavation materials (soil) will likely bulk or swell once dug out and placed in trucks, thereby increasing the amount of excavation hauling trips. Most soil, gravel and sand swells 20 to 30 percent above the volume of the excavation, while wet gravel with clay (a likely prospect given the water table levels disclosed in the DEIR) swells to 50 to 60 percent greater than the size of the excavation. Sandstone or limestone swells to 70 to 80 percent greater than the volume of excavation. The DEIR presents no evidence of reasonable estimates of the volume of construction haul traffic based on the actual materials to be excavated.

Hence, the claim that filing a traffic control plan approved by the City will mitigate construction traffic impacts (Mitigation Measure TRA-8) is purely speculative and unsubstantiated. This is inadequate.

Deferring the formulation of mitigation measures is generally impermissible. Mitigation measures adopted after Project approval deny the public the opportunity to comment on the Project as modified to mitigate impacts. It is not impractical for the Project Applicant to fully disclose and analyze the potential construction traffic impacts during construction, including a reasonable and full disclosure of construction haul traffic, as part of the DEIR, and to propose specific and enforceable mitigation measures to address those impacts. The DEIR should be revised to include this information and analysis.

Response G.9

The comment states that the Draft EIR underestimates the number of construction trips due to the unit (square feet) used to estimate the amount of demolition material and due to the likelihood for excavated material to swell once placed in trucks. The comment incorrectly states that the Project would require 195,000 cubic feet of excavated material. As discussed in section 2.6.1, *Demolition and Excavation*, in Chapter 2, *Project Description*, excavation would result in the export of approximately 195,000 cubic yards (not cubic feet) of soil.

As indicated in Appendix 3.2-1 of the Draft EIR on page 64 under the heading "Hauling Trip Number," 32,500 one-way truck trips for soil hauling and 2,582 one-way trips for demolition materials hauling would be required during Project construction. The number of one-way haul trips was calculated by assuming 12-cubic-yard haul trucks would be used to haul away demolition materials (266,220 square feet) and excavated soil (195,000 cubic yards). The California Emissions Estimator Model (CalEEMod) assumes 16-cubic-yard haul trucks. As indicated in Appendix 3.2-1 of the Draft EIR on page 59, the CalEEMod default values for one-way haul truck trips for demolition and soil hauling was increased from 1,211 to 2,582 and 24,375 to 32,500, respectively, to account for the smaller-sized haul trucks that would be used during Project construction. CalEEMod converts the amount of demolished building square footage to the number of haul truck trips. In this case, the 266,220 square feet of demolition materials divided by 1,211 truck trips results in 220 square feet of material per haul trip, which is roughly equivalent to 16 cubic yards according to CalEEMod. Thus, the use of square feet as the unit to measure the anticipated amount of demolition material did not result in an underestimation of the number of haul trips. The commenter's statement about the likelihood for excavated material to swell once placed in trucks is noted. The applicant's design team provided the anticipated number of haul trips for the excavated soil, which was calculated based on the applicant's professional judgement and expertise with projects similar to the proposed Project.

Furthermore, construction impacts would be temporary. It should also be noted that the number of construction trips in the short-term would be less than the trips to and from the site in the long-term under operation of the proposed apartment complex. As discussed under Impact TRA-8 in Section 3.13, *Transportation and Circulation*, Mitigation Measure TRA-8, which requires the development and implementation of a construction traffic control plan, would be implemented to reduce the potential for construction vehicle conflicts with other roadway users. The specific elements of the construction traffic control plan would be developed in accordance with the City's policies and submitted for City approval. However, the requirements of MM TRA-8 are specific enough to not be considered deferral of mitigation. Although the development of the construction traffic control plan would occur in the future, the components of what that plan must include and must accomplish are explicitly outlined in the mitigation measure. The mitigation measure is not necessarily tied to the number of haul trips, so the

commenters claim that the mitigation is inadequate due to a perceived error in calculating the number of trips is unfounded.

Comment G.10

F. Basis for Cumulative Impacts Analysis Is Uncertain

The cumulative impacts analysis in the DEIR makes an unsupported assumption that ambient traffic will grow 2 percent per year. Smith Engineering contests this assumption and questions the facts upon which it is based, especially given "the rapid growth of development in the area, both in Mountain View and in surrounding communities, and revitalization of economic activity of existing uses in recent years." Under CEQA, a correct cumulative impacts analysis would examine a concurrent project development list, and/or an applicable regional traffic forecast model. Both of these options are available to the City, leading Smith Engineering to conclude that the "unsubstantiated background growth assumption" in the DEIR is inadequate and requires further justification.

Response G.10

The comment states that the cumulative impacts analysis underestimates growth by assuming a growth rate rather than a concurrent project development list and/or an applicable regional traffic forecast model. As discussed under Section 4.1.1, *Approach to Impact Analysis*, in Chapter 4, *Other CEQA-Required Sections*, of the Draft EIR, the City of Mountain View planning staff generated a list of pending projects for consideration in the cumulative impact analysis. Refer to Appendix D of the Transportation Impact Analysis (Appendix 3.13-1) for a complete list of these projects. The City evaluated the potential trips and distribution of trips from these pending projects. However, to ensure capturing all relevant foreseeable future development, the Transportation Impact Analysis applied a two-percent-per-year compounded growth factor to account for additional planned or future growth. The two percent annual growth rate used for the cumulative traffic analysis factors in the growth from specific pending development projects, and accounts for other regional growth. Based on ongoing analysis and verification by City of Mountain View Public Works staff, the two percent annual growth rate tends to overstate the cumulative traffic trips in the region, and presents a conservative analysis of cumulative traffic conditions. Based on the above, the cumulative analysis in the Draft EIR is adequate and requires no further justification.

Comment G.11

VI. Conclusion

For all of the forgoing reasons, the City must prepare and recirculate a revised DEIR in order to adequately disclose, analyze, and mitigate the Project's significant impacts to air quality, public health, and traffic, before considering the entitlements for the proposed Project.

Response G.11

The comment states that the Draft EIR should be revised and recirculated. See responses to comments G.1 through G.10 and G.12 through G.27 for a detailed description of how the Draft EIR complied fully with all of CEQA's requirements.

Comment G.12

ATTACHMENT 1

We have reviewed the November 2018 Draft Environmental Impact Report (DEIR) for the 777 West Middlefield Road Project ("Project") located in the City of Mountain View ("City"). The Project proposes to demolish 208 existing, multi-family residential units in order to construct 716 dwelling units in three buildings, including 85 studios, 431 one-bedroom units, and 200 two-bedroom units. Additionally, the Project proposes to construct 878 vehicle parking spaces and 788 bicycle parking spaces across the 9.84-acre Project site.

Our review concludes that the DEIR fails to adequately evaluate the Project's Air Quality impacts. As a result, the health impacts associated with the construction and operation of the proposed Project are underestimated and inadequately addressed. An updated DEIR should be prepared to adequately assess and mitigate the potential health risk the Project may have on the surrounding environment.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The DEIR for the Project relies on emissions calculated from the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod"). 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 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 were utilized in calculating the Project's air pollutant and GHG emissions, and make known which default values were changed as well as provide a justification for the values selected.

When reviewing the Project's CalEEMod output files, located in Appendix 3.2-1, we found that several of the values inputted into the model are not consistent with information disclosed in the DEIR and are not consistent with guidance set forth by the Bay Area Air Quality Management District (BAAQMD). As a result, emissions associated with the Project are greatly underestimated. An updated DEIR should be prepared that adequately assesses the potential impacts that construction and operation, the Project may have on regional and local air quality.

Response G.12

The comment states that the air quality emissions generated by the Project were greatly underestimated because the Draft EIR used Project-specific assumptions rather than model default values. Construction related criteria pollutant and greenhouse gas emissions were estimated using Project-specific assumptions that were provided by the applicant's design team. Consistent with Bay Area Air Quality Management District recommendations, the Project-specific assumptions were used in place of CalEEMod default values because the Project-specific assumptions represent the best available information for characterizing the anticipated construction activities and emissions associated with the Project. The CalEEMod runs performed by SWAPE include additional construction equipment that vastly and falsely overstate the equipment that would reasonably be expected to be used for the Project.

Comment G.13

Underestimated Land Use Size

Review of the Project's CalEEMod output files demonstrates that the land uses proposed by the DEIR were underestimated in the Project's CalEEMod model: As a result, the Project's construction and operational emissions are underestimated.

According to the DEIR, the Project proposes to construct 716 residential units and 878 below-ground vehicle parking spaces (see excerpt below) (Table 2-1, p. 2-5) (see also p. 2-14 ["subterranean parking garage would have two levels with a total of 878 parking spaces"]).

Table 2-1. Project Features

Feature	Building A	Building B	Building C	Total
Square Footage (feet)	328,849	311,256	142,236	**782,341**
Dwelling Units (total)	306	266	144	**716**
Studio	42	24	19	**85**
One-Bedroom Units	176	168	87	**431**
Two-Bedroom Units	88	74	38	**200**
Personal Storage Units	306	266	144	**716**
Vehicle Parking Spaces	394	340	144	**878**
Bicycle Parking Spaces	337	293	158	**788**
Source: KTGY Group Incorporated 2018.				

However, review of the DEIR's CalEEMod output files demonstrates that the Project Applicant modeled emissions assuming only 847 parking spaces would be constructed (see excerpt below) (Appendix A, pp. 55, pp. 88).

777 Middlefield EIR

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	847.00	Space	7.62	338,800.00	0
Other Asphalt Surfaces	49.00	1000sqft	1.12	49,000.00	0
Apartments Mid Rise	716.00	Dwelling Unit	9.64	782,341.00	2048

As you can see in the excerpt above, the Project Applicant underestimates the parking land use size by 31 parking spaces. As previously stated, the land use type and size features are used throughout CalEEMod to determine default variable and emission factors that go into the model's calculations.For example, the square footage of a land use is used for certain calculations such as determining the wall space to be painted (i.e., VOC emissions from architectural coatings) and volume that is heated or cooled (i.e., energy impacts). Similarly, the acreage is used to determine the amount of ground to be prepared, graded, paved, etc. Furthermore, CalEEMod assigns each land use type with its own set of energy usage emission factors. By underestimating the land use from the model, the emissions that would be produced during construction and operation of the entire parking structure are unaccounted for, and as a result, the Project's emissions are underestimated.

Response G.13

The comment states that the Draft EIR underestimates the construction emissions generated by the Project because the air quality analysis assumed 847 parking spaces rather than the 878

parking spaces that would be included as part of the Project. Subsequent to the preparation of the air pollutant and greenhouse gas analysis, the applicant revised the number of proposed parking spaces from 847 to 878. Thus, the air quality emissions estimated for the Project may be slightly underestimated due to the underestimation of the air quality and greenhouse gas emissions associated with paint application and energy consumption associated with the proposed subterranean parking structure. Nonetheless, as discussed under Impact AQ-2a and Impact AQ-2b in Section 3.2, *Air Quality*, and under Impact GHG-1a and GHG-1b in Section 3.6, *Greenhouse Gas Emissions*, of the Draft EIR, the Project's construction and operational emissions would be well below the applicable emissions thresholds. The incremental additional emissions that could be associated with the additional 31 parking spaces on the site would be minimal, and would not materially affect the air quality or greenhouse gas emissions impacts or conclusions in the Draft EIR. Thus, even if the Project's construction and operational air quality and greenhouse gas emissions were remodeled to assume the proposed 878 parking spaces, the impact conclusions identified in the Draft EIR would not change. The air quality and greenhouse gas analyses in the Draft EIR, therefore, adequately identify the potential impacts of the Project.

Comment G.14

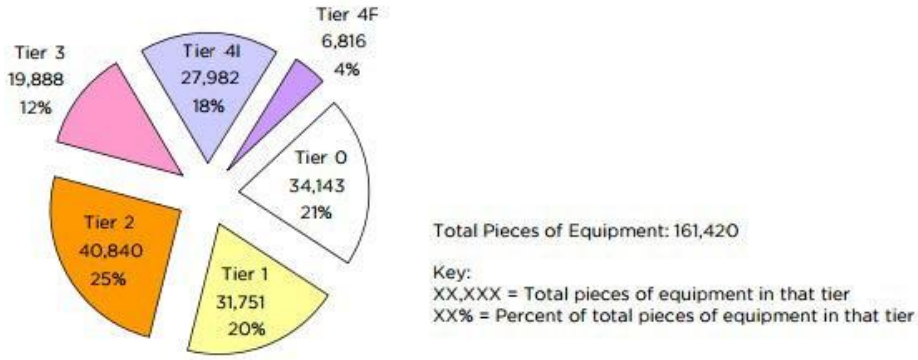
Failure to Assess Feasibility of Obtaining Tier 4 Final Equipment

According to the DEIR, the Project's construction emissions will be less than significant with implementation of Mitigation Measures MM AQ-1 and MM AQ-2 (p. 3.2-22). Mitigation Measure MM AQ-1 states, "The Project developer shall ensure that all off-road diesel-powered equipment used during construction is equipped with EPA Tier 4 Final engines" (p. 3.2-22). As a result, the DEIR models construction emissions of air pollutants by assuming that Tier 4 Final off-road equipment will be utilized during construction (Appendix 3.2-1, pp. 56, pp. 89). However, the DEIR fails to assess the feasibility of obtaining an entire fleet of Tier 4 Final equipment for Project construction (Appendix 3.2-1, pp. 56, pp. 89). Due to the limited number of Tier 4 Final construction equipment available, the DEIR should have assessed the feasibility of obtaining construction equipment equipped with Tier 4 Final engines. By failing to demonstrate how the Project will actually comply with this mitigation measure, this measure is unenforceable and thus, the Project Applicant cannot claim the emissions reductions from this measure.

The U.S. EPA's 1998 nonroad engine emission standards were structured as a three-tiered progression. Tier 1 standards were phased-in from 1996 to 2000 and Tier 2 emission standards were phased in from 2001 to 2006. Tier 3 standards, which applied to engines from 37-560 kilowatts (kW) only, were phased in from 2006 to 2008. The Tier 4 emission standards were introduced in 2004 and were phased in from 2008 to 2015. These tiered emission standards, however, are only applicable to newly manufactured nonroad equipment. According to the U.S. EPA, "if products were built before EPA emission standards started to apply, they are generally not affected by the standards or other regulatory requirement s." Therefore, pieces of equipment manufactured prior to 2000 are not required to adhere to Tier 2 emission standards, and pieces of equipment manufactured prior to 2006 are not required to adhere to Tier 3 emission standards. Construction equipment often lasts more than 30 years; as a result, Tier 1 equipment and non-certified equipment are currently still in use. It is estimated that of the two million off-road diesel engines currently used in construction, 31 percent were manufactured before the introduction of emissions regulations.

Although Tier 4 Final engines are currently being produced and installed in new off-road construction equipment, the vast majority of existing diesel off-road construction equipment in California is not equipped with Tier 4 Final engines. Based on information and data provided in the San Francisco Clean Construction Ordinance Implementation Guide for San Francisco Public Projects, the availability of Tier 4 Final equipment was extremely limited, with 25% of all off-road equipment in the state of California equipped with Tier 2 engines, approximately 12% equipped with Tier 3 engines, approximately 18% equipped with Tier 4 Interim engines, and only 4% equipped with Tier 4 Final engines statewide (see excerpt below).

Figure 4: 2014 Statewide All Fleet Sizes (Pieces of Equipment)



As demonstrated in the figure above, Tier 4 Final equipment only accounts for 4% of all off-road equipment available in the state of California. Thus, by stating that the Project proposes to use only Tier 4 Final equipment during construction, the DEIR's analysis is relying on a fleet of construction equipment that only accounts for 4% of all off-road equipment available in the state. By failing to evaluate the feasibility of implementing Tier 4 Final mitigation into the Project's construction phases, the Project's estimated mitigated construction emissions are unsupported and the significance determination made within the DEIR should not be relied upon.

Response G.14

The comment states that the Draft EIR failed to assess the feasibility of using Tier 4 construction equipment. In response to concerns that Tier 4-compliant construction equipment is not commercially available, and therefore, is not feasible to specify as an air quality mitigation measure, ICF compiled data on sales of construction equipment during the period of both phase-in (2011–2014) and required (2015–present) Tier 4-compliant equipment. The following equipment types are associated with Project construction:

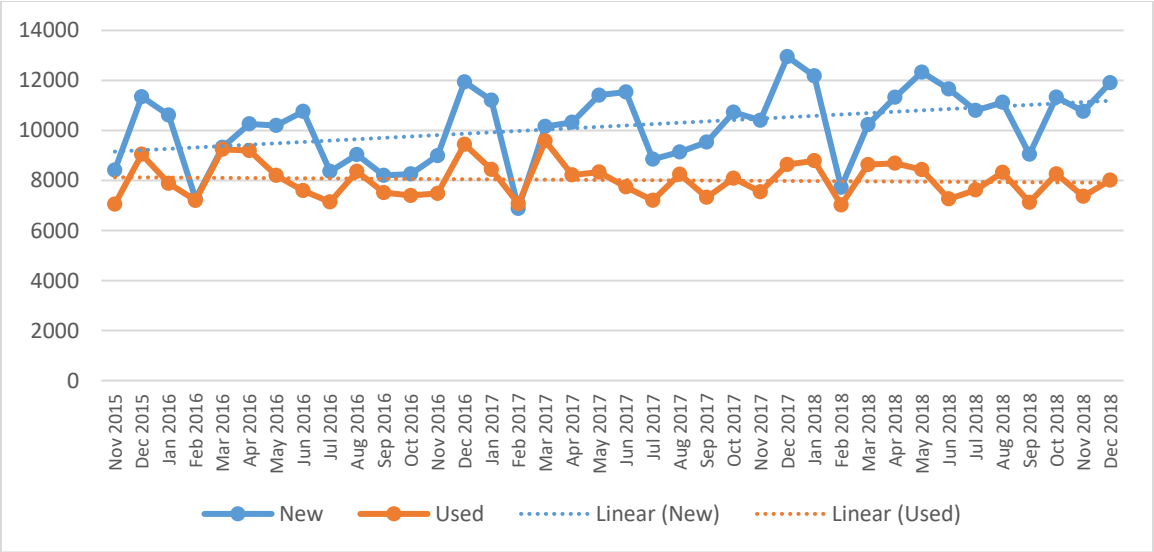
- Forklift (51 horsepower [hp])
- Pump (84 hp)
- Excavator (417/80 hp)
- Rubber Tired Dozer (166 hp)
- Tractor/Loader/Backhoe (87 hp)
- Drill rig (700 hp)
- Paver (130 hp)

Beginning in 2015, all engines in construction equipment sold in the U.S. were required to be Tier 4 compliant. Therefore, the availability of Tier 4 equipment should be reflected in equipment sales over time. If Tier 4 equipment is not commercially available, or is commercially available but is not being purchased, sales during and after the required Tier 4 period would be expected to be less than sales trends over time would otherwise suggest. In addition, sales of used equipment might be expected to increase over previous trends, reflecting an increased demand for Tier 3 and earlier equipment as buyers that cannot find new Tier 4 equipment turn to the used market. Such an increase in demand could induce owners of older equipment to sell earlier than they otherwise would have. On the other hand, if Tier 4 equipment is commercially available and is being purchased, sales during and after the required Tier 4 period would be expected to reflect sales trends over time and would not decrease compared to existing trends.

Figure 1 provides an overall perspective for U.S. sales of all types of construction equipment for 2015–2018. Although there is month-to-month variation, Figure 1 shows that annual sales of new equipment increases year-over-year and annual sales of used equipment remains relatively constant during this period.

Sales data for the types of construction equipment associated with the Project are described below.

Figure 1. Sales of New and Used Construction Equipment in the U.S.[3]



Forklifts

North American forklift sales increased from 225,534 units in 2015 to 253,146 in 2017, a 9.5 percent increase from 2016 and a 12.2 percent increase over 2015 sales.[4] Because all equipment

[3] EDAdata 2018. EDA. Industry Insight: Construction. Available: https://edadata.com/industryinsight/construction/. Accessed: January 24, 2019.

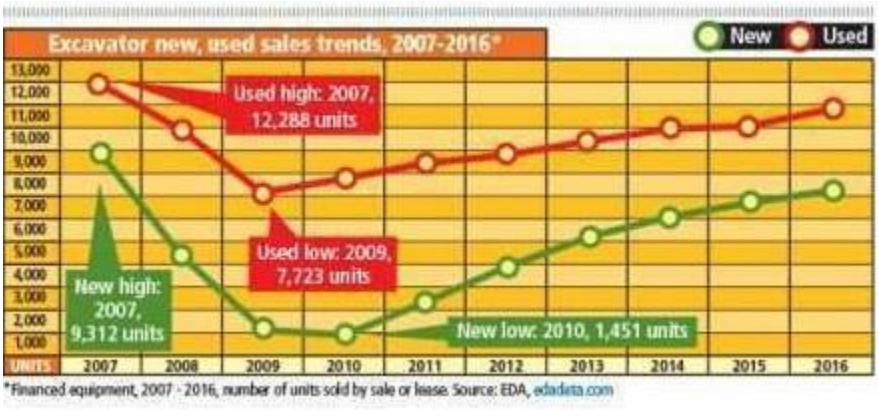
[4] MMH 2018. Modern Materials Handling. ITA reports third consecutive year of record-breaking forklift sales in 2017. Available: https://www.mmh.com/article/ita_reports_third_consecutive_year_of_record_breaking_forklift_sales_in_201. Accessed: January 24, 2019.

sold in 2015 or later must be Tier 4 compliant, these sales suggest that Tier 4 forklifts are being purchased.

Excavators

Figure 2 shows sales of excavators for 2007–2016. Sales of new excavators rose steadily during the Tier 4 phase-in period (2011–2014) and continued to increase in 2016. Sales of used excavators increased more modestly. There was no decline in sales with the introduction of Tier 4 excavators, and no steepening of the used sales trend that could suggest that buyers were purchasing older (i.e., Tier 3 and earlier) equipment rather than new Tier 4 excavators.

Figure 2. Sales of New and Used Excavators in the U.S. [5]

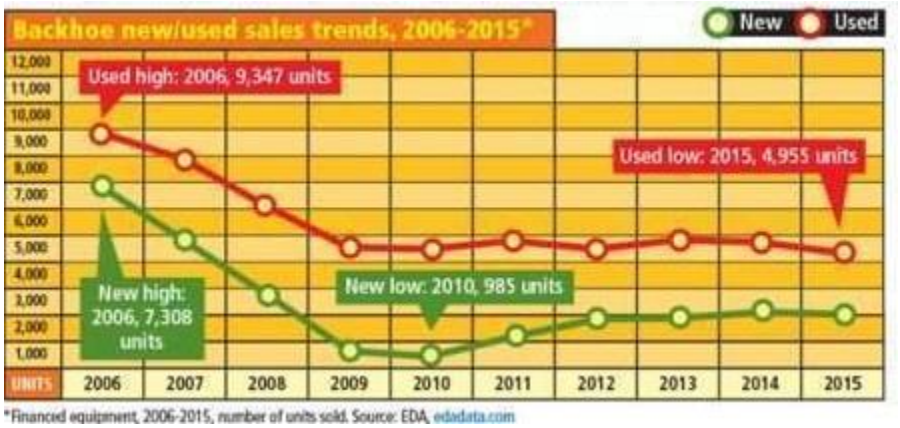


Backhoes

Figure 3 shows sales of backhoes for 2006–2015. Sales of new backhoes rose steadily during the Tier 4 phase-in period (2011–2014) and remained relatively constant in 2015. Sales of used backhoes remained relatively constant from 2009–2015. There was no decline in sales with the introduction of Tier 4 backhoes, and no steepening of the used sales trend that could suggest that buyers were purchasing older (i.e., Tier 3 and earlier) equipment rather than new Tier 4 backhoes.

[5] EDAdata 2018. EDA. Industry Insight: Construction. Available: https://edadata.com/industryinsight/construction/. Accessed: January 24, 2019. Equipment World 2017. Equipment World. Infographic: Excavator sales and buyer trends. Available: https://www.equipmentworld.com/infographic-excavators-sales-and-buyer-trends/. Accessed: January 24, 2019.

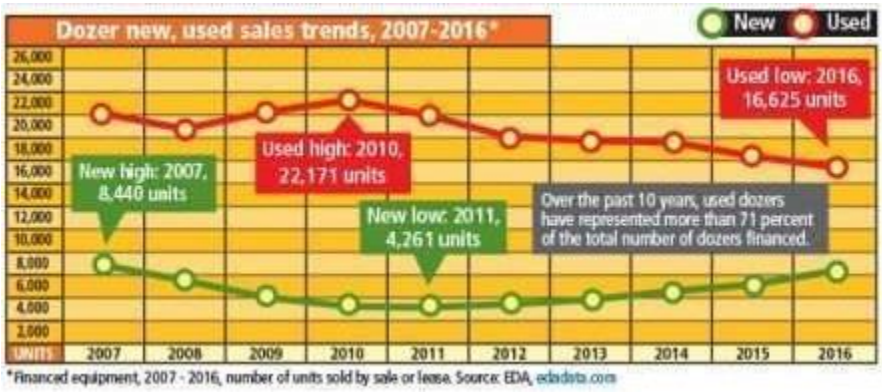
Figure 3. Sales of New and Used Backhoes in the U.S. [6]



Rubber Tired Dozers

Figure 4 shows sales of dozers for 2007–2016. Sales of new dozers rose steadily during the Tier 4 phase-in period (2011–2014) and continued to rise in 2015 and 2016. Sales of used dozers declined from 2011–2016. There was no decline in new dozer sales with the introduction of Tier 4 dozers, and no steepening of the used sales trend that could suggest that buyers were purchasing older (i.e., Tier 3 and earlier) equipment rather than new Tier 4 dozers.

Figure 4. Sales of New and Used Dozers in the U.S. [7]



Pavers/Compactors

Figure 5 shows sales of compactors for 2007–2016. Sales of new compactors rose steadily during the Tier 4 phase-in period (2011–2014) and continued to rise in 2015 and 2016. Sales of used compactors declined from 2011–2016. There was no decline in new compactor sales with

[6] EDAdata 2018. EDA. Industry Insight: Construction. Available: https://edadata.com/industryinsight/construction/. Accessed: January 24, 2019. Equipment World 2016. Equipment World. Infographic: Backhoe sales and buyer trends. Available: https://www.equipmentworld.com/infographic-backhoe-sales-and-buyer-trends/. Accessed: January 24, 2019.

[7] EDAdata 2018. EDA. Industry Insight: Construction. Available: https://edadata.com/industryinsight/construction/. Accessed: January 24, 2019. Equipment World 2018. Equipment World. Infographic: Dozer sales and buyer trends. Available: https://www.equipmentworld.com/infographic-dozer-sales-and-buyer-trends-2/. Accessed: January 24, 2019.

the introduction of Tier 4 compactors, and no steepening of the used sales trend that could suggest that buyers were purchasing older (i.e., Tier 3 and earlier) equipment rather than new Tier 4 compactors.

Figure 5. Sales of New and Used Compactors in the U.S. [8]

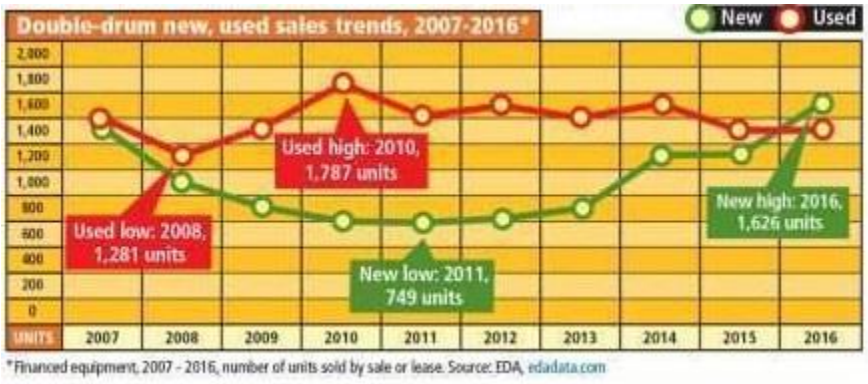


Figure 6 shows sales of various equipment including loaders other than backhoes for 2010–2014. Consistent with the trend in sales of new backhoes, U.S. sales of loader backhoes, rough terrain forklifts, rubber tracked loaders, and skid steer loaders increased steadily from 2010 to 2014. Figure 4 shows that there was no decline in loader sales during the Tier 4 phase-in period.

Figure 6. Estimate U.S. Construction Machinery Market (units)[9]

Product	2010	2011	2012	Estimated 2013	% Change 13 vs 12	Forecast 14 vs 13	% Change 14 vs 13
Asphalt Pavers	1,051	1,167	1,285	1,275	-0.8%	1,340	5.1%
Compactors	3,945	3,900	4,115	4,315	4.9%	4,530	5.0%
Cranes	632	1,255	1,660	1,830	10.2%	2,050	12.0%
Crawler Tractors	4,400	5,010	5,440	5,700	4.8%	6,100	7.0%
Hydraulic Excavators	21,285	32,120	38,175	39,000	2.2%	42,300	8.5%
Loader Backhoes	12,050	14,435	15,025	16,000	6.5%	15,200	-5.0%
Motor Graders	1,800	2,100	2,495	2,695	8.0%	2,800	3.9%
Haulers - Rigid	775	780	910	895	-1.6%	850	-5.0%
Haulers - Articulated	850	1,800	2,000	1,300	-35.0%	1,500	15.4%
RT Forklifts	3,748	9,400	14,110	15,090	6.9%	15,800	4.7%
Rubber Tracked Loaders	11,300	19,000	21,000	23,200	10.5%	25,500	9.9%
Skid Steer Loaders	30,030	35,006	40,019	41,027	2.5%	45,000	9.7%
Wheel Loaders	10,880	16,265	18,500	19,000	2.7%	21,000	10.5%
Total	102,746	142,238	164,734	171,327	4.0%	183,970	7.4%

[8] EDAdata 2018. EDA. Industry Insight: Construction. Available: https://edadata.com/industryinsight/construction/. Accessed: January 24, 2019. Equipment World 2018. Equipment World. Infographic: Double-drum compactor sales and buyer trends. Available: https://www.equipmentworld.com/infographic-double-drum-compactor-sales-and-buyer-trends/. Accessed: January 24, 2019.

[9] Manfredi 2014. Frank Manfredi. 2014 Construction Machinery Forecast. In: Equipment Today. January 6. Available: https://www.forconstructionpros.com/business/article/11271548/2014-construction-forecast-and-equipment-acquisition-trends. Accessed: January 24, 2019.

No sales data were identified for pumps or drill rigs. However, sales trends for pumps and drill rigs are expected to be consistent with trends for forklifts, excavators, dozers, compactors, and backhoes.

Conclusions

U.S. sales of construction equipment during and after the Tier 4 phase-in period demonstrate that Tier 4 equipment is being purchased and that sales of new equipment have not declined with the phase-in or requirement of Tier 4. Therefore, Tier 4 equipment is demonstrated to be available for purchase in the U.S. commercial market. Based on the above, Tier 4 equipment can feasibly be required (with respect to availability) for a construction equipment fleet, including the Project's construction equipment fleet, as a condition of project approval.

In addition, regardless of the prevalence (or lack thereof) of Tier 4 equipment, the City will require the use of such equipment as a Condition of Approval to comply with this mitigation measure. Therefore, Tier 4 equipment will be required for Project construction, even if such equipment is in short supply.

Comment G.15

Unsubstantiated Change in the Number of Worker and Vendor Trips

Review of the CalEEMod output files demonstrates that the Project Applicant made unsubstantiated changes to the default number of worker and vendor trips required to construct a project of this size. As a result, the Project's construction emissions are significantly underestimated.

According to the "User Entered Comment & Non-Default Data" table, the numbers of worker and vendor trips required throughout construction were substantially changed (see excerpt below) (Appendix 3.2-1, pp. 59, pp. 92).

Table Name	Column Name	Default Value	New Value
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	140.00	1.00
tblTripsAndVMT	VendorTripNumber	140.00	1.00
tblTripsAndVMT	VendorTripNumber	140.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	678.00	160.00
tblTripsAndVMT	WorkerTripNumber	678.00	160.00
tblTripsAndVMT	WorkerTripNumber	678.00	160.00
tblTripsAndVMT	WorkerTripNumber	136.00	75.00

As you can see in the excerpt above, the number of vendor trips and worker trips are completely different from CalEEMod defaults. The presumed number of construction vendor trips required to construct a project of this size was reduced from 420 to only 5. The presumed number of construction worker trips required to construct a Project of this size was reduced from 2,183 to only 575. However, the Project Applicant provides no justification for the reduction in worker and vendor trips during construction. The CalEEMod trip assumptions are based on a survey of similar sized construction projects conducted by the Sacramento Metropolitan Air Quality Management

District (SMAQMD) and thus, without any justification for a deviation, the default assumptions present substantial evidence of the number of construction worker and vendor trips that will presumably occur. Thus, these changes are completely unsubstantiated and significantly underestimate the Project's construction emissions.

Response G.15

The comment states that the air quality emissions generated by the Project were significantly underestimated because Project-specific vendor trips and worker trips were assumed in the analysis. Construction related criteria pollutant and greenhouse gas emissions were estimated using Project-specific assumptions that were provided in consultation with the applicant's design team. Consistent with Bay Area Air Quality Management District recommendations, the Project-specific assumptions were used in place of CalEEMod default values because the Project-specific assumptions represent the best available information for characterizing the anticipated construction activities and associated emissions associated with the Project. The vendor and worker trip assumptions in SWAPE's CalEEMod run used highly conservative CalEEMod default values, that overstate the actual number of vendor and worker trips that would occur due to the Project. Pages 2 and 3 of SWAPE's CalEEMod output indicates there would be 0, 140, 140, 140, and 0 daily construction vendor trips each with a trip length of 40 miles for the construction subphases: Grading and Mass Excavation, Below-grade Garage Construction, Frame/Roofing/Exterior Finishes, Plumbing/Electrical/Drywall, and Finishes. Based on Project-specific vendor data provided by the applicant, only one daily construction vendor trip with a trip length of 40 miles would be required for each construction subphase. In addition, pages 2 and 3 of SWAPE's CalEEMod output indicates there would be 13, 678, 678, 678, and 136 daily construction worker trips by construction subphase. Based on Project-specific worker data provided by the applicant, there would be 20, 60, 160, 160, and 75 daily construction worker trips by construction subphase. Thus, the air quality and greenhouse gas emissions assumptions in the Draft EIR are not unsubstantiated and do not significantly underestimate the Project's construction emissions.

Comment G.16

Unsubstantiated Change in Construction Equipment

Review of the CalEEMod output files demonstrates that the Project Applicant also made unsubstantiated changes to the off-road construction equipment required for Project construction. Specifically, the Project Applicant changed the default construction equipment list and the default engine horsepower (hp) for those pieces of equipment (see excerpt below) (Appendix 3.2-1).

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	HorsePower	158.00	417.00
tblOffRoadEquipment	HorsePower	89.00	51.00
tblOffRoadEquipment	HorsePower	89.00	51.00
tblOffRoadEquipment	HorsePower	247.00	166.00
tblOffRoadEquipment	HorsePower	97.00	87.00
tblOffRoadEquipment	HorsePower	221.00	700.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	89.00	51.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

As you can see in the excerpt above, the DEIR models the Project's construction emissions by making substantial changes in the default construction equipment that will be required. Specifically, the Project Applicant reduced the amount of construction equipment required by approximately 40 pieces.

Furthermore, the DEIR substantially reduces the engine hp for many pieces of construction equipment. According to the CalEEMod output files, these changes are "From AQ/GHG data request spreadsheet" (Appendix 3.2-1, pp. 55-56, pp. 88-89). However, review of the DEIR and associated appendices and reference documents demonstrates that the Project Applicant failed to provide the

AQ/GHG data request spreadsheet and, as a result, the DEIR fails to justify these changes. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified. These changes are unreasonable and unsubstantiated, and they should not be used to estimate Project emissions.

Response G.16

The comment states that unreasonable and unsubstantiated changes to the default amount and horsepower of construction equipment were assumed in the Draft EIR (refer to response to comment G.14, above). Construction related criteria pollutant and greenhouse gas emissions were estimated using Project-specific assumptions that were provided by the applicant's design team. As stated in response to comment G.15, above, consistent with Bay Area Air Quality Management District recommendations, the Project-specific assumptions were used in place of CalEEMod default values because the Project-specific assumptions represent the best available information for characterizing the anticipated construction activities and associated emissions associated with the Project. The CalEEMod runs performed by SWAPE used highly conservative CalEEMod default values that include additional and larger pieces of construction equipment that vastly and falsely overstate the equipment of the Project. For example, based on Project-specific offroad equipment data provided by the applicant, two 417-hp excavators, one 166-hp bulldozer, and two 87-hp backhoe/loaders would operate during the Grading and Mass Excavation subphase. Two 80-hp gradalls, two 51-hp forklifts, one 84-hp concrete pump, and one 700-hp drill rig would operate during the Below-Grade Garage Construction subphase. Two 80-hp gradalls, one 84-hp concrete pump, and two 51-hp forklifts would operate during the Frame/Roofing/Exterior Finishes and Plumbing/Electrical/Drywall subphases. And two 80-hp gradalls, one 84-hp concrete pump, two 51-hp forklifts, and two 130-hp pavers would operate during the Finishes subphase. Thus, the air quality and greenhouse gas emissions assumed reasonable and substantiated construction equipment in the Draft EIR.

Comment G.17

Updated Analysis Indicates Significant Pollutant Emissions

In an effort to accurately determine the Project's emissions, we prepared an updated CalEEMod model that includes more site-specific information and correct input parameters (Attachment A). In our model, we corrected the parking lot size. Additionally, our CalEEMod model did not include any Tier 4 Final off-road construction equipment, as there is not substantial evidence that the Project Applicant will be able to procure a fleet Tier 4 Final equipment. Furthermore, since the Project Applicant failed to provide any justifications, we used model defaults for the worker and vendor trips as well as the construction equipment and engine horsepower.

When corrected, site-specific input parameters are used to model emissions, we find that the Project's construction-related NOx emissions exceed the 54 pounds per day (lbs/day) threshold set forth by the Bay Area Air Quality Management District (BAAQMD) (see table below).

Average Daily Construction Emissions (lbs/day)	
Model	**NOx**
DEIR	33
SWAPE	61
Percent Increase	**85%**
BAAQMD Regional Thresholds (lbs/day)	**54**
Threshold Exceeded?	***Yes***

When corrected input parameters are used to model the Project ' s construction emissions, NOx emissions increase by approximately 85% and exceed the BAAQMD's significance thresholds by a substantial margin. Our updated model demonstrates that when the Project's construction emissions are estimated correctly, the Project would result in a significant air quality impact that was not identified in the DEIR. As a result, an updated DEIR should be prepared that includes an updated air pollution model to adequately estimate the Project's emissions, and additional mitigation measures should be identified and incorporated to reduce these emissions to a less-than-significant level.

Response G.17

The comment indicates that an updated analysis performed by SWAPE indicates significant pollutant emissions. See responses to comments G.14 and G.16. As discussed therein, the CalEEMod runs performed by SWAPE include additional construction equipment that vastly and falsely overstate the equipment of the Project. The comment does not provide substantial evidence that an updated emissions analysis for the Project is necessary.

Comment G.18

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The DEIR fails to adequately evaluate the potential health risk impact that the proposed Project would have on nearby sensitive receptors. Specifically, the DEIR: (1) relies upon flawed emissions from a flawed CalEEMod model; and (2) fails to prepare a quantitative operational health risk assessment. As a result, the Project's construction-related health risk impact is greatly underestimated, and its operational health risk is unknown.

Response G.18

The comment states that the construction-related health risk analysis in the Draft EIR is greatly underestimated because the analysis relies on flawed emissions from a flawed model and the Draft EIR fails to quantify operational health risks. See responses to comments G.12 through G.16. As discussed therein, the CalEEMod runs performed by SWAPE include additional construction equipment that vastly and falsely overstate the equipment of the Project. With respect to the portion of the comment that states a quantified operational health risk is required, see response to comment G.20 below.

Comment G.19

Use of Incorrect Emission Estimates in Construction Health Risk Assessment

The DEIR conducts a construction HRA and determines that the health risk posed to the highest offsite residence due to construction emissions is 3 in one million (see excerpt below) (Table 3. 2-10, p. 3.2-25).

Table 3.2-10. Project-level Cancer and Chronic Hazard Risks During Construction

Receptor	Cancer Risk* (cases per million)	Non-Cancer Hazard Index	Annual PM2.5 Concentration (μg/m³)
Adjacent Temple Receptor	1	< 1	< 0.1
Highest Offsite Resident	3	< 1	< 0.1
Next-Highest Resident	2	< 1	< 0.1
Significance Threshold	*10*	*1*	*0.3*
Exceed Threshold?	*No*	*No*	*No*

Note: μg/m³ = micrograms per cubic meter; PM2.5 = particulate matter no more than 2.5 microns in diameter

* The Project-level cancer and chronic hazard risks assumed Tier 4 equipment for all off-road equipment and model year 2010 and newer engines for all haul trucks associated with demolition and soil hauling activities, as required per MM AQ-1 and MM AQ-2 (see Impact AQ-2a).

As a result, the DEIR states that with implementation of Mitigation Measures MM AQ-1 and MM. AQ-2, the health risk would be less than significant (p. 3.2-24). This, however, is incorrect. The DEIR's construction HRA relies upon emission estimates from a flawed CalEEMod model to estimate the excess cancer risk posed to nearby residents as a result of emissions generated during construction-related activity. Specifically, our review of the Project's CalEEMod model and corresponding emissions estimates, as discussed in the sections above, found that the model relied upon incorrect and unsubstantiated input parameters in order to estimate the Project's emissions. Because the emissions estimates from the Project's CalEEMod model are underestimated, it is reasonable to assume that the Project's construction-relate d HRA also underestimates the health risk posed to sensitive receptors near the Project site. As a result, we find the DEIR's HRA and subsequent significance determination to be incorrect and unreliable, and the HRA should not be relied upon to determine the significance of the Project's construction-related health impacts.

Response G.19

The comment indicates that incorrect emission estimates were used in the construction health risk assessment prepared for the Project. See responses to comments G.12 through G.16. As discussed therein, the CalEEMod runs performed by SWAPE include additional construction equipment that vastly and falsely overstate the equipment of the Project. Therefore, the comment does not provide substantial evidence that an updated emissions analysis for the Project is necessary.

Comment G.20

Failure to Evaluate the Operational Health Risk

The DEIR determines that the Project's operational health risks would be less than significant, without conducting an operational health risk (p. 3.2-27). The DEIR states,

> "The Project is not expected to represent a significant source of operational DPM because traffic to and from the site would consist primarily of light-duty vehicles, which are not substantial emitters of DPM. In addition, no diesel emergency back-up

> generators or any other major operations-related diesel-fueled equipment is included as part of the Project. Therefore, the Project would not result in any appreciable increases in health risks from DPM or PM2.S exhaust during operation" (p. 3.2-27).

This justification for failing to conduct an operational health risk assessment is incorrect for several reasons.

First, simply because the Project claims that the "Project is not expected to represent a significant source of operational DPM" (diesel particulate matter) does not meant that an HRA is not required. According to the BAAQMD,

> "For assessing community risks and hazards, a 1,000 foot radius is recommended around the project property boundary."

According to the DEIR, there are multiple sensitive receptors within 1,000 feet of the Project site, including residences immediately adjacent to the site (Table 3.2-3, p. 3.2-7). Therefore, since there are sensitive receptors within 1,000 feet of the Project site, an HRA should be conducted to determine the health risk posed to the nearest sensitive receptor as a result of Project construction and operation.

Second, the omission of a quantified health risk assessment is inconsistent with the most recent guidance published by California's Office of Environmental Health Hazard Assessment (OEHHA). In February of 2015, OEHHA released its most recent Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments, which was formally adopted in March of 2015. This guidance document describes the types of projects that warrant the preparation of a health risk assessment. According to the DEIR's Traffic Impact Analysis (TIA), Project operation will generate approximately 2,138 net daily vehicle trips as a result of the Project's proposed land uses, which will generate substantial exhaust emissions and expose nearby sensitive receptors to these DPM emissions (Table 7, Appendix 3.13-1, p. 27). The OEHHA document recommends that exposure from projects lasting more than 6 months should be evaluated for the duration of the project, and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident (MEIR). 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, per BAAQMD and OEHHA guidelines, health risk impacts from Project operation should be included in a revised CEQA evaluation for the Project.

Response G.20

The comment states that the Draft EIR should be revised to include an operational health risk assessment for the Project. The California Office of Environmental Health Hazard Assessment's Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments is specifically referred to as the Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. The guidance manual was developed by the California Office of Environmental Health Hazard Assessment, in conjunction with the California Air Resources Board for use in implementing the Air Toxics Hot Spots Program. The California Air Resources Board states that the Air Toxics Hot Spots Information and Assessment Act requires stationary sources to report the types and quantities of certain substances routinely released into the air.

The Air Toxics Hot Spots Information and Assessment Act specifically defines a facility as follows:

> 44304. "Facility" means every structure, appurtenance, installation, and improvement on land which is associated with a source of air releases or potential air releases of a hazardous material.

The California Air Resources Board specifically notes that applicability for the health risk assessment is based on the following types of facilities:

- Facilities that emit >10 tons per year of Total Organic Gasses, Particulate Matter (PM), Nitrogen Oxides (NO_X), or Sulfur Oxides (SO_X)
- Facilities that emit >5 tons/year of any Federal Hazardous Air Pollutant
- Facilities that emit <10 tons/year like gas stations, dry cleaners, hazardous waste incinerators, metal platers using cadmium or chromium, waste water treatment facilities, etc.

The Project does not propose significant operational sources of toxic air contaminants (TACs) (e.g., freeways and high-traffic roads, emergency generators, commercial distribution centers, rail yards, ports, refineries, chrome platers, dry cleaners, or gasoline stations). The Project would generate passenger vehicle traffic, which is not a substantial TAC source. Because passenger vehicles are not a significant source of TACs, a quantitative operational TAC impact assessment was not completed for the Project in the Draft EIR, consistent with City practice in its environmental documents. This is also consistent with Bay Area Air Quality Management District guidance, which states that passenger vehicles are not a substantial source of TACs.

Given the lack of operational TAC emission sources included in the Project, the commenter's assessment has been inappropriately applied to the Project and inaccurately states that the Project would result in significant operational health risk impacts. The information provided by the commenter is not substantial evidence of an actual Project impact. Operational health risk impacts at adjacent sensitive receptors would be less than significant as stated in the Draft EIR.

Comment G.21

Updated Health Risk Assessment Indicates Significant Health Impact

In an effort to demonstrate the potential risk posed by Project construction and operation to nearby sensitive receptors, we prepared a simple screening-level HRA (Attachment B). The results of our assessment, as described below, provide substantial evidence that the Project's construction and operational DPM emissions may result in a potentially significant health risk impact that was not previously identified.

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

possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project.

We prepared a preliminary HRA of the Project's health-related impacts to sensitive receptors using the annual PM10 exhaust estimates from SWAPE's CalEEMod output files. According to the DEIR, the closest residential receptor is approximately 10 feet, or 3 meters, from the Project site (p. 3.2-7). Consistent with recommendations set forth by OEHHA, we used a residential exposure duration of 30 years, starting from the 3rd trimester stage of life. We also assumed that construction and operation of the Project would occur sequentially, with no gaps between each Project phase. The SWAPE annual CaIEEMod model's emissions estimate indicates that construction activities will generate approximately 629 pounds of DPM over the 3-year (or approximately 1,093-day) construction period. The AERSCREEN model relies on a continuous average emission rate to simulate maximum downward concentrations from point, area, and volume emission sources. To account for the variability in equipment usage and truck trips over Project construction, we calculated an average DPM emission rate by the following standard equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{628.6\ lbs}{1{,}093\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.003019\ g/s}$$

Using this equation, we estimated a construction emission rate of 0.003019 grams per second (g/s). Subtracting the 1,093-day construction duration from the total residential exposure duration of 30 years, we assumed that after Project construction, the MEIR would be exposed to the Project's operational DPM for an additional 27 years. The SWAPE annual CalEEMod output files indicate that operational activities will generate approximately 160 pounds of DPM per year throughout operation. Applying the same equation used to estimate the construction DPM emissions rate, we estimated the following emissions rate for Project operation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{160.2\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.002304\ g/s}$$

Using this equation, we estimated an operational emission rate of 0.002304 g/s. Construction and operational activity were simulated as a 9.84-acre rectangular area source in AERSCREEN, with dimensions of 295 meters by 135 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 concentration from the Project site. EPA guidance suggests that in screening procedures, the annualized average concentration of an air pollutant should be estimated by multiplying the single-hour concentration by 10%. For example, for the MEIR the single-hour concentration estimated by AERSCREEN for Project construction is approximately 2.369 μg/m^3 DPM at approximately 1 meter downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.2369 μg/m^3 for Project construction at the MEIR. For Project operation, the single-hour concentration at the MEIR estimated by AERSCREEN is approximately 1.808 μg/m^3 DPM at approximately 1 meter downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.1808 μg/m^3 for Project operation at the MEIR.

We calculated the excess cancer risk to the residential receptors located closest to the Project site using applicable HRA methodologies prescribed by OEHHA and the BAAQMD. Consistent with the construction schedule proposed by the DEIR, the annualized average concentration for construction was used for the entire 3rd trimester of pregnancy (0.25 years), the infantile stage of life {0-2 years), and the first 0.75-years of the child stages of life (2 to 16 years). The annualized average concentration for operation was used for the remainder of the 30-year exposure period, which makes up the remainder of the child stages of life (2 to 16 years) and adult stages of life (16 to 30 years). Consistent with OEHHA guidance, we used Age Sensitivity Factors {ASFs) to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution. According to the updated guidance, quantified cancer risk should be multiplied by a factor of ten during the 3rd trimester of pregnancy and the first two years of life (infant) and should be multiplied by a factor of three during the child stage of life (2 to 16 years). Furthermore, in accordance with guidance set forth by OEHHA, we used 95th percentile breathing rates for infants. We used a cancer potency factor of 1.1 (mg/kg-day)[1] and an averaging time of 25,550 days. Finally, according to OEHHA guidance, we used a Fraction of Time At Home (FAH) Value of 0.85 for the 3rd trimester and infant receptors, 0.72 for the child receptor, and 0.73 for the adult receptor. The results of our calculations are shown below.

The Maximum Exposed Individual at an Existing Residential Receptor (MEIR)					
Activity	**Duration (years)**	**Concentration (µg/m³)**	**Breathing Rate (L/kg-day)**	**ASF**	**Cancer Risk**
Construction	0.25	0.2369	361	10	2.7E-06
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	***2.7E-06***
Construction	2.00	0.2369	1090	10	6.6E-05
Infant Exposure Duration	***2.00***			***Infant Exposure***	***6.6E-05***
Construction	0.75	0.2369	572	3	3.3E-06
Operation	13.25	0.1808	572	3	4.5E-05
Child Exposure Duration	***14.00***			***Child Exposure***	***4.8E-05***
Operation	14.00	0.1808	261	1	7.3E-06
Adult Exposure Duration	***14.00***			***Adult Exposure***	***7.3E-06***
Lifetime Exposure Duration	**30.00**			**Lifetime Exposure**	**1.2E-04**

The excess cancer risk posed to adults, children, infants, and during the third trimester of pregnancy at the MEIR located approximately 1 meter away, over the course of Project construction and operation, are approximately 7.3, 48, 66, and 2.7 in one million, respectively. Furthermore, the excess cancer risk over the course of a residential lifetime (30 years) at the MEIR is approximately 120 in one million. Consistent with OEHHA guidance, exposure was assumed to begin in the third trimester of pregnancy to provide the most conservative estimates of air quality hazards. The infant, child, and lifetime cancer risks exceed the BAAQMD's threshold of 10 in one million.

It should be noted that our analysis represents a screening-level HRA, which is known to be more conservative, and tends to err on the side of health protection. The purpose of a screening-level HRA, however, is to determine if a more refined HRA needs to be conducted. If the results of a screening-level health risk assessment are above applicable thresholds, then the Project needs to conduct a more refined HRA that is more representative of site-specific concentrations. Our

screening-level HRA demonstrates that 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. As a result, a refined HRA must be prepared to examine air quality impacts generated by Project construction and operation using site-specific meteorology and specific equipment usage schedules. An updated DEIR must be prepared to adequately evaluate the Project's health risk impact, and should include additional mitigation measures to reduce these impacts to a less-than-significant level.

Response G.21

The comment states that the Draft EIR should be revised to analyze a previously unidentified potentially significant health risk associated with the Project. First, as noted in response to Comment G.20, given the lack of operational TAC emission sources included in the Project, the commenter's assessment has been inappropriately applied to the Project and inaccurately states that the Project would result in significant operational health risk impacts. The information provided by the commenter is not substantial evidence of an actual Project impact. Operational health risk impacts at adjacent sensitive receptors would be less than significant.

Second, SWAPE utilized AERSCREEN for their health risk assessment, which is a screening-level model that produces a "worst-case" assessment of pollutant concentrations. ICF utilized AERMOD for the construction health risk assessment presented in the Draft EIR. AERMOD is a comprehensive modeling platform that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. Accordingly, AERMOD is capable of providing more refined concentration results based on Project-specific conditions.

Third, SWAPE's emissions are total (gasoline, diesel, dust) PM10, include additional equipment added by SWAPE that do not reflect Project-specific activity, and do not include implementation of the prescribed mitigation (Tier 4 engines, model year 2010 and newer haul trucks). ICF's emissions are from PM2.5 diesel exhaust (per Bay Area Air Quality Management District guidance), reflect the Project-specific equipment inventory as provided by the applicant's design team, and include feasible mitigation (Tier 4 engines, model year 2010 and newer haul trucks).

Fourth, the commenter's assumptions for their own assessment demonstrate that the operational health risk assessment analysis they recommend is intended for stationary sources. Specifically, the comment states that, "Operational activity was simulated as a 9.84-acre rectangular area source in AERSCREEN, with dimensions of 295 meters by 135 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." Based on this information, the commenter is assuming a fixed source of emissions with equipment exhaust stacks and the regular use of heavy-duty vehicles onsite, which is not representative of the Project's uses.

Fifth, SWAPE's emission rate for construction uses incorrect diesel particulate emissions and assumes a construction duration of 1,093 days. ICF's emission rate uses correct diesel particulate matter emissions and assumes 782 working days, consistent with the construction activity anticipated for the Project by the applicant.

Based on the above, the additional modeling and data submitted by the commenter do not constitute new "substantial evidence" and no updated health risk assessment for the Project is necessary.

Comment G.22

Mitigation Measures Available to Reduce Construction Emissions

Our air quality analysis determined that the Project's construction NOx emissions would exceed thresholds and create a significant impact. Moreover, our health risk assessment demonstrates that Project construction-related DPM emissions would result in a significant health risk impact. Therefore, additional mitigation measures must be identified and incorporated in an updated DEIR to reduce construction NOx and DPM emissions to less than significant levels.

Additional mitigation measures can be found in CAPCOA's Quantifying Greenhouse Gas Mitigation Measures, which attempt to reduce Greenhouse Gas (GHG) levels, as well as reduce criteria air pollutants, such as NOx and particulate matter. NOx and DPM are byproducts of diesel fuel combustion, and are emitted by on-road vehicles and by off-road construction equipment. Mitigation for criteria pollutant emissions should include consideration of the following measures in an effort to reduce construction emissions:

The Northeast Diesel Collaborative ("NEDC") is a regionally coordinated initiative to reduce diesel emissions, improve public health, and promote clean diesel technology. The NEDC recommends that contracts for all construction projects require the following diesel control measures:

- All diesel generators on site for more than 10 total days must be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85 percent.
- All diesel nonroad construction equipment on site for more than 10 total days must have either (1) engines meeting EPA Tier 4 nonroad emission standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85 percent for engines 50 horse power (hp) and greater and by a minimum of 20 percent for engines less than 50 hp.
    - According to MM AQ-1, the Project proposes to use an entire fleet of Tier 4 Final off- road construction equipment. The Applicant must show proof of availability for use during construction of the Project in order to demonstrate consistency with the proposed measure (p. 3.2-22).
- All diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend approved by the original engine manufacturer with sulfur content of 15 parts per million (ppm) or less.

Response G.22

The comment states that the Project's construction NO_X emissions would exceed thresholds, resulting in a significant impact. In addition, the comment identifies measures to reduce greenhouse gas levels and reduce criteria air pollutants, including the use of ultra-low sulfur diesel fuel. As required by Mitigation Measure AQ-1, the applicant would ensure that construction equipment would meet Tier 4 Final emissions standards; as of the publication of this EIR, Tier 4 Final engines are considered the best available technology. Use of Tier 4 Final engines would reduce total PM2.5 exhaust emissions from construction by approximately 88

percent, relative to unmitigated conditions. It is anticipated that the use of Tier 4 Final engines during Project construction would meet or exceed reductions achieved by measures outlined by SWAPE. With respect to the portion of this comment related to the feasibility of requiring the use of Tier 4 Final off-road construction equipment, see response to comment G.14.

Comment G.23

Repower or Replace Older Construction Equipment Engines

The NEDC recognizes that availability of equipment that meets the EPA's newer standards is limited. Due to this limitation, the NEDC proposes actions that can be taken to reduce emissions from existing equipment in the Best Practices for Clean Diesel Construction report. These actions include but are not limited to:

- Repowering equipment (i.e. replacing older engines with newer, cleaner engines and leaving the body of the equipment intact).

Engine repower may be a cost-effective emissions reduction strategy when a vehicle or machine has a long useful life and the cost of the engine does not approach the cost of the entire vehicle or machine. Examples of good potential replacement candidates include marine vessels, locomotives, and large construction machines. Older diesel vehicles or machines can be repowered with newer diesel engines or in some cases with engines that operate on alternative fuels {see section "Use Alternative Fuels for Construction Equipment" for details). The original engine is taken out of service and a new engine with reduced emission characteristics is installed. Significant emission reductions can be achieved, depending on the newer engine and the vehicle or machine's ability to accept a more modern engine and emission control system. It should be noted, however, that newer engines or higher tier engines are not necessarily cleaner engines, so it is important that the Project Applicant check the actual emission standard level of the current (existing} and new engines to ensure the repower product is reducing emissions for PM10.

- Replacement of older equipment with equipment meeting the latest emission standards.

Engine replacement can include substituting a cleaner highway engine for a nonroad engine. Diesel equipment may also be replaced with other technologies or fuels. Examples include hybrid switcher locomotives, electric cranes, LNG, CNG, LPG or propane yard tractors, forklifts or loaders.

Replacements using natural gas may require changes to fueling infrastructure. Replacements often require some re-engineering work due to differences in size and configuration. Typically, there are benefits in fuel efficiency, reliability, warranty, and maintenance costs.

Response G.23

The comment identifies measures to reduce greenhouse gas levels and reduce criteria air pollutants, including engine replacement. As required by Mitigation Measure AQ-1, which will be required as a Condition of Approval by the City, the applicant would ensure that construction equipment would meet Tier 4 Final emissions standards; as of the publication of this EIR, Tier 4 Final engines are considered the best available technology. Use of Tier 4 Final engines would reduce total PM2.5 exhaust emissions from construction by approximately 88 percent, relative to unmitigated conditions. It is anticipated that the use of Tier 4 Final engines during Project construction would meet or exceed reductions achieved by measures outlined by SWAPE.

Comment G.24

Install Retrofit Devices on Existing Construction Equipment

PM emissions from alternatively-fueled construction equipment can be further reduced by installing retrofit devices on existing and/or new equipment. The most common retrofit technologies are retrofit devices for engine exhaust after-treatment. These devices are installed in the exhaust system to reduce emissions and should not impact engine or vehicle operation. It should be noted that actual emissions reductions and costs will depend on specific manufacturers, technologies and applications.

CAPCOA's Quantifying Greenhouse Gas Mitigation Measures report also proposes the use of electric and/or hybrid construction equipment as a way to mitigate criteria pollutant emissions, such as particulate matter. When construction equipment is powered by grid electricity rather than fossil fuel, direct emissions from fuel combustion are replaced with indirect emissions associated with the electricity used to power the equipment. Furthermore, when construction equipment is powered by hybrid-electric drives, emissions from fuel combustion are also greatly reduced and criteria air pollutants would be 100% reduced for equipment running on electricity. Electric construction equipment is available commercially from companies such as Peterson Pacific Corporation and Komptech USA, which specialize in the mechanical processing equipment like grinders and shredders. Construction equipment powered by hybrid-electric drives is also commercially available from companies such as Caterpillar. For example, Caterpillar reports that during an 8-hour shift, its D7E hybrid dozer burns 19.5 percent fewer gallons of fuel than a conventional dozer while achieving a 10.3 percent increase in productivity. The D7E model burns 6.2 gallons per hour compared to a conventional dozer which burns 7.7 gallons per hour. Fuel usage and savings are dependent on the make and model of the construction equipment used. The Project Applicant should calculate project-specific savings and provide manufacturer specifications indicating fuel burned per hour.

Response G.24

The comment identifies measures to reduce greenhouse gas levels and reduce criteria air pollutants, including the installation of retrofit devices on construction equipment. As required by Mitigation Measure AQ-1, which will be required as a Condition of Approval by the City, the applicant would ensure that construction equipment would meet Tier 4 Final emissions standards; as of the publication of this EIR, Tier 4 Final engines are considered the best available technology. Use of Tier 4 Final engines would reduce total PM2.5 exhaust emissions from construction by approximately 88 percent, relative to unmitigated conditions. It is anticipated that the use of Tier 4 Final engines during Project construction would meet or exceed reductions achieved by measures outlined by SWAPE.

Comment G.25

Institute a Heavy-Duty Off-Road Vehicle Plan

CAPCOA's Quantifying Greenhouse Gas Mitigation Measures report recommends that the Project Applicant provide a detailed plan that discusses a construction vehicle inventory tracking system to ensure compliances with construction mitigation measures. The system should include strategies such as requiring hour meters on equipment, documenting the serial number, horsepower, manufacture age, fuel, etc. of all onsite equipment and daily logging of the operating hours of the equipment. Specifically, prior to the construction of a Project the contractor should submit a

certified list of all diesel vehicles, construction equipment, and generators to be used on site. The list should include the following:

- Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment.
- Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation.
- For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date.

Response G.25

The comment states that the applicant should institute a heavy-duty off-road vehicle plan to ensure compliance with the mitigation measures identified in the Draft EIR. As required by Mitigation Measure AQ-1, the applicant would ensure that construction equipment would meet Tier 4 Final emissions standards; as of the publication of this EIR, Tier 4 Final engines are considered the best available technology. Mitigation Measure AQ-1 has been revised to indicate that evidence of the use of Tier 4 equipment or cleaner shall be submitted to the City prior to construction of the Project. This text change to the Draft EIR is documented in Chapter 5, *Draft EIR Text Revisions*, of this Final EIR.

Comment G.26

Implement a Construction Vehicle Inventory Tracking System

CAPCOA's Quantifying Greenhouse Gas Mitigation Measures report recommends that the Project Applicant provide a detailed plan that discusses a construction vehicle inventory tracking system to ensure compliances with construction mitigation measures. The system should include strategies such as requiring engine run time meters on equipment, documenting the serial number, horsepower, manufacture age, fuel, etc. of all onsite equipment and daily logging of the operating hours of the equipment. Specifically, for each onroad construction vehicle, nonroad construction equipment, or generator, the contractor should submit to the developer's representative a report prior to bringing said equipment on site that includes:

- Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, and engine serial number.
- The type of emission control technology installed, serial number, make, model, manufacturer, and EPA/CARB verification number/level.
- The Certification Statement signed and printed on the contractor's letterhead.

Furthermore, the contractor should submit to the developer's representative a monthly report that, for each onroad construction vehicle, nonroad construction equipment, or generator onsite, includes:

- Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.
- Any problems with the equipment or emission controls.

- Certified copies of fuel deliveries for the time period that identify:
  - Source of supply
  - Quantity of fuel
  - Quality of fuel, including sulfur content (percent by weight).

In addition to those measures, we also recommend that the City require the Applicant to implement the following mitigation measures, called "Enhanced Exhaust Control Practices," that are recommended by the Sacramento Metropolitan Air Quality Management District ("SMAQMD"):

1. The project representative shall submit to the lead agency and District a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project.
   - The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment.
   - The project representative shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.
   - This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment.
   - The District's Equipment List Form can be used to submit this information.
   - The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.
2. The project representative shall provide a plan for approval by the lead agency and District demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NOx reduction and 45% particulate reduction compared to the most recent CARB fleet average.
   - This plan shall be submitted in conjunction with the equipment inventory.
   - Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.
   - The District's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction.
3. The project representative shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour.
   - Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented, and a summary provided to the lead agency and District monthly.
   - A visual survey of all in-operation equipment shall be made at least weekly.

- A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.

4. The District and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this mitigation shall supersede other District, state or federal rules or regulations.

These measures offer a cost-effective way to incorporate lower-emitting equipment into the Project's construction fleet, which subsequently reduces NOx and particulate matter emissions released during Project construction. An updated DEIR must be prepared to include additional mitigation measures, as well as include an updated air quality assessment and HRA to ensure that the necessary mitigation. measures are implemented to reduce construction emissions. Furthermore, the Project Applicant needs to demonstrate commitment to the implementation of these measures prior to Project approval to ensure that the Project's construction-related emissions are reduced to the maximum extent possible.

Response G.26

The comment states that the applicant should implement a construction vehicle inventory tracking system to ensure compliance with the mitigation measures identified in the Draft EIR. As required by Mitigation Measure AQ-1, the applicant would ensure that construction equipment would meet Tier 4 Final emissions standards; as of the publication of this EIR, Tier 4 Final engines are considered the best available technology. The additional measures suggested by the commenter are not necessary to reduce the Project’s impacts to a less-than-significant level. For these reasons, an updated and recirculated EIR is not required.

Comment G.27

Feasible Mitigation Measures Available to Reduce Operational Emissions

Our analysis also demonstrates that the Project's operational-DPM emissions may present a potentially significant impact. In an effort to reduce the Project's emissions, we identified several additional mitigation measures that are applicable to the Project. Additional mitigation measures that could be implemented to reduce operational DPM emissions include, but are not limited to, the following:

Additional, feasible mitigation measures can be found in CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures*, which attempt to reduce GHG levels, as well as reduce criteria air pollutants, such as NOx and particulate matter. Therefore, to reduce the Project's operational DPM emissions, consideration of the following measures should be made:

- Incorporate Bike Lane Street Design (On-Site)
  - Incorporating bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments can reduce VMTs. These improvements can help reduce peak-hour vehicle trips by making commuting by bike easier and more convenient for more people. In addition, improved bicycle facilities can increase access to and from transit hubs, thereby expanding the "catchment area" of the transit stop or station and

increasing ridership. Bicycle access can also reduce parking pressure on heavily-used and/or heavily-subsidized feeder bus lines and auto-oriented park-and-ride facilities.

- limit Parking Supply
  - This mitigation measure will change parking requirements and types of supply within the Project site to encourage "smart growth" development and alternative transportation choices by project residents and employees. This can be accomplished in a multi-faceted strategy:
    - Elimination (or reduction) of minimum parking requirements
    - Creation of maximum parking requirements
    - Provision of shared parking
- Implement Subsidized or Discounted Transit Program
  - This project can provide subsidized/discounted daily or monthly public transit passes to incentivize the use of public transport. The project may also provide free transfers between all shuttles and transit to participants. These passes can be partially or wholly subsidized by the employer, school, or development. Many entities use revenue from parking to offset the cost of such a project.

When combined together, these measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduces DPM emissions released during Project operation. An updated DEIR must be prepared to include additional mitigation measures, as well as include an updated HRA to ensure that the necessary mitigation measures are implemented to reduce the operational health risk to below thresholds. The Project Applicant also needs to demonstrate commitment to the implementation of these measures prior to Project approval, to ensure that the Project's operational DPM emissions are reduced to the maximum extent possible.

Response G.27

The comment states that the Project's operational diesel particulate matter emissions may present a potentially significant impact. See response to comment G.20 for a detailed explanation of the reason operational health risk impacts at adjacent sensitive receptors would be less than significant as stated in the Draft EIR. Also see response to comment G.8 regarding parking requirements and impacts.

Chapter 5
Draft EIR Text Revisions

This section contains revisions to the text of the 777 West Middlefield Road Draft EIR dated November 2018. Revised or new language is underlined. All deletions are shown with a ~~line through the text.~~

Page 2-15: **REVISE** the second paragraph under Section 2.5.5 in Chapter 2, *Project Description*, as follows:

There are 202 existing trees on the Project site. Of these, 154 meet the City's criteria for Heritage Trees. The Project would require the removal of ~~173~~ 172 trees on the Project site, including 127 Heritage Trees. Under the Project, four existing Heritage Trees would be transplanted; 25 trees would remain in their existing locations on the Project site, including 24 Heritage Trees.

Page 3.1-10: **REVISE** the fourth paragraph in the operation discussion under Impact AES-1 in Section 3.1, *Aesthetics*, as follows:

To accommodate the Project, approximately ~~173~~ 172 existing trees would need to be removed, 127 of which are Heritage Trees. However, the Project would include new landscaping along the perimeter of the Project site, between each of the buildings, and within each courtyard. The Project would plant approximately 482 trees in addition to 5.1 acres of landscaped open space. Many of the proposed trees would be evergreen, allowing for year-round shade and screening of the Project site. In addition, streetscape improvements would be constructed. These improvements would include a combination of newly planted trees, relocated trees, a new sidewalk, and seating zones adjacent to building lobbies. Shrubs and groundcover would surround the building frontages up to the streetscape. These features, particularly the increase in the number of onsite trees, would provide a visual buffer between the proposed buildings and the existing residential neighborhoods. Figure 2-9 in Chapter 2~~.2~~, *Project Description*, shows the landscape plan for the Project to compensate for the removal of existing trees and vegetation to enhance the development.

Page 3.1-10: **REVISE** the sixth paragraph in the operation discussion and **ADD** table under Impact AES-1 in Section 3.1, *Aesthetics*, as follows:

The City of Mountain View's Planning Division has a development review process to ensure conformance with City plans, ordinances, and policies related to urban design. This development review process includes review of preliminary plans by the Development Review Committee (DRC) and consideration of public input. The review, consistent with General Plan Policy LUD 1.5, would ensure that the proposed design would be consistent with standards for residential development and would not adversely affect the visual quality of the area. The City's Standard Conditions of Approval outline requirements for designs and street trees. Standard Conditions of Approval PL-01 through PL-16 outline the findings of approvals, depending on which permits are required. Standard Conditions of Approval PL-01, PL-06, and PL-11 apply to the Project. The DRC would consider the Project's compliance with the Standard

Conditions of Approval during their review. As described in Table 3.1-1, the Project would adhere to Standard Conditions of Approval PL-01 (Development Review Permit) and PL-06 (Planned Community Permit). ~~require the architectural design and location/configuration of proposed structures to be compatible and harmonious with surrounding development. They also require that the general landscape design ensures visual relief, complements structures, and provides an attractive environment, consistent with adopted landscape programs.~~ In addition, Standard Condition of Approval PL-11 (Heritage Tree Removal Permit) outlines requirements for the removal of Heritage Trees and mandates that the removal of such trees would not visually affect the neighborhood or the remaining trees in the area. Standard Conditions of Approval PW-67 through PW-69 (Street Trees) require the installation of street trees along street frontages and describe requirements for the location and upkeep of these trees.

Table 3.1-1. Project Consistency with Development Review Standards Conditions of Approval

Standard Condition Approval	Project Consistency
PL-01(A). The Project complies with the general design considerations as described by the purpose and intent of the Zoning Ordinance, the General Plan, and any City-adopted design guidelines.	**Consistent.** As discussed throughout this section and in Section 3.9, *Land Use and Planning*, the Project would be consistent with the purpose and intent of the Zoning Ordinance, the General Plan, and design guidelines.
PL-01(B). The architectural design of structures, including colors, materials, and design elements (i.e., awnings, exterior lighting, exterior lighting, screening of equipment, signs, etc.) would compatible with surrounding development.	**Consistent.** The Project would be integrated into the existing medium-density neighborhood by incorporating top, middle, and base design elements and stepping the massing down to three and four stories. Although the Project would result in a substantial increase in building height and mass compared with existing conditions, the building mass would be terraced to create a stepped effect from the building perimeter. This would allow the majority of the building massing to be setback from public views of the Project. In addition, landscaping would block views of some of the buildings.
PL-01(C). The location and configuration of structures, parking, landscaping, and access are appropriately integrated and compatible with surrounding development, including public streets and sidewalks and other public property.	**Consistent.** The Project would feature contemporary materials and detailing, including stucco, composite and wood panels, cementitious lap siding, masonry veneers, vinyl windows, metal awnings and railings, a decorative canopy, and rafter tails, which would create a presence at the street level, including public streets, sidewalks, and other surrounding public areas. Proposed streetscape improvements include a combination of newly planted trees and transplanted existing trees, a new City standard sidewalk, and seating zones adjacent to building lobbies. Shrubs and groundcover would surround the building frontages up to the streetscape.
PL-01(D). The general landscape design ensures visual relief, complements structures, provides an attractive environment, and is consistent with any adopted landscape program for the general area.	**Consistent.** The Project would include new landscaping along the perimeter of the Project site, between each of the buildings, and within each courtyard. The Project would plant approximately 482 trees in addition to 5.1 acres of landscaped open space. Therefore, the Project would ensure visual relief, complement structures, provide an attractive environment, and is consistent with any adopted landscape program for the general area.

Standard Condition Approval	Project Consistency
PL-01(E). The design and layout of the Project would result in well-designed vehicular and pedestrian access, circulation, and parking.	**Consistent.** The Project would support pedestrian access between neighborhoods through construction of a linear park/paseo through the middle of the Project site and a bicycle path, which would extend from West Middlefield Road and North Shoreline Boulevard on the south side of the Project site. The Project would include one subterranean parking garage that would serve all three buildings; therefore, large surface parking areas would not be visible from surrounding areas.
PL-06 (A). The Project demonstrates superior site and building design and compatibility with surrounding uses and developments.	**Consistent.** The Project would be integrated into the existing medium-density neighborhood by incorporating top, middle, and base design elements and stepping the massing down to three and four stories. Landscaping would also block views of some of the buildings.
PL-06 (B). The proposed use or development is consistent with the land use designation of the General Plan.	**Consistent.** As discussed in Section 3.9, *Land Use and Planning*, the General Plan land use designation for the Project site is Medium-Density Residential. The Project would generally conform to the intent of the land use designation for the Project site
PL-06 (C). The proposed uses and development will not be detrimental to the public interest, health, safety, convenience, or welfare.	**Consistent.** The Project includes a multi-family residential development on a site that currently includes multi-family residential uses. Although density at the Project site would be increased, this would not be detrimental to public interest, healthy, safety, convenience, or welfare.
PL-06 (D). The Project promotes a well-designed development that is harmonious with existing and planned development in the surrounding area.	**Consistent.** The Project's design and architectural elements would be distinct and feature contemporary materials but would not conflict with the character of the neighborhood. Therefore, the Project would be harmonious with existing and planned development in the surrounding area.

Page 3.2-2: **REVISE** Section 3.2.1.2, Criteria and Other Pollutants of Concern, in Section 3.2, *Air Quality*, as follows:

Criteria Pollutants

The federal and state governments have established ambient air quality standards (discussed below) for six criteria pollutants: ozone, lead, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and PM, which consists of PM less than or equal to 10 microns in diameter (PM10) and PM less than or equal to 2.5 microns in diameter (PM2.5). Ozone ~~and NO_2 are~~ is considered a regional pollutant~~s because they (or their~~ its precursors~~)~~ affect air quality on a regional scale. Pollutants such as CO, NO_2, SO_2, and lead are considered local pollutants that tend to accumulate in the air locally. PM10 and PM2.5 are both regional and local pollutants. The primary criteria pollutants of concern generated by the project are ozone precursors (ROG and NO_X), CO, and PM.[1] The BAAQMD also

[1] As discussed further below, there are also ambient air quality standards for SO_2, lead (Pb), sulfates, hydrogen sulfide, vinyl chloride, and visibility particulates. However, these pollutants are typically associated with industrial sources, which are not included as part of the plan. Accordingly, they are not evaluated further. Similarly, the vast majority of the NO_X emissions (95 percent) generated by the combustion of fuels is in the form of NO. Accordingly, the project would not contribute to substantial localized NO_2 emissions.

recognizes these pollutants as the "air pollutants of greatest concern for protecting public health" (Bay Area Air Quality Management District 2017a).

All criteria pollutants can have human health and environmental effects at certain concentrations. The ambient air quality standards for these pollutants (see Table 3.2-2) are set to public health and the environment within an adequate margin of safety (Clean Air Act Section 109). Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants, and form the scientific basis for new and revised ambient air quality standards.

Principal characteristics and possible health and environmental effects from exposure to the primary criteria pollutants generated by the project are discussed below

~~The primary criteria pollutants of concern in the Project area are ozone (including nitrogen oxides [NO_x] and reactive organic gases [ROGs]), CO, and PM. The principal characteristics of these pollutants are discussed below.~~

Ozone, or smog, is a photochemical oxidant that is formed when ROGs and NO_X (both by-products of the internal combustion engine) react with sunlight. ~~Ozone poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. In addition, ozone has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone can also act as a corrosive, resulting in property damage, such as the degradation of rubber products.~~ Reactive organic gases are compounds that are made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROGs are the emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products, such as aerosols. ~~Adverse effects on human health are not caused directly by ROGs but, rather, ROG reactions that form secondary pollutants, such as ozone.~~ Nitrogen oxides serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and NO_2.[2] NO is a colorless, odorless gas that is formed from atmospheric nitrogen and oxygen when combustion takes place under high temperatures and/or high pressures. NO_2 is a reddish-brown gas that is formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Ozone poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoor. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggregate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (U.S. Environmental Protection Agency 2019a). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e.,

[2] The vast majority (95 percent) of the NO_X emissions is in the form of NO (South Coast Air Quality Management District 2008).

breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggest that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (U.S. Environmental Protection Agency 2019b). The average background level of ozone in the Bay Area is approximately 45 parts per billion (Bay Area Air Quality Management District 2017).

In addition to human health effect, ozone has been tied to crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death. Ozone can also act as a corrosive and oxidant, resulting in property damage such as the degradation of rubber products and other materials.

Carbon monoxide is a colorless, odorless, toxic gas that is produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation. Exposure to CO at high concentrations can also cause fatigue, headaches, confusion, dizziness, and chest pain. There are no ecological or environmental effects to ambient CO (California Air Resources Board 2019).

Particulate matter consists of finely divided solids or liquids, such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized—inhalable coarse particles, or PM10, and inhalable fine particles, or PM2.5. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading. ~~Both PM10 and PM2.5 may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems.~~

Particulate pollution can be transported over long distances and may adversely affect the human respiratory system, especially for people who are naturally sensitive or susceptible to breathing problems. Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lunch function, and increased respiratory symptoms. Studies show that every 1 microgram per cubic meter reduction in PM2.5 results in a one percent reduction in mortality rate for individuals over 30 years old (Bay Area Air Quality Management District 2017a). Depending on its composition, both PM10 and PM2.5 can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (U.S. Environmental Protection Agency 2019c).

Page 3.2-4: **REVISE** the first paragraph in Section 3.2.1.3, Air Quality Conditions, in Section 3.2, *Air Quality*, as follows:

CARB collects ambient air quality data from a network of air monitoring stations throughout the state. In Santa Clara County, five stations record ozone levels, three stations record PM2.5, and two stations record PM10, CO, NO_2, and SO_2. The closest

ozone monitoring station is the San José–Jackson Street station, which is approximately 10.5 miles southeast of the Project area. Table 3.2-1 summarizes ozone, PM2.5, PM10, CO, NO_2, and SO_2 levels for the last 3 years for which complete data are available (2015–2017). As shown in Table 3.2-1, the San José–Jackson Street station has experienced violations of the ozone, PM10, and PM2.5 standards. As discussed above, the ambient air quality standards define clean air and represent the maximum amount of pollution that can be present in outdoor air without any harmful effects on people and the environment. Existing violations of the ozone and PM10 ambient air quality standards indicate that certain individuals exposed to this pollutant may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments.

Page 3.2-7: **REVISE** Table 3.2-3 in Section 3.2, *Air Quality*, as follows:

Table 3.2-3. Sensitive Receptors within 1,000 Feet of the Project Area

Receptor	Distance of Nearest Receptor to Project Site
The Wonder Years Preschool	765 feet southwest
San Veron Park	175 feet north
Mountain View Buddhist Temple	60 feet south
Residences	Immediately adjacent[a]

Note:

[a] There are residences north (across West Middlefield Road), south, east (across West Middlefield Road), and west (across North Shoreline Boulevard) of the Project site. The closest residence is approximately 10 feet south of the site's property line. Refer to Figure 3.2-1 for additional information on the locations of all residential receptors within 1,000 feet of the Project site.

Page 3.2-15: **REVISE** the text below the subheading *Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern* in Section 3.2, *Air Quality*, as follows:

Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern

~~As discussed above, all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals). Moreover, ozone precursors (ROG and NO_X) affect air quality on a regional scale. Health effects related to ozone are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and as such, translating Project-generated criteria pollutants to specific health effects would produce meaningless results. In other words, minor increases in regional air pollution from Project-generated ROG and NO_X would have nominal or negligible impacts on human health. As such, an analysis of impacts on human health associated with Project-generated regional emissions is not included in the Project-level analysis. Increased emissions of ozone precursors (ROG and NO_X) generated by the Project could increase photochemical reactions and the formation of~~

~~tropospheric ozone, which, at certain concentrations, could lead to respiratory symptoms (e.g., coughing), decreased lung function, and inflammation of airways. Although these health effects are associated with ozone, the impacts are a result of cumulative and regional ROG and NO_x emissions. The incremental contribution of the Project to specific health outcomes from criteria pollutant emissions would be limited and cannot be solely traced to the Project (see Impact C-AQ-2 for a discussion of regional cumulative impacts).~~

In December 2018, the California Supreme Court issued its decision in *Sierra Club v. County of Fresno* (226 Cal.App.4th 704) (hereafter referred to as the Friant Ranch Decision). The case reviewed the long-term, regional air quality analysis contained in the EIR for the proposed Friant Ranch development. The Friant Ranch project is a 942-acre master-plan development in unincorporated Fresno County within the San Joaquin Valley Air Basin, an air basin currently in nonattainment for the ozone and PM2.5 NAAQS and CAAQS. The Court found that the air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The Court's decision clarifies that environmental documents must connect a project's air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

As discussed in Section 3.2.1.2, *Criteria and Other Air Pollutants of Concern*, all criteria pollutants that would be generated by the proposed project are associated with some form of health risk (e.g., asthma). Criteria pollutants can be classified as either regional or localized pollutants. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. Ozone is considered a regional criteria pollutant, whereas CO, NO_2, SO_2, and lead (Pb) are localized pollutants. PM can be both a local and a regional pollutant, depending on its composition. As discussed above, the primary criteria pollutants of concern generated by the proposed project are ozone precursors (ROG and NO_X), CO, and PM (including DPM).

Regional Project-Generated Criteria Pollutants (Ozone Precursors and Regional PM)

Adverse health effects induced by regional criteria pollutant emissions generated by the proposed project (ozone precursors and PM) are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). For these reasons, ozone precursors (ROG and NO_X) contribute to the formation of ground-borne ozone on a regional scale, where emissions of ROG and NOx generated in one area may not equate to a specific ozone concentration in that same area. Similarly, some types of particulate pollutant may be transported over long-distances or formed through atmospheric reactions. As such, the magnitude and locations of specific health effects from exposure to increased ozone or regional PM concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project.

Models and tools have been developed to correlate regional criteria pollutant emissions to potential community health impacts. Appendix 3.2-1 summarizes many of these tools, identifies the analyzed pollutants, describes their intended application and resolution, and analyzes whether they could be used to reasonably correlate project-level emissions to specific health consequences. As described in Appendix 3.2-1, while there are models capable of quantifying ozone and secondary PM formation and associated health effects, these tools were developed to support regional planning and policy analysis and have limited sensitivity to small changes in criteria pollutant concentrations induced by individual projects. Therefore, translating project-generated criteria pollutants to the locations where specific health effects could occur or the resultant number of additional days of nonattainment cannot be estimated with a high degree of accuracy.

Technical limitations of existing models to correlate project-level regional emissions to specific health consequences are recognized by air quality management districts throughout the state, including the San Joaquin Valley Air Pollution Control District (SJVAPCD) and South Coast Air Quality Management District (SCAQMD), who provided amici curiae briefs for the Friant Ranch legal proceedings. In its brief, SJVAPCD (2015) acknowledges that while health risk assessments for localized air toxics, such as DPM, are commonly prepared, "it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task." The air district further notes that emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information," and that any such information should not be "accurate when applied at the local level." SCAQMD (2015) presents similar information in their brief, stating that "it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels".[3]

As discussed above, air districts develop region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment or nonattainment designations under the NAAQS and CAAQS. The NAAQS and CAAQS are informed by a wide range of scientific evidence that demonstrates there are known safe concentrations of criteria pollutants. While recognizing that air quality is cumulative problem, air districts typically consider projects that generate criteria pollutant and ozone precursor emissions below these thresholds to be minor in nature and would not adversely affect air quality such that the NAAQS or CAAQS would be exceeded. Emissions generated by the project could increase photochemical reactions and the formation of tropospheric ozone and secondary PM, which at certain concentrations, could lead to increased incidence of specific health consequences. Although these health effects are associated with ozone and particulate pollution, the effects are a result of cumulative and regional emissions. As such, a project's incremental contribution cannot be traced to specific health outcomes on a regional scale, and a quantitative correlation of project-generated regional criteria pollutant

[3] For example, SCAQMD's analysis of their 2012 Air Quality Attainment Plan showed that modeled NOx and ROG reductions of 432 and 187 tons per day, respectively, only reduced ozone levels by 9 parts per billion. Analysis of SCAQMD's Rule 1315 showed that emissions of NOx and ROG of 6,620 and 89,180 pounds per day, respectively, contributed to 20 premature deaths per year and 89,947 school absence (South Coast Air Quality Management District 2015).

emissions to specific human health impacts is not included in this analysis. It is foreseeable that unmitigated construction- and operational-generated emissions of ozone precursors and PM in excess of BAAQMD thresholds could contribute to cumulative and regional health impacts. In such cases, all feasible mitigation is applied, and emissions are reduced to the extent possible. Please refer to Impact AQ-2a and Impact AQ-2b for a discussion of project-generated emissions and a description of feasible mitigation. See Impact AQ-3 for a discussion of cumulative impacts.

Localized Project-Generated Criteria Pollutants (PM and CO) and Air Toxics (DPM)

Localized pollutants generated by a project are deposited and potentially affect population near the emissions source. Because these pollutants dissipate with distance, emissions from individual projects can result in direct and material health impacts to adjacent sensitive receptors. Models and thresholds are readily available to quantify these potential health effects and evaluate their significance (California Air Pollution Control Officers Association 2009, Office of Environmental Health Hazard Assessment 2015, Bay Area Air Quality Management District 2017b, California Air Resources Board 2000). Locally adopted thresholds and analysis procedures for the localized pollutants of concern associated with the proposed plan (CO, PM and DPM[4], and asbestos) [5] are identified below and summarized in Table 3.2-5.

~~Because localized pollutants generated by a project can directly affect adjacent sensitive receptors, the analysis of project-related impacts on human health focuses only on those localized pollutants with the greatest potential to result in a significant, material impact on human health. This is consistent with the current state of practice and published guidance by BAAQMD (2017), the California Air Pollution Control Officers Association (2009), OEHHA (2015), and CARB (2000). These pollutants are (1) locally concentrated CO and PM, (2) DPM, and (3) asbestos. BAAQMD thresholds of significance for each pollutant are discuss below and summarized in Table 3.2-5.~~

Localized Carbon Monoxide Concentrations

Heavy traffic congestion can contribute to high levels of CO, and individuals exposed to such hot spots may have a greater likelihood of developing adverse health effects. BAAQMD has adopted screening criteria that provide a conservative indication of whether Project-generated traffic would cause a potential CO hot spot. If the screening criteria are not met, a quantitative analysis through site-specific dispersion modeling of Project-related CO concentrations would not be necessary, and the Project would not cause localized violations of the CAAQS for CO. Projects that do not generate CO concentrations in excess of the health-based CAAQS would not contribute a significant

[4] DPM is the primary TAC of concern—of all controlled TACs, emissions of DPM are estimated to be responsible for about 82% of the total ambient cancer risk in the BAAQMD (Bay Area Air Quality Management District 2017a). Given the risks associated with DPM, tools and factors for evaluating human health impacts from project-generated DPM have been developed and are readily available. Conversely, tools and techniques for assessing project-specific health outcomes as a result of exposure to other TAC (e.g., benzene) remain limited. These limitations impede the ability to evaluate and precisely quantify potential public health risks posed by TAC exposure.

[5] Although SO_2 NO_2, and lead may also concentration locally, the project does not represent a significant source of these pollutants. Accordingly, they are not discussed or evaluated further.

level of CO such that localized air quality and human health would be substantially degraded.

Page 3.2-20: **REVISE** the second paragraph below Impact AQ-2a in Section 3.2, *Air Quality*, as follows:

As shown in Table 3.2-6, construction of the Project would not generate ROGs or PM exhaust in excess of BAAQMD's numeric thresholds. However, the Project would generate NO_X in excess of BAAQMD's significance threshold in 2020. These emissions, if left unmitigated, could contribute to ozone ground-level formation in the SFBAAB, which at certain concentrations, can contribute to short- and long-term human health effects. Santa Clara County does not currently attain the ozone CAAQS and NAAQS (see Table 3.2-2). Certain individuals residing in areas that do not meet the ambient air quality standards, including Santa Clara County, could be exposed to pollutant concentrations that cause or aggravate acute and/or chronic health conditions (e.g., asthmas, lost work days, premature mortality). While construction of the Project would contribute to future NOx emissions, maximum daily construction-generated NOx emissions represent approximately 0.01 percent of total NOx in the SFBAAB (Bay Area Air Quality Management District 2017a)[6]. As previously discussed, the magnitude and locations of any potential changes in ambient air quality, and thus health consequences, from these additional emissions cannot be quantified with a high level of certainty due to the dynamic and complex nature of pollutant formation and distribution (e.g., meteorology, emissions sources, sunlight exposure). However, it is known that public health will continue to be affected in Santa Clara County so long as the region does not attain the CAAQS or NAAQS. Implementation of Mitigation Measures AQ-1 and AQ-2 would reduce construction-related NO_X emissions to below BAAQMD's NO_X threshold, as shown in Table 3.2-7.

Page 3.2-22: **REVISE** the second paragraph in Section 3.2, *Air Quality*, as follows:

Because construction-related criteria pollutant emissions associated with the Project would be mitigated to below BAAQMD's significance thresholds, and dust emissions would be less than significant with implementation of Standard Conditions of Approval PL-116, criteria pollutant emission impacts would be less than significant with mitigation. As such, construction emissions would not be expected to contribute a significant level of air pollution such that regional air quality within the SFBAAB would be degraded.

Page 3.2-22: **REVISE** the first paragraph below Table 3.2-7 in Section 3.2, *Air Quality*, as follows:

The City's Standard Condition of Approval PL-116 (Basic Air Quality Construction Measures) requires all construction contractors to implement BAAQMD's basic construction mitigation measures as part of their projects. Specifically, PL-116 requires exposed surfaces to be watered two times per day, haul trucks transporting loose materials to be covered, visible mud or dirt track-out onto adjacent public roads to be removed using wet power vacuum street sweepers at least once per day, vehicle

[6] SFBAAB 2015 NOx emissions reported in the Clean Air Plan were 300 tons per day (Bay Area Air Quality Management District 2017a). Maximum project-generated NOx emissions are 89 pounds per day, which equates to 0.0445 ton per day.

speeds on unpaved roads to be limited to 15 mph, anticipated paved surfaces to be paved as soon as possible, and a publicly visible sign to be posted with the telephone number and person to contact at the Lead Agency regarding dust complaints.

Implementation of Standard Condition of Approval PL-116 will reduce construction-related fugitive dust emissions to less than significant. In addition, Standard Condition of Approval PL-115 (Air Quality) will require a permit from the BAAQMD for construction.

Page 3.2-22: **REVISE** Mitigation Measure AQ-1 in Section 3.2, *Air Quality*, as follows:

MM AQ-1: Use Clean Diesel-Powered Equipment during Construction to Control Construction-Related NO_X Emissions.

The Project developer shall ensure that all off-road diesel-powered equipment used during construction is equipped with EPA Tier 4 Final engines. The construction contractor shall submit evidence of the use of EPA Tier 4 Final engines or cleaner for Project construction to the City prior to the commencement of construction activities.

Page 3.2-23: **REVISE** the last paragraph under Impact AQ-2b in Section 3.2, *Air Quality*, as follows:

Because operations-related criteria pollutant emissions associated with the Project would be below BAAQMD's significance thresholds for operational activities, criteria pollutant emissions impacts would be less than significant. As such, operational emissions would not be expected to contribute a significant level of air pollution such that regional air quality within the SFBAAB would be degraded. No mitigation is required.

Page 3.2-24: **REVISE** the last paragraph under Impact AQ-3 in Section 3.2, *Air Quality*, as follows:

With implementation of MM AQ-1 and AQ-2, criteria pollutant emissions during construction would not exceed BAAQMD's thresholds (see Table 3.2-7). In addition, construction-related dust emissions would be less than significant with implementation of Standard Condition of Approval PL-116 (See Impact AQ-2a for a description of BAAQMD's Basic Air Quality Construction Measures). Also, criteria pollutant emissions during Project operations would not exceed BAAQMD's thresholds for operations (see Table 3.2-9). Consequently, criteria pollutant emissions would not be cumulatively considerable for any criteria pollutant and would be less than significant with mitigation.

Page 3.2-24: **REVISE** last paragraph under the subheading *Construction-Generated Fugitive Dust* under Impact AQ-4a in Section 3.2, *Air Quality*, as follows:

During grading and excavations activities, dust would be generated. The amount of dust generated is highly variable and dependent on the size of the disturbed area at any given time, the amount of activity, soil conditions, and meteorological conditions. BAAQMD's CEQA Guidelines consider the dust impacts to be less than significant if BAAQMD's construction best management practices are employed to reduce these emissions. These measures will reduce fugitive dust emissions by approximately 36 percent (Bay Area Air Quality Management District 2017b). Therefore, implementation of Standard Condition of Approval PL-116 (Basic Air Quality Construction Measures) would ensure that construction-related fugitive dust

emissions would be less than significant and would not expose receptors to substantial pollutant concentrations or risk.

Page 3.2-25: **REVISE** last paragraph under the subheading *Asbestos* under Impact AQ-4a in Section 3.2, *Air Quality*, as follows:

Asbestos is a naturally occurring mineral that was previously used in building construction because of its heat resistance and strong insulating properties. Exposure to asbestos, however, has been shown to cause many disabling and fatal diseases, including lung cancer, mesothelioma, and pleural plaques. Demolition of the buildings on the Project site may expose workers and nearby receptors to asbestos if the material was used during construction of the original buildings. However, the Project would comply with BAAQMD Regulation 11, Rule 2, Asbestos, Demolition, Renovation, and Manufacturing. The purpose of this of the rule is to control emissions of asbestos to the atmosphere during demolition and building renovation. Because the applicant would be required to control asbestos emissions according to BAAQMD regulations, receptors would not be exposed to substantial asbestos risk, and impacts associated with asbestos emissions would be less than significant.

Page 3.2-25: **REVISE** second and third paragraphs under the subheading *Construction-Generated DPM and PM2.5 Exhaust* under Impact AQ-4a in Section 3.2, *Air Quality*, as follows:

Table 3.2-10 and Table 3.2-11 present~~s~~ the maximum unmitigated and mitigated construction-related health risks for receptors within 1,000 feet of the Project, respectively. The receptor affected by the highest concentrations of DPM exhaust and PM2.5 exhaust is adjacent to the southern edge of the Project site, in the northeast corner of the Mountain View Buddhist Temple property. The receptor affected by the second-highest concentrations of DPM and PM2.5 is the residence 10 feet south of the Project site, and the receptors affected by the third-highest concentrations of DPM and PM2.5 are the residences 140 feet southeast of the Project site. As shown in Table 3.2-10, unmitigated Project construction would ~~not~~ result in a significant increase in cancer risk at the residence 10 feet south of the Project site and the receptors 140 feet southeast of the Project site ~~nearby sensitive receptors~~. Chronic HI and annual PM2.5 exhaust concentrations would ~~also~~ be below BAAQMD's significance thresholds. In addition, Standard Condition of Approval PL-115 (Air Quality) will require a permit from the BAAQMD for construction.

As shown in Table 3.2-11, mitigated Project construction would not result in a significant increase in cancer risk at nearby sensitive receptors. Chronic HI and annual PM2.5 exhaust concentrations would also be below BAAQMD's significance thresholds. In addition, Standard Condition of Approval PL-115 (Air Quality) will require a permit from the BAAQMD for construction. Therefore, impacts would be less than significant with mitigation.

Page 3.2-25: **ADD** table prior to Table 3.2-10 under Impact AQ-4a Section 3.2, *Air Quality*, as follows:[7]

Table 3.2-10. Project-level Cancer and Chronic Hazard Risks During Construction

Receptor	Cancer Risk (cases per million)	Non-Cancer Hazard Index	Annual PM2.5 Concentration (µg/m³)
Adjacent Temple Receptor	6	< 1	0.1
Highest Offsite Resident	29	< 1	0.1
Next-Highest Resident	20	< 1	0.1
Significance Threshold	*10*	*1*	*0.3*
Exceed Threshold?	*Yes*	*No*	*No*
Note: µg/m³ = micrograms per cubic meter; PM2.5 = particulate matter no more than 2.5 microns in diameter			

Page 3.3-14: **REVISE** the first paragraph under Impact BIO-2 in Section 3.3, *Biological Resources*, as follows:

There are 202 existing trees on the Project site. Of these, 154 meet the City's criteria for Heritage Trees. The Project would require the removal of ~~173~~ 172 trees on the Project site, including 127 Heritage Trees. Under the Project, four existing Heritage Trees would be transplanted; 25 trees would remain in their existing locations on the Project site, including 24 Heritage Trees. The Project would involve planting approximately 482 trees. Figure 2-9 in Chapter 2.2, *Project Description*, shows the landscape plan for the Project to compensate for the removal of existing trees and vegetation to enhance the development.

Page 3.4-16: **REVISE** Mitigation Measure CUL-5 in Section 3.4, *Cultural Resources*, as follows:

MM CUL-5: Stop work if tribal cultural properties are encountered during ground disturbing activities.

If prehistoric or historic-period cultural materials are unearthed during ground-disturbing activities, it is ~~recommended~~ required that all work within 100 feet of the find halt until a qualified archaeologist and Native American representative can assess the significance of the find.

Page 3.6-11: **REVISE** the first sentence under Impact GHG-1a in Section 3.6, *Greenhouse Gas Emissions*, as follows:

Construction is expected to span approximately 4 calendar years[8], beginning in April 2020.

Page 3.10-16: **REVISE** the last two paragraphs under the subheading *Construction Equipment Noise* under Impact NOI-1a in Section 3.10, *Noise*, as follows:

[7] The table number for Table 3.2-10 and all subsequent tables in Section 3.2, *Air Quality*, of the Draft EIR would increase by one as a result of this new table. The subsequent table numbering changes are not indicated herein.

[8] Construction of the Project is scheduled to commence in April 2020 and end in March 2023, a period of approximately 36 months that spans 4 calendar years (2020, 2021, 2022, and 2023). This clarification would not result in any changes to the conclusions identified in the Draft EIR.

Project construction would comply with Section 8.70.1 of the City of Mountain View Municipal Code, which includes regulations related to noise generated by construction. It stipulates that no construction activity will commence prior to 7:00 a.m. or continue later than 6:00 p.m. Monday through Friday. In addition, no noise-generating work shall be permitted on Saturdays, Sundays, or holidays, unless prior written approval is granted by the Chief Building Official. The Project would also be required to adhere to the Standard City Conditions (effective January 30, 2017). Standard Condition of Approval PL-106 (Construction Noise Reduction) requires noise reduction measures to be incorporated into construction plans and contractor specifications. Specifically, PL-106 requires that all equipment comply with manufacturer's muffler requirements, that all equipment be turned off when not in use, and that stationary equipment be located as far as practical from receiving properties. Because noise from a point source is typically reduced by 6 dB per doubling of distance, the further away stationary equipment is located from receivers, the lower the construction noise would be at the receiver. In addition, PL-106 states that temporary sound barriers or sound curtains shall be used around loud stationary equipment if the other noise reduction methods are not effective or possible. It is estimated that a temporary sound wall could reduce noise from construction by approximately 5 to 10 dB, depending on the height of the noise source, the barrier and the receiver.

In addition, Standard Condition of Approval PL-114 (Disturbance Coordinator) requires a designated "disturbance coordinator" responsible for responding to any local complaints regarding construction noise. This would ensure that excessive noise would be addressed promptly, as PL-114 also requires that reasonable measures warranted to correct the problem be implemented should complaints be received. Since construction would be limited to the allowable daytime hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, project construction would therefore ~~A~~adhere~~nce~~ to the applicable local regulations (Section 8.70.1 of the City Municipal Code). ~~and Standard Conditions of Approval PL-106 and PL-114~~Adherence to the municipal code would ensure that potential noise impacts related to construction equipment would be less than significant, and adherence to Standard Conditions of Approval PL-106 and PL-114 would further reduce this less-than-significant impact. No mitigation is required.

Page 3.10-16: **REVISE** the two paragraphs under the subheading *Construction Noise* under Impact NOI-4 in Section 3.10, Noise, as follows:

As discussed under Impact NOI-1a, construction activities associated with the Project would occur only during exempt hours (i.e., when there are no numerical standards that apply to construction noise). In addition, the Project would comply with Standard Condition of Approval PL-106 (Construction Noise Reduction). This Standard Condition of Approval states that noise reduction measures shall be incorporated into construction plans and contractor specifications to reduce the impact of temporary construction-related noise on nearby properties. These measures include complying with manufacturers' muffler requirements for engines, turning off construction equipment when not in use, and locating stationary equipment as far as practical from receiving properties. Because noise from a point source is typically reduced by 6 dB per doubling of distance, the further away stationary equipment is located from

receivers, the lower the construction noise would be at the receiver. Other measures include installing temporary sound barriers or sound curtains around loud stationary equipment if other noise-reduction methods are not effective or possible, ~~shrouding or shielding impact tools,~~ or using electric rather than diesel-powered construction equipment. Note that a temporary sound wall can reduce noise from construction by approximately 5 to 10 dB, depending on the height of the noise source, the barrier and the receiver.

~~These measures would help reduce the increase in ambient noise attributable to Project construction.~~ Because Project construction would occur only within allowable hours ~~and comply with the applicable Standard Condition of Approval, described above~~, it would therefore adhere to the applicable local regulations (Section 8.70.1 of the City Municipal Code). Adherence to the municipal code would ensure any temporary increases in noise from construction activities would not be considered substantial. The~~se~~ measures discussed above from PL-106 would help to further reduce the ~~increase in~~ ambient noise increases attributable to Project construction. In addition, Standard Condition of Approval PL-114 (Disturbance Coordinator), ~~requires a designated "disturbance coordinator" responsible for responding to any local complaints regarding construction noise~~ would ensure that excessive noise would be addressed promptly, since PL-114 requires that reasonable measures warranted to correct the problem be implemented should noise complaints be received. Because project construction would adhere to the applicable regulations from the municipal code ~~Therefore~~, potential construction noise impacts related to a substantial temporary increase in noise would be less than significant. In addition, adherence to Standard Conditions of Approval PL-106 and PL-114 would further reduce this less-than-significant impact. No mitigation is required.

Page 3.14-13: **REVISE** the third paragraph under the subheading System Infrastructure under Impact UTL-2 in Section 3.14, *Utilities and Service Systems*, as follows:

According to the Utility Impact Study prepared for the Project, the Project would contribute to a deficiency in the sanitary sewer system under the Moffett-Middlefield condition.[9] According to the City of Mountain View Public Works Department, the recommended CIPs in the Moffett-Middlefield Sewer Diversion Feasibility memorandum are proposed in the 5-year CIP and are anticipated to be approved in Spring 2019. Based on that contribution, the applicant would be required to pay a fair share toward capital improvement projects (CIPs) identified by the City under the Moffett-Middlefield condition (including CIP #20-37, which consists of replacing the sewer in Middlefield Road and CIP #21-33, which consists of the sewer main flow reversal in Moffett Boulevard). With implementation of Mitigation Measure UTL-2, the Project would have a less-than-significant impact related to the increased generation of wastewater at the Project site.

[9] The Moffett-Middlefield (2030) Condition analyzed in the Utility Impact Study prepared for the Project was created from the 2030 *General Plan Update Utility Impact Study* model and includes the sewer system CIPs from the GPUUIS, but also includes the recommended CIPs in the *Moffett-Middlefield Sewer Diversion Feasibility* memorandum (Schaaf & Wheeler, January 2017).

Page 3.12-9: **REVISE** the first sentence in the first paragraph under the subheading *Discussion* under Impact PSR-1a in Section 3.12, *Public Services and Recreation*, as follows:

Construction of the Project is scheduled to commence in ~~March 2019~~ April 2020 and end in ~~April 2022~~ March 2023, a period of approximately 36 months.

Page 3.12-10: **REVISE** the first sentence in the first paragraph under the subheading *Discussion* under Impact PSR-2a in Section 3.12, *Public Services and Recreation*, as follows:

Construction of the Project is scheduled to commence in ~~March 2019~~ April 2020 and end in ~~April 2022~~ March 2023, a period of approximately 36 months.

Page 6-1: **REVISE** the citation identified below in Section 6, *References*, as follows.

Bay Area Air Quality Management District. 2017b. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA. Available: http://www.baaqmd.gov/~/media/files/ planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed: August 10, 2018.

Page 6-1: **ADD** the following citation to Section 6, *References*.

Bay Area Air Quality Management District. 2017a. *Spare the Air: Cool the Climate.* April. San Francisco, CA. Available: http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en. Accessed: March 12, 2019.

Page 6-2: **ADD** the following citations to Section 6, *References*.

California Air Resources Board. 2019. What is Carbon Monoxide? Available: <https://ww2.arb.ca.gov/resources/carbon-monoxide-and-health>, Accessed: February 26, 2019.

San Joaquin Valley Air Pollution Control District. 2015. Applicable of the Leave to File Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P. Filed April.

South Coast Air Quality Management District. 2008. Final Localized Significant Threshold Methodology. Available: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2>. Accessed: March 4, 2019.

South Coast Air Quality Management District, 2015. Applicable of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party. Filed April.

U.S. Environmental Protection Agency. 2019a. Health Effects of Ozone Pollution. Available: <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>. Accessed: February 26, 2019.

U.S. Environmental Protection Agency. 2019b. Health Effects of In the General Population. Available: <https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population>. Accessed: February 26, 2019.

U.S. Environmental Protection Agency. 2019c. Health and Environmental Effects of Particulate Matter (PM). Available: <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm>. Accessed: February 26, 2019.

Page 6-5: **REMOVE** the citation identified below from Section 6, *References*. The citation was inadvertently included in the Draft EIR.

~~Waters, Michael R. 1992. *Principles of Geoarchaeology: A North American Perspective*. Tucson, AZ: The University of Arizona Press.~~

Page 6-8: **REVISE** the citation identified below in Section 6, *References*, as follows:

Personal Communication: Rosenblatt, Lee P.E., Principal. Carlson, Barbee & Gibson, Inc. May 30, 2018.~~June 30, 2018~~. Email to John Schwarz, JHS Consulting, Perry Hariri, Miramar Capital.

Page 6-13: **REVISE** the citation identified below in Section 6, *References*, as follows:

Personal Communication: Rosenblatt, Lee P.E., Principal. Carlson, Barbee & Gibson, Inc. May 30, 2018.~~June 30, 2018~~. Email to John Schwarz, JHS Consulting, Perry Hariri, Miramar Capital.

Page 6-13: **REMOVE** the citation identified below from Section 6, *References*. The citation was inadvertently included in the Draft EIR.

~~Personal Communication: Topley, Lori, City of Mountain View. July 2, 2014- email to DJP&A.~~

Page 6-13: **REMOVE** the citation identified below from Section 6, *References*. The citation was inadvertently included in the Draft EIR.

~~Personal Communication: Topley, Lori, City of Mountain View. July 2, 2014- email to DJP&A.~~

Appendix 3.2-1: **ADD** the following text and table to the end of Appendix 3.2-1.

Several models and tools capable of translating mass emissions of criteria pollutants to various health endpoints have been developed. Table 3.2-1.1 summarizes key tools, identifies the analyzed pollutants, describes their intended application and resolution, and analyzes whether they could be used to reasonably correlate project-level emissions to specific health consequences. As shown in Table 3.2-1.1, almost all tools were designed to be used at the national, state, regional, and/or city-levels. These tools are not well suited to analyze small or localized changes in pollutant concentrations associated with individual projects. Accordingly, they are generally not recommended for CEQA analyses.

Table 3.2-1.1. Analysis of Models and Tools to Correlate Project-Generated Criteria Pollutant Emissions to Health End Points

Tool	Created by	Description	Resolution	Pollutants Analyzed	Project-Level CEQA Applicability
AirCounts[10]	Abt Assoc.	Online tool that helps large and medium-sized cities quickly estimate the health benefits of PM2.5 emission reductions and economic value of those benefits. The tool estimates the number of deaths (mortality) avoided and economic value related to user-specified regional, annual PM2.5 emissions reduction. The modeling year is 2010; avoided deaths are expected to occur over a 20-year period and their present value is shown in 2010 US dollars at a 3% discount rate.	City-level	Primary PM2.5	This tool is only illustrative, as it is limited to certain cities and does not target specific sectors. Given that it was designed as a screening-level tool, is not sector specific, and includes limited California data, the tool is **not recommended** for project-level CEQA analysis.
AP2 (formerly Air Pollution Emission Experiments and Policy [APEEP])[11]	Mueller and Mendelsohn, 2006	AP2 is an integrated assessment model developed to assess marginal damage impacts from emissions at the national scale but can be applied at the county-level. The model connects emissions to monetary damages through six modules: emissions (per EPA's national inventory), air quality modeling, concentrations, exposures, physical effects, and valuation. Damages are presented on a dollar-per-ton basis. Model extends damage assessment beyond human health, and includes assessment on reduced crop and timber yields, reductions in visibility, enhanced depreciation of man-made materials and damages due to lost recreation services.	National or county-level	SO_2, ROG, NOx, ozone, PM2.5, PM10	The model operates at the national scale but may be applied at the county-level (although it is not clear how this adjustment should be made). The tool is also not commercially available. Accordingly, the tool is **not recommended** for project-level CEQA analysis.
Methodology for Estimating Premature Deaths Associated with Long-Term Exposure to Fine Airborne Particulate Matter in California[12]	CARB	The staff report identifies a relative risk of premature death associated with PM2.5 exposure based on a review of all relevant scientific literature, and a new relative risk factor was developed. This new factor is a 10% increase in risk of premature death per 10 $\mu g/m^3$ increase in exposure to PM2.5 concentrations (uncertainty interval: 3% to 20%)	National		The primary author of the CARB staff report notes that the analysis method is not suited for small projects and may yield unreliable results due to various uncertainties (SCAQMD 2015). Accordingly, the tool is **not recommended** for project-level CEQA analysis.
Co-Benefits Risk Assessment (COBRA)[13]	US EPA	Preliminary screening tool that contains baseline emission estimates of a variety of air pollutants for a single year (2017). COOBRA is targeted to state and local governments as a screening assessment for clean energy policies. Users specify changes to the baseline emission estimates. COBRA then uses "canned" source-receptor matrix model to estimate PM changes and resulting health outcomes and monetized values. The results can be mapped to visually represent air quality, human health, and health-related economic benefits. Analysis can be performed across the 14 major emissions categories included in the EPA's National Emissions Inventory. Note that COBRA is based on EPA's BenMAP-CE (discussed in a separate entry).	National, regional, state, or county-levels	PM2.5, SO_2, NOx, NH_3, and ROG	COBRA is a preliminary screening tool only and cannot be used at sub-county resolution. It also does not account for secondary emission changes resulting from market responses. Accordingly, the tool is **not recommended** for project-level CEQA analysis.
Environmental Benefits and Mapping Program-Community Edition (BenMAP-CE)[14]	US EPA	BenMAP is EPA's detailed model for estimating the health impacts from air pollution. It relies on input concentrations and applies concentration-response (C-R) health impact functions, which relate a change in the concentration of a pollutant with a change in the incidence of a health endpoint, including premature mortality, heart attacks, chronic respiratory illnesses, asthma exacerbation and other adverse health effects. Detailed inputs are required for air quality changes (concentrations from AERMOD), population, baseline incidence rates, and effect estimates.	National, County, City, and sub-regional levels	Ozone, PM, NO_2, SO_2, CO	The smallest analysis resolution for BenMAP-CE is 144 square kilometers (equivalent to approximately 56 square miles or 36,000 acres). Accordingly, the tool is **not recommended** for project-level CEQA analysis.

[10] https://www.abtassociates.com/tools

[11] Original APEEP: https://www.researchgate.net/publication/253359043_The_Air_Pollution_Emission_Experiments_and_Policy_Analysis_Model_APEEP_Technical_Appendix

[12] https://www.arb.ca.gov/research/health/pm-mort/PMmortalityreportFINALR10-24-08.pdf

[13] https://www.epa.gov/statelocalenergy/co-benefits-risk-assessment-cobra-health-impacts-screening-and-mapping-tool

[14] https://www.epa.gov/benmap

Tool	Created by	Description	Resolution	Pollutants Analyzed	Project-Level CEQA Applicability
Fast Scenario Screening Tool (TM5-FASST)[15]	Joint Research Centre (Italy)	Tool allows users to evaluate how air pollutant emissions affect large scale pollutant concentrations and their impact on human health (mortality and years of life lost) and crop yield from national to regional air quality policies, such as climate policies. The tool is web-based and does not require coding or modelling. Users must gain access through publishers.	Global and national-levels	PM2.5, ozone, NOx, NH_3, CO, ROG, EC, CH_4, SO_2	This tool is applicable at national to global scales. Accordingly, the tool is **not recommended** for project-level CEQA analysis.
Long-range Energy Alternatives Planning System-- Integrated Benefits Calculator (LEAP-IBC)	Climate and Clean Air Coalit-ion (CCAC)	Allows users to rapidly estimate the impacts of reducing emissions on health, climate, and agriculture. Tool uses sensitivity coefficients that link gridded emissions of air pollutants and precursors to health, climate and agricultural impacts at a national level. The sensitivity coefficients are generated by a chemical transport model, so air quality modeling not necessary. Tool is currently Excel-based and is available through the developers only. A web-based interface is currently under development.	National-level	PM2.5, ozone, NO_2	This tool is applicable at national scale. Accordingly, the tool is **not recommended** for project-level CEQA analysis.
Multi-Pollutant Evaluation Method (MPEM)[16]	BAAQMD	Estimates the impacts of control measures on pollutant concentration, population exposures, and health outcomes for criteria, toxic, and GHG pollutants. Monetizes the value of total health benefits from reductions in PM2.5, ozone, and certain carcinogens, and the social value of GHG reductions. MPEM was designed for development of a Clean Air Plan for the San Francisco Bay Area. The inputs are specific to the SF region and are not appropriate for projects outside BAAQMD.	Regional level in the SFBAAB	Ozone, PM, air toxics, GHG	This tool is designed to support the BAAQMD in regional planning and emissions analysis within the SFBAAB. The model applies changes in pollutant concentrations over a four-square kilometer grid. Accordingly, the tool is **not recommended** for project-level CEQA analysis that cover an area smaller than 1,000 acres.
Response Surface Model (RSM)-based Benefit-per-Ton Estimates[17]	US EPA	Consists of tables reporting the monetized PM2.5-related health benefits from reducing PM2.5 precursors from certain source types nationally and for 9 US cities/regions. Applying these estimates simply involves multiplying the emissions reduction by the relevant benefit per-ton metric. The resulting value is the PM mortality risk estimate at a 3% discount rate. Note that RSM is based on EPA's BenMAP-CE (discussed in a separate entry).	National or regional (San Joaquin County only) levels	EC, SOx, VOC, NH_3, NOx	While RSM includes regional values specific to San Joaquin County, the metrics only reflect the benefits of reductions in exposure to ambient PM alone and do not include the benefits of reductions in other pollutants. The values are also dated as new sector-based BPT values are more current. Accordingly, the tool is **not recommended** for project-level CEQA analysis.
Sector-based Benefit-per-Ton Estimates[18]	US EPA	Two specific sets of BPT estimates for 17 key source categories are available. Both are a reduced-form approach based on BenMAP modeling. The first are based on Fann et al. (2012) values and available from EPA's website. The second is based on updated modeling from Fann et al. (2017) and available in a Technical Support Document (TSD) from EPA. Applying these factors involves multiplying the emissions reduction (in tons) by the relevant benefit (economic value) or incidence (rates of mortality and morbidity) per-ton metric. The resulting value is the economics, mortality, and morbidity of direct and indirect PM2.5 emissions. All values are based on a national-scale study. Local values are preferred, but not available from any existing reduced form model and use of reduced form estimates for another city is unlikely to provide a better-than-national value. Use of the current values from EPA's 2018 TSD represent the most current estimate of monetized or incidence risk. Values from Lepeule et al. (2012) represent the most current estimate of mortality.	National-scale	PM2.5, SO_2, NOx	The BPT estimates do not account for project-specific emissions or receptor locations, local dispersion characteristics, or regional photochemistry. The resultant health effects are therefore reflective of national averages and may not be accurate when applied to the project-level. Accordingly, the tool is **not recommended** for project-level CEQA analysis.

[15] http://tm5-fasst.jrc.ec.europa.eu/

[16] http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/mpem_nov_dec_2016-pdf.pdf?la=en

[17] https://www.epa.gov/benmap/response-surface-model-rsm-based-benefit-ton-estimates.

[18] https://www.epa.gov/benmap/sector-based-pm25-benefit-ton-estimates. The updated Technical Support Document (February 2018) is available at: https://www.epa.gov/sites/production/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf.

Chapter 6

Copies of the Comment Letters Received on the Draft EIR

The original comment letters received on the Draft EIR are provided in the following pages:

Letter A

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

December 21, 2018

Diana Pancholi
City of Mountain View
500 Castro Street
PO Box 7540
Mountain View, CA 94039-7540

Subject: 777 West Middlefield Road Project
SCH#: 2018032072

Dear Diana Pancholi:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on December 20, 2018, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

RECEIVED
JAN 02 2019
Community Development Department

Enclosures
cc: Resources Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2018032072
Project Title 777 West Middlefield Road Project
Lead Agency Mountain View, City of

Type EIR Draft EIR

Description Project is an infill project involving redevelopment of an approx. 9.84 acre-site between West Middlefield Road and North Shoreline Blvd. The project site is currently occupied by approx. 208 multi-family residential units within multiple building as well as associated parking and common areas. The project proposes a General Plan Amendment and Rezoning to allow the demolition of the existing buildings and the development of up to 716 new residential units (apartments) in three separate buildings, with subterranean parking under each building. The total amount of new uses proposed is approx. 782,512 sf. A linear park/paseo, bicycle path would be added as well. The existing residential buildings and surface parking lots would be demolished and trees and vegetation would be removed and replaced.

Lead Agency Contact

Name Diana Pancholi
Agency City of Mountain View
Phone 650-903-6306 **Fax**
email
Address 500 Castro Street
PO Box 7540
City Mountain View **State** CA **Zip** 94039-7540

Project Location

County Santa Clara
City Mountain View
Region
Lat / Long 37° 24' 10.5" N / 122° 04' 34.6" W
Cross Streets West Middlefield Road and North Shoreline Blvd.
Parcel No. 153-24-005
Township 6S **Range** 2W **Section** 22 **Base** MD

Proximity to:

Highways 85, 101, 237, 82
Airports Moffet Airfield
Railways Caltrain, VTA Light Rail
Waterways Hale Creek, Stevens Creek, Mountain View Slough
Schools Theuerkauf, Stevenson,
Land Use Project site is zoned R3-2 (Multiple Family) and Medium-Density Residential land use designation.

Project Issues Air Quality; Archaeologic-Historic; Biological Resources; Coastal Zone; Drainage/Absorption; Economics/Jobs; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Growth Inducing; Landuse; Cumulative Effects; Other Issues; Aesthetic/Visual

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Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 3; Department of Parks and Recreation; Department of Water Resources; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 4; Department of Housing and Community Development; State Water Resources Control Board, Division of Drinking Water; Air Resources Board, Transportation Projects; Native American Heritage Commission; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 2; Public Utilities Commission; State Lands Commission

Document Details Report
State Clearinghouse Data Base

Date Received 11/06/2018 ***Start of Review*** 11/06/2018 ***End of Review*** 12/20/2018

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
(707) 428-2002
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

December 14, 2018

Governor's Office of Planning & Research
DEC 17 2018
STATE CLEARINGHOUSE

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12/20/18
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Ms. Diana Pancholi, Senior Planner
City of Mountain View
500 Castro Street
Mountain View, CA 94039

Dear Ms. Pancholi:

Subject: 777 West Middlefield Road Project, Draft Environmental Impact Report, SCH #2018032072, City of Mountain View, Santa Clara County

The California Department of Fish and Wildlife (CDFW) received the draft Environmental Impact Report (EIR) from the City of Mountain View (City) for the 777 West Middlefield Road Project (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife resources. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is a Trustee Agency with responsibility pursuant to CEQA for commenting on projects that could directly or indirectly impact biological resources. CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (i.e. biological resources). As a Trustee Agency, CDFW is responsible for providing, as available, biological expertise to review and comment upon environmental documents and impacts arising from project activities (CEQA Guidelines, § 15386; Fish and Game Code, § 1802).

CDFW is also considered a Responsible Agency under CEQA §15381 if a project requires discretionary approval, such as under the California Endangered Species Act, the Native Plant Protection Act, the Lake and Streambed Alteration Agreement, or other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources.

PROJECT DESCRIPTION SUMMARY

Objective: The Project would take place on a 9.84-acre site. The Project includes demolition of 208 multi-family units within 21 buildings (totaling approximately 226,086 square feet) and 406 surface parking spaces. The draft EIR states that the Project would remove 173 trees, 4 of which are proposed to be transplanted. The Project includes building of 716 dwelling units in

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

three buildings and an underground parking area. In addition, there would be 482 landscape trees planted.

Location: 777 West Middlefield Road, City of Mountain View, Santa Clara County, CA 94043; APN# 153-24-005.

Timeframe: Construction of the Project would commence in April 2020 and end in March 2023.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the City in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on wildlife (biological) resources.

Section 3.3.3.4 Impacts and Mitigation Measures, Impact BIO-1 and Impact BIO-2, Page 3.3-14. As stated above, the Project proposes to remove 173 trees, including 127 heritage trees. The draft EIR Section 3.3.2.3 (Page 3.3-3) defines a heritage tree according to City of Mountain View Municipal Code, as, in summary and in part, any species with a trunk circumference of 48 inches or more, or any oak (*Quercus* spp.), redwood (*Sequoia* spp.) or cedar (*Cedrus* spp.) tree with a circumference of 12 inches or more (circumference measured at 54 inches above natural grade).

The draft EIR describes various City Standard Conditions of Approval in relation to landscaping plans and tree removal. One of these Standard Conditions of Approval is PL-90 (Replacement), which requires replacement of trees. The draft EIR states that the 482 landscape trees will compensate for tree removal and that this, in addition to compliance with the Standard Conditions of Approval, results in less-than-significant impact and no mitigation is required. However, the draft EIR does not sufficiently describe the mitigation in enough detail to support a determination that impacts are less-than-significant. The draft EIR does not provide information pertaining to the species and diameter of trees to be removed. The draft EIR does not provide specific information regarding the requirements of the Standard Conditions of Approval, most importantly the PL-90 that requires tree replacement.

CDFW considers mature native tree habitat types, especially oak woodlands, as important to a wide range of wildlife species with high levels of biodiversity. For example, oak woodlands provide habitat for nearly half of the 632 terrestrial vertebrates species found in California. Acorns are a key resource for deer, squirrels, turkeys, jays, quail and bear. Standing dead trees provide an important habitat resource for raptors, bats, salamanders, and lizards. Coarse woody tree material lying on the ground, particularly large logs, is a very important wildlife habitat element because they retain moisture in a relatively dry ecosystem. Oak woodlands near riparian resources like creeks, rivers or lakes support the greatest number of wildlife species.

CDFW therefore recommends that the EIR include a detailed description of the trees to be removed (i.e. species and diameter) and the requirements for tree replacement. The EIR should fully describe how tree removal will be reduced or mitigated to less-than-significant levels.

CDFW recommends that the EIR include the following tree mitigation measures and replacement ratios for native trees removed: 3:1 for trees 4 - 6 inches diameter at breast height (dbh) and 6:1 for trees greater than 6 inches dbh. Oak trees greater than 24 inches dbh should be replaced at a 10:1 ratio. Trees planted should be of the same species of tree that was removed. Non-native trees greater than 3 inches in diameter shall be replaced at a 1:1 ratio with a native tree species.

Both native and non-native trees provide nesting habitat for birds. The draft EIR does provide measures for nesting birds. However, the bird nest survey measure does not provide enough information on how the potential impacts of Project construction will be reduced to less-than-significant levels. The draft EIR also does not describe whether avoidance of nesting birds would be possible with the establishment of a buffer sufficient to protect any active nests from Project-related construction.

CDFW therefore recommends that the three following mitigation measures be included in the EIR:

1. Nesting Bird Surveys: If Project-related work is scheduled during the nesting season (typically February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), CDFW recommends that a qualified biologist conduct two surveys for active nests of such birds within 14 days prior to the beginning of Project construction, with a final survey conducted within 48 hours prior to construction. Appropriate minimum survey radii surrounding the work area are typically the following: i) 250 feet for passerines; ii) 500 feet for small raptors such as accipiters; and iii) 1,000 feet for larger raptors such as buteos. Surveys should be conducted at the appropriate times of day and during appropriate nesting times.

2. Active Nest Buffers: If the qualified biologist documents active nests within the Project area or in nearby surrounding areas, an appropriate buffer between the nest and active construction should be established, as explained below. The buffer should be clearly marked, and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist should conduct baseline monitoring of the nest to characterize "normal" bird behavior and establish a buffer distance which allows the birds to exhibit normal behavior. The qualified biologist should monitor the nesting birds daily during construction activities and increase the buffer if the birds show signs of unusual or distressed behavior (e.g. defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist or construction foreman should have the authority to cease all construction work in the area until the young have fledged and the nest is no longer active.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a data base which may be used to make subsequent or supplemental environmental determinations. [Pub. Resources Code, § 21003, subd. (e)]. Accordingly, please report any special-status species and natural communities detected during

Project surveys to the California Natural Diversity Database (CNDDB). The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

The Project, as proposed, will have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish and Game Code, § 711.4; Pub. Resources Code, § 21089).

CONCLUSION

CDFW appreciates the opportunity to comment on the draft EIR to assist the City of Mountain View in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Ms. Kristin Garrison, Environmental Scientist, at (707) 944-5534 or Kristin.Garrison@wildlife.ca.gov; or Ms. Brenda Blinn, Senior Environmental Scientist (Supervisory), at (707) 944-5541 or Brenda.Blinn@widlife.ca.gov.

Sincerely,

Gregg Erickson

Gregg Erickson
Regional Manager
Bay Delta Region

cc: Office of Planning and Research, State Clearinghouse, Sacramento

Letter B

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
(707) 428-2002
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

December 14, 2018

Ms. Diana Pancholi, Senior Planner
City of Mountain View
500 Castro Street
Mountain View, CA 94039

Dear Ms. Pancholi:

Subject: 777 West Middlefield Road Project, Draft Environmental Impact Report, SCH #2018032072, City of Mountain View, Santa Clara County

The California Department of Fish and Wildlife (CDFW) received the draft Environmental Impact Report (EIR) from the City of Mountain View (City) for the 777 West Middlefield Road Project (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife resources. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is a Trustee Agency with responsibility pursuant to CEQA for commenting on projects that could directly or indirectly impact biological resources. CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (i.e. biological resources). As a Trustee Agency, CDFW is responsible for providing, as available, biological expertise to review and comment upon environmental documents and impacts arising from project activities (CEQA Guidelines, § 15386; Fish and Game Code, § 1802).

CDFW is also considered a Responsible Agency under CEQA §15381 if a project requires discretionary approval, such as under the California Endangered Species Act, the Native Plant Protection Act, the Lake and Streambed Alteration Agreement, or other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources.

PROJECT DESCRIPTION SUMMARY

Objective: The Project would take place on a 9.84-acre site. The Project includes demolition of 208 multi-family units within 21 buildings (totaling approximately 226,086 square feet) and 406 surface parking spaces. The draft EIR states that the Project would remove 173 trees, 4 of which are proposed to be transplanted. The Project includes building of 716 dwelling units in

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

three buildings and an underground parking area. In addition, there would be 482 landscape trees planted.

Location: 777 West Middlefield Road, City of Mountain View, Santa Clara County, CA 94043; APN# 153-24-005.

Timeframe: Construction of the Project would commence in April 2020 and end in March 2023.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the City in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on wildlife (biological) resources.

Section 3.3.3.4 Impacts and Mitigation Measures, Impact BIO-1 and Impact BIO-2, Page 3.3-14. As stated above, the Project proposes to remove 173 trees, including 127 heritage trees. The draft EIR Section 3.3.2.3 (Page 3.3-3) defines a heritage tree according to City of Mountain View Municipal Code, as, in summary and in part, any species with a trunk circumference of 48 inches or more, or any oak (*Quercus* spp.), redwood (*Sequoia* spp.) or cedar (*Cedrus* spp.) tree with a circumference of 12 inches or more (circumference measured at 54 inches above natural grade).

The draft EIR describes various City Standard Conditions of Approval in relation to landscaping plans and tree removal. One of these Standard Conditions of Approval is PL-90 (Replacement), which requires replacement of trees. The draft EIR states that the 482 landscape trees will compensate for tree removal and that this, in addition to compliance with the Standard Conditions of Approval, results in less-than-significant impact and no mitigation is required. However, the draft EIR does not sufficiently describe the mitigation in enough detail to support a determination that impacts are less-than-significant. The draft EIR does not provide information pertaining to the species and diameter of trees to be removed. The draft EIR does not provide specific information regarding the requirements of the Standard Conditions of Approval, most importantly the PL-90 that requires tree replacement.

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Project surveys to the California Natural Diversity Database (CNDDB). The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

The Project, as proposed, will have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish and Game Code, § 711.4; Pub. Resources Code, § 21089).

CONCLUSION

CDFW appreciates the opportunity to comment on the draft EIR to assist the City of Mountain View in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Ms. Kristin Garrison, Environmental Scientist, at (707) 944-5534 or Kristin.Garrison@wildlife.ca.gov; or Ms. Brenda Blinn, Senior Environmental Scientist (Supervisory), at (707) 944-5541 or Brenda.Blinn@widlife.ca.gov.

Sincerely,

Gregg Erickson

Gregg Erickson
Regional Manager
Bay Delta Region

cc: Office of Planning and Research, State Clearinghouse, Sacramento

Letter C

ADAMS BROADWELL JOSEPH & CARDOZO
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ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
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jlaurain@adamsbroadwell.com

DANIEL L. CARDOZO
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THOMAS A. ENSLOW
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KYLE C. JONES
MARC D. JOSEPH
RACHAEL E. KOSS
NIRIT LOTAN
MILES F. MAURINO
COLLIN S. McCARTHY

LAURA DEL CASTILLO
Of Counsel

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721
TEL: (916) 444-6201
FAX: (916) 444-6209

November 16, 2018

VIA EMAIL & U.S. MAIL

Lisa Natusch
City Clerk
City of Mountain View
City Hall
500 Castro Street, 3rd Floor
Mountain View, CA 94041
Lisa.Natusch@mountainview.gov

Randal Tsuda
Community Development Director
City of Mountain View
City Hall
500 Castro Street, 3rd Floor
Mountain View, CA 94041
Randal.tsuda@mountainview.gov

VIA EMAIL ONLY

Diana Pancholi, Diana.Pancholi@mountainview.gov

Re: Request for Immediate Access to Documents Referenced in the Draft Environmental Impact Report – 777 West Middlefield Road, SCH #2018032072

Dear Ms. Natusch, Mr. Tsuda and Ms. Pancholi:

We are writing on behalf of Mountain View Residents for Responsible Development ("Mountain View Residents") to request ***immediate access*** to any and all documents referenced or relied upon in the Draft Environmental Impact Report ("DEIR") prepared for the 777 West Middlefield Road Project, SCH #2018032072, ("Project) proposed by FortBay, LLC. This request *excludes* any documents that are otherwise available on the City of Mountain View's Planning Department website as of today's date.[1]

[1] http://www.sanjoseca.gov/index.aspx?NID=4936 (accessed October 10, 2018).

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Our request for all documents referenced or relied upon in the DEIR is made pursuant to the California Environmental Quality Act ("CEQA"), which requires that all documents referenced in an environmental review document be made available to the public for the entire comment period.[2]

Pursuant to Government Code section 6253.9, if the requested documents are in electronic format, please send them using a file transfer program such as Dropbox. If the electronic files are 10 MB or less (or can be easily broken into chunks of 10 MB or less), they can be emailed to me as attachments. If any of the requested items are available on the Internet, we request that the City direct us to the appropriate electronic link(s) for accessing the documents.

My email and U.S. Mail information is:

Janet Laurain
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037
jlaurain@adamsbroadwell.com

I will be calling you to arrange for duplication/transmission of the documents. If you have any questions, please call me at (650) 589-1660. Thank you for your assistance with this matter.

Sincerely,

Janet Laurain
Paralegal

JML:acp

[2] *See* Pub. Resources Code, § 21092, subd. (b)(1); 14 Cal. Code Reg. § 15087, subd. (c)(5).

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Letter D

ADAMS BROADWELL JOSEPH & CARDOZO
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LAURA DEL CASTILLO
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SO. SAN FRANCISCO OFFICE
601 GATEWAY BLVD., SUITE 1000
SO. SAN FRANCISCO, CA 94080
TEL: (650) 589-1660
FAX: (650) 589-5062

December 7, 2018

Via Email and U.S. Mail

Leslie D. Jensen
Senior Deputy City Attorney
Mountain View City Attorney's Office
500 Castro Street
Mountain View, CA 94041
Email: Leslie.Jensen@mountainview.gov

Via Email Only

Diana Pancholi, Senior Planner
Email: Diana.Pancholi@mountainview.gov

Lisa Natusch, City Clerk
Email: Lisa.Natusch@mountainview.gov

Randal Tsuda, Community Development Director
Email: Randal.tsuda@mountainview.gov

Re: Request to Extend Public Review Period and to Provide All Documents Referenced in the Draft Environmental Impact Report – 777 West Middlefield Road, SCH #2018032072

Dear Ms. Jensen, Ms. Pancholi, Ms. Natusch, and Mr. Tsuda:

We are writing on behalf of Mountain View Residents for Responsible Development ("Mountain View Residents") to respectfully request that the City of Mountain View ("City") extend the public review and comment period for the Draft Environmental Impact Report ("DEIR") prepared for the 777 West Middlefield Road Project ("Project), SCH #2018032072, proposed by FortBay, LLC by at least 30 days

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due to the City's failure to provide timely access to all documents referenced in the DEIR.

This request is made pursuant to the California Environmental Quality Act,[1] Public Resources Code section 21092(b)(1), which requires that all documents referenced in an environmental review document be made available to the public for the entire comment period.[2]

On November 16, 2018, our office submitted a request on behalf of Mountain View Residents for immediate access to any and all documents referenced or relied upon in the DEIR, as well as all documents referring or related to the Project.[3] As the City knows, public records related to the Project include all documents in actual or constructive possession of the City, which includes the City's consultants' files.[4]

In response, on November 26, 2018 the City provided electronic access to the DEIR Appendices and five planning file documents pertaining to the Project.[5] The City noted that copies of other documents referenced or relied upon in the DEIR would be made available upon request, and suggested that additional responsive files may exist and would be provided on a "rolling basis."

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[1] Pub. Resources Code §§ 21000 et seq.
[2] Pub. Resources Code § 21092(b)(1).
[3] Letter from Janet Laurain, Adams Broadwell Joseph & Cardozo to Lisa Natusch, Randal Tsuda, and Diana Pancholi re: Request for Immediate Access to Documents Referenced in the Draft Environmental Impact Report – 777 West Middlefield Road, SCH #2018032072 (Nov. 16, 2018).
[4] *Consolidated Irrigation District v. Superior Court* (2012), 205 Cal.App.4th 697, 710.
[5] Email from Leslie Jensen, City Attorney's Office to Alisha Pember, Lynette King, Lisa Natusch, Margarita Herrera, and Diana Pancholi re: Request for Immediate Access to Public Records - 777 West Middlefield Road Project, SCH #2018032072 (Nov. 26, 2018); Email from Leslie Jensen, City Attorney's Office to Alisha Pember, Lynette King, Lisa Natusch, and Margarita Herrera re: PRR 2018-224 Pember/Laurain (due 11/26/18) EIR (Nov. 26, 2018).

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In a follow-up email on December 5, 2018, Janet Laurain of our office requested that the City provide the 21 documents referenced in the DEIR that are not otherwise available online, and specifically requested prompt access to the Phase I and Phase II Environmental Site Assessments for the Project.[6]

We have not yet received a definitive answer from the City regarding our request for these DEIR reference documents. Without access to all documents underlying the DEIR's analysis, Mountain View Residents' members and other members of the public are unable to fully evaluate and comment on the accuracy of the City's analysis and conclusions regarding the Project's impacts. We expect that several of these references documents will be voluminous and will require adequate time to review and analyze.

The courts have held that the failure to provide even a few pages of a CEQA document for a portion of the CEQA review period invalidates the entire CEQA process, and that such a failure must be remedied by permitting additional public comment.[7] It is also well settled that a CEQA document may not rely on hidden studies or documents that are not provided to the public.[8] By failing to make all documents referenced in the DEIR "readily available" during the current comment period, the City is violating the procedural mandates of CEQA.

Accordingly, we request that:

1) The City immediately provide us with access to the missing documents requested in this letter.

2) The City <u>extend the public review and comment period on the DEIR for at least 30 days from the date on which the County releases *all* the referenced documents for public review</u>.

---

[6] Email from Janet Laurain to Leslie Jensen re: 777 West Middlefield Road Project - PRR 2018-224 (Dec. 5, 2018).
[7] *Ultramar v. South Coast Air Quality Man. Dist*. (1993) 17 Cal.App.4th 689, 699.
[8] *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3rd 818, 831 ("Whatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.").

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Given the short time before the current comment deadline, please contact me as soon as possible with your response to this request, but no later than **Tuesday, December 11, 2018**.

Thank you for your prompt attention and response to this matter.

Sincerely,

Kyle C. Jones

KCJ:ljl

4444-003j

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Letter E

Viramontes, Jessica

Subject: RE: EIR 777W Middlefield Road comments

From: B Fromm [mailto:bfromm_mv@yahoo.com]
Sent: Sunday, December 16, 2018 5:38 PM
To: Pancholi, Diana
Subject: EIR 777W Middlefield Road comments

Regarding this EIR I have the following comments:
After reading the report I found that the traffic report is incomplete. The two closest intersection on W Middlefield were left out of the traffic report. No counts were done at the intersection with Linda Vista and San Vernon, they were not even mentioned in the report. Westbound on W Middlefield at Linda Vista is an existing left turn (with allowed u turn) pocket that is used by anyone who need to get to their driveways on the south side of Middlefield. To put even more traffic in the left turn pocket at Shoreline will make it impossible to clear the pocket even after two cycles. For us living in Sterlin estates it will be impossible to make a left turn onto Linda Vista. The traffic if terrible right now and the report states it will not get worse. I don't believe that will be the case.

The density of this project concerns me greatly, the tall back buildings have no road access for fire and emergency vehicles. The developer thinks it's OK to have an medical emergency being wheeled through the complex to an ambulance, a lot of time minutes count.

Do not approve this project in the current form,

Beate Fromm
650 964-3359

Letter F

LOZEAU DRURY LLP

T 510.836.4200
F 510.836.4205

410 12th Street, Suite 250
Oakland, Ca 94607

www.lozeaudrury.com
michael@lozeaudrury.com

Via Email and U.S. Mail

December 20, 2018

Diana Pancholi, Planner
Community Development
City of Mountain View
500 Castro Street, 1st Floor
Mountain View, CA 94039-7540
diana.pancholi@mountainview.gov

Re: **Comment on Draft Environmental Impact Report for 777 W. Middlefield Road Residential Project, aka SCH2018032072**

Dear Ms. Pancholi,

I am writing on behalf of Laborers International Union of North America, Local Union No. 270 and its members living in and around the City of Mountain View ("LIUNA") regarding the Draft Environmental Impact Report ("DEIR") prepared for the project known as 777 W. Middlefield Road Residential Project, aka SCH2018032072, including all actions related or referring to the demolition of the existing buildings and the development of up to 718 new residential units in three separate buildings, with subterranean parking under each building, on Parcel No: 153-24-005 in the City of Mountain View ("Project") .

After reviewing the DEIR, we conclude that the DEIR fails as an informational document and fails to impose all feasible mitigation measures to reduce the Project's impacts. LIUNA requests that the Community Development Department address these shortcomings in a revised draft environmental impact report ("RDEIR") and recirculate the RDEIR prior to considering approvals for the Project. We reserve the right to supplement these comments during review of the Final EIR for the Project and at public hearings concerning the Project. *Galante Vineyards v. Monterey Peninsula Water Management Dist*., 60 Cal. App. 4th 1109, 1121 (1997).

Sincerely,

Michael R. Lozeau
Lozeau | Drury LLP

Letter G

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A PROFESSIONAL CORPORATION
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FAX: (650) 589-5062

January 11, 2019

Via Email and Overnight Mail

Diana Pancholi, Senior Planner
Planning Division
Community Development Department
500 Castro Street – P.O. Box 7540
Mountain View, CA 94039-7540
Email: Diana.Pancholi@mountainview.gov

Re: Comments on the Draft Environmental Impact Report – 777 West Middlefield Road Project (SCH #2018032072)

Dear Ms. Pancholi:

We are writing on behalf of Mountain View Residents for Responsible Development ("Mountain View Residents") to provide comments on the Draft Environmental Impact Report ("DEIR") prepared by the City of Mountain View ("City") for the 777 West Middlefield Road Project ("Project"). Fortbay Mountain View LLC ("Applicant") is proposing to demolish an existing 9.84-acre residential site containing 208 units, and construct a 716-unit apartment complex. The apartments would be distributed among three separate buildings, two of which would include subterranean parking garages containing 878 vehicle parking spaces. The total amount of new uses is approximately 782,512 square feet. The Project site is located on one parcel (APN 153-24-005) located between West Middlefield Road and North Shoreline Boulevard, at 777 West Middlefield Road.

The Applicant is requesting the following approvals for the Project: a General Plan Amendment to amend the site designation from Medium Density Residential to High Density Residential; a Zoning Map Amendment from R3-2 (Multiple-Family) to a new customized zoning designation of P (Planned Community); a Planned Community and Development Review Permit; a Heritage Tree Removal Permit for the removal of 127 Heritage Trees, a Site and Architectural Plan Review approval, a Demolition Permit, and a Subdivision Map.

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Based on our review of the DEIR and related Project documents, we have determined that the DEIR does not comply with the requirements of the California Environmental Quality Act ("CEQA"). First, the City underestimates the Project's construction and operational emissions of criteria pollutants and thus lacks substantial evidence to support its conclusion that air quality impacts would be less than significant. Second, the City failed to properly disclose and analyze the Project's potential public health impacts to nearby sensitive receptors from exposure to emissions of toxic air contaminants ("TACs"), which substantial evidence shows will be significant. Third, the DEIR underestimates the Project's traffic impacts and thus lacks substantial evidence to support its conclusion that traffic impacts would be less than significant. For each of these reasons, the City may not approve the Project until a revised DEIR is prepared and re-circulated for public review and comment.

These comments were prepared with the assistance of technical experts Matt Hagemann and Kaitlyn Heck of Soil Water Air Protection Enterprise ("SWAPE"), and Daniel Smith of Smith Engineering & Management ("Smith Engineering").[1] SWAPE's comments and curriculum vitae are attached hereto as Attachment 1, and Smith Engineering's comments and curriculum vitae are attached hereto as Attachment 2. Their comments are fully incorporated in these comments and are submitted to the City in addition to the comments in this letter. Accordingly, the City must address and respond to the technical experts' comments separately.[2]

I. STATEMENT OF INTEREST

Mountain View Residents is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential public health and environmental impacts associated with the Project. Mountain View Residents includes the International Brotherhood of Electrical Workers Local 332, Plumbers & Steamfitters Local 393, Sheet Metal Workers Local 104, Sprinkler Fitters Local 483,

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[1] Attachment 1: Letter from Matt Hagemann & Kaitlyn Heck, SWAPE, to Kyle Jones, Adams Broadwell Joseph & Cardozo re: Comments on the 777 West Middlefield Road Project (January 10, 2019) ("SWAPE Comments"); Attachment 2: Letter from Dan Smith, Smith Engineering & Management, to Kyle Jones, Adams Broadwell Joseph & Cardozo re: 777 West Middlefield Road DEIR (SCH # 2018032072) (January 10, 2019) ("Smith Engineering Comments").

[2] Mountain View Residents reserves the right to supplement these comments at later hearings and proceedings related to this Project. Gov. Code § 65009(b); PRC § 21177(a); *Bakersfield Citizens for Local Control v. Bakersfield* (2004) 124 Cal. App. 4th 1184, 1199-1203; *see Galante Vineyards v. Monterey Water Dist*. (1997) 60 Cal. App. 4th 1109, 1121.

and their members and families, and other individuals that live and/or work in the City of Mountain View and Santa Clara County.

Individual members of Mountain View Residents include Jonathan R. Gonzales and Andrew R. Quiroz who work, recreate and raise their families in the City of Mountain View. They would be directly affected by the Project's adverse environmental and public health impacts. Individual members may also work on the Project itself and, therefore, will be first in line to be exposed to any health and safety hazards that exist onsite. Mountain View Residents have a strong interest in enforcing the State's environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for business and industry to expand in the City of Mountain View and Santa Clara County, and by making it less desirable for businesses to locate and people to live there.

II. LEGAL BACKGROUND

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an EIR, except in limited circumstances.[3] The EIR is the very heart of CEQA.[4] "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."[5]

CEQA has two primary purposes. First, CEQA is designed to inform decisionmakers and the public about the potential, significant environmental effects of a project.[6][7] CEQA's purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. In this respect, an EIR "protects not only the environment but also informed self-government."[8] The EIR has been described as "an environmental 'alarm bell' whose

[3] See, e.g., Pub. Resources Code ("PRC") § 21100.
[4] *Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652.
[5] *Comtys. for a Better Env' v. Cal. Res. Agency* (2002) 103 Cal. App.4th 98, 109 ("*CBE v. CRA*").
[6] 14 Cal. Code Regs. ("CEQA Guidelines"), § 15002, subd. (a)(1).
[7] See, e.g., PRC § 21100.
[8] *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.

purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[9]

In furtherance of CEQA's purpose as an informational tool, the discussion of impacts in an EIR must be detailed, complete, and "reflect a good faith effort at full disclosure."[10] CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project.[11] In addition, an adequate EIR must contain the facts and analysis necessary to support its conclusions.[12]

The second purpose of CEQA is to require public agencies to avoid or reduce environmental damage when possible by requiring appropriate mitigation measures and through the consideration of environmentally superior alternatives.[13] 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. To that end, if an EIR identifies potentially significant impacts, it must then propose and evaluate mitigation measures to minimize those impacts.[14] CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures.[15] Without an adequate analysis and description of feasible mitigation measures, it would be impossible for agencies relying upon the EIR to meet this obligation.

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."[16] As the courts have explained, "a

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[9] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[10] CEQA Guidelines § 15151; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 721-722.
[11] PRC § 21100, subd. (b)(1); CEQA Guidelines § 15126.2, subd. (a).
[12] See *Citizens of Goleta Valley* 52 Cal.3d at 568.
[13] CEQA Guidelines § 15002, subds. (a)(2)-(3); see also, *Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1354; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564; *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 391, 400.
[14] PRC §§ 21002.1, subd. (a), 21100, subd. (b)(3).
[15] PRC §§ 21002-21002.1.
[16] *Berkeley Jets*, 91 Cal. App. 4th 1344, 1355 (emphasis added), *quoting, Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 391 409, fn. 12.

prejudicial abuse of discretion" occurs "if the failure to include relevant information precludes informed decision-making and informed public participation, thereby thwarting the statutory goals of the EIR process."[17]

III. The DEIR's Conclusion that Air Quality Impacts Would be Less Than Significant Is Not Supported by Substantial Evidence

An EIR must fully disclose all potentially significant impacts of the project under consideration. Furthermore, when making a determination as to the significance of project impacts, the lead agency's determination must be supported by accurate scientific and factual data for each impact.[18] An agency cannot conclude that an impact is less than significant unless it produces rigorous analysis and concrete substantial evidence justifying the finding.[19]

A. The Input Parameters Used in the DEIR's Emissions Model Are Not Supported by Substantial Evidence

The DEIR states that the Project's construction and operational emissions were calculated using the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod").[20] When modeling a project's emissions, CalEEMod provides the user with recommended default values based on information such as land use type, meteorological data, project type, and typical equipment associated with the project type.[21] The user may then replace default values when more site-specific information is available; however, any changes to CalEEMod defaults must be supported by substantial evidence.[22] Once the model is run, CalEEMod generates "output files" for each model that reveal the parameters used in the model.

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[17] *Berkeley Jets*, 91 Cal.App.4th at 1355; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722; *Galante Vineyards v. Monterey Peninsula Water Management Dist.* (1997) 60 Cal.App.4th 1109, 1117; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946.
[18] CEQA Guidelines § 15064(b).
[19] *Kings Cty. Farm Bur. v. Hanford* (1990) 221 Cal.App.3d 692, 732.
[20] DEIR, p. 3.2-17 and Appendix 3.2-1.
[21] SWAPE Comments at p. 1.
[22] *Id.* (citing CalEEMod User Guide, p. 2, 9, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4).

SWAPE reviewed the CalEEMod output files for the Project included in DEIR Appendix 3.2-1.[23] In reviewing the CalEEMod output files, SWAPE found several of the input parameters used to calculate the Project's emissions are inconsistent with information provided in the DEIR. As SWAPE's comments explain, these changes are not supported by substantial evidence and resulted in an underestimation of the Project's emissions.[24]

First, the Project's CalEEMod output files show that the number of vehicle parking spaces was underestimated in the air model.[25] The Project description states that the subterranean parking garage would have "two levels with a total of 878 parking spaces".[26] In reviewing the CalEEMod output files, however, SWAPE found that the air model was prepared assuming only 847 parking spaces would be constructed, which is less than the actual Project size.[27] This discrepancy is significant because the land use type and size are used by CalEEMod to determine emission factors that go into the model's calculations.[28] Thus, because the number of vehicle parking spaces in the air model is smaller than what is proposed for the actual Project, the construction and operational emissions are underestimated.[29]

Second, SWAPE raises substantial questions about the feasibility and enforceability of Mitigation Measure MM AQ-1, which requires that all off-road diesel-powered construction equipment shall be equipped with EPA "Tier 4 Final" engines.[30] These cleaner-burning engines were only recently phased in under EPA regulations that apply to newly manufactured construction equipment, not existing equipment. A recent study found that in the entire state of California *only 4%* of off-road diesel construction equipment is equipped with Tier 4 Final engines.[31] Almost half of all equipment in the state does not have emission-reducing engines, and the vast majority of remaining equipment has Tier 2 or Tier 3 engines.[32] It is unreasonable to assume that the Project Applicant will be able to procure an entire fleet of construction equipment with Tier 4 Final engines for this Project. Because

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[23] *Id*. at pp. 2-7.
[24] *See id*. at pp. 2-6.
[25] *Id*. at p. 2.
[26] DEIR at p. 2-14.
[27] SWAPE Comments at p. 2.
[28] *Id*. at p. 2.
[29] *Id*. at p. 2.
[30] DEIR at p. 3.2-22; SWAPE Comments at pp. 3-5.
[31] *Id*. at pp. 4-5.
[32] *Id*.

the feasibility of MM AQ-1 is not supported, the DEIR cannot claim emissions reductions from this measure.

Third, SWAPE found that the number of vehicle trips made by construction workers and vendors was manually reduced in the model by a substantial amount, resulting in a significant underestimation of construction emissions without any factual justification.[33] DEIR Appendix 3.2-1 includes a table listing the estimated vendor and worker trips during construction.[34] However, SWAPE found that rather than inputting the presumed number of trips in the CalEEMod model as the CalEEMod User's Guide instructs, the Project emissions model was significantly modified to reduce those trips.[35] In the case of vendor trips, the reduction was made from 420 trips to only 5 trips, and in the case of worker trips, the reduction was made from 2,138 trips to only 575 trips.[36] The DEIR provides no justification for these reductions. SWAPE concludes that "these changes are completely unsubstantiated and significantly underestimate the Project's construction emissions."[37]

Fourth, the number of pieces of construction equipment required to build the Project, and the horsepower of that construction equipment, were manually reduced in the model by a substantial amount, resulting in a further significant underestimation of construction emissions without any justification.[38] DEIR Appendix 3.2-1 includes a table listing the estimated number and horsepower of off-road construction equipment.[39] However, SWAPE found that rather than inputting the presumed number of trips in the CalEEMod model for a project of this size, as the CalEEMod User's Guide instructs, the Project emissions model was significantly modified to reduce both the number and horsepower of equipment.[40] The number of pieces of construction equipment in the model was manually reduced by 40, and the horsepower of equipment was significantly changed.[41] The DEIR provides no justification for these reductions other than a note in Appendix 3.2-1 about a "AQ/GHG data request spreadsheet" that was not included in the DEIR appendices

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[33] *Id.* at pp. 5-6.
[34] DEIR, Appendix 3.2-1, pp. 59, 92.
[35] SWAPE Comments at pp. 5-6.
[36] *Id.*
[37] *Id.* at p. 6.
[38] *Id.* at pp. 6-7.
[39] DEIR, Appendix 3.2-1, pp. 55-56, 88-89.
[40] SWAPE Comments at pp. 6-7.
[41] *Id.*

or reference documents.[42] SWAPE concludes that "these changes are unreasonable and unsubstantiated, and they should not be used to estimate Project emissions."[43]

Because the emissions calculations included in the DEIR were prepared using (1) assumptions that are inconsistent with the Project information provided in the DEIR; (2) mitigation that is not feasible or enforceable; and (3) unsubstantiated changes in the CalEEMod emissions model, the DEIR consequently underestimated Project emissions. The City may not rely on these unsupported emissions calculations to determine the significance of the Project's air quality and public health impacts. The City lacks substantial evidence for the conclusions in the DEIR that air quality and public health impacts would be less than significant. Project emissions must be recalculated using data that is consistent with the Project description, feasible and enforceable construction mitigation, and supportable estimates of construction-related equipment and vehicle trips.

B. The DEIR's Conclusion that Public Health Impacts on Nearby Receptors Would Be Less Than Significant Is Not Supported by Substantial Evidence

The City evaluated the Project's public health impacts on nearby receptors by preparing a health risk assessment ("HRA") that evaluates fine particulate matter emissions from Project construction activities.[44] Relying on that HRA, the DEIR concludes that, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, the Project's TAC emissions would result in a less than significant impact on nearby sensitive receptors.[45] The City did not prepare an HRA to evaluate the impacts of the Project's operational emissions on those sensitive receptors. Instead, the DEIR concludes that "the Project would not result in any appreciable increases in health risks" during operation because the use of diesel vehicles and equipment would be minimal.[46]

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[42] *Id.* at p. 7.
[43] *Id.*
[44] DEIR, Appendix 3.2-1, at p. 178.
[45] DEIR at p. 3.2-24.
[46] *See id.* at p. 3.2-27.

As explained more fully in the attached SWAPE comments, the City's conclusion that the Project's health risk impacts on nearby sensitive receptors would be less than significant is not supported by substantial evidence for several reasons.[47]

First, as discussed in section III(A) above, the City's HRA was prepared using a flawed CalEEMod emissions model which underestimated Project emissions.[48] Because Project construction emissions are underestimated, and those emissions numbers are used to prepare the construction HRA, the HRA also underestimates the construction-related health risk to nearby sensitive receptors.[49]

Second, SWAPE explains that the DEIR's omission of a quantified HRA for the Project's *operational* emissions is inconsistent with the most recent guidance published by the Bay Area Air Quality Management District's ("BAAQMD") and by the California Office of Environmental Health Hazard Assessment (OEHHA), and therefore the City's conclusion that public health risks to nearby receptors would be less than significant is unsupported.[50] The BAAQMD recommends that an HRA assess community risks and hazards within 1,000 feet of the Project boundaries, and there are multiple residents who live immediately adjacent to the Project site.[51] OEHHA's 2015 guidelines describe the types of projects that warrant preparation of a health risk assessment.[52] The Guidelines recommend that exposure from projects lasting more than 6 months should be evaluated for the duration of the project.[53]

Here, once the Project is operational, it will generate vehicle trips, which generate additional exhaust emissions, and will therefore continue to expose nearby receptors to emissions of TACs for the duration of the Project.[54] Exposure to traffic-related emissions has been implicated with a variety of cancer as well as non-cancer health risks including acute and chronic respiratory disease, such as reduced lung function and increased asthma hospitalizations and heart attacks, as well as

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[47] SWAPE Comments at pp. 8-10.
[48] *Id.* at pp. 8-9.
[49] *See id.*
[50] *Id.* at pp. 9-10.
[51] *Id.* at p. 9.
[52] *Id.*
[53] *Id.*
[54] *Id.*

premature death in individuals with heart disease.[55] While an expected duration was not provided in this case, it can reasonably be assumed the Project will operate for at least 30 years – much longer than the 6-month minimum in the OEHHA guidelines. For this reason, SWAPE concludes that the health risks from Project operations should have also been evaluated in the HRA.[56]

IV. Substantial Evidence Shows that the Project May Result in Significant Air Quality Impacts and a Significant Cancer Risk from the Project Exposing People to Toxic Air Contaminants

In an effort to demonstrate the impacts of the Project, SWAPE first prepared a corrected CalEEMod emissions analysis using an accurate number of vehicle parking spaces, an achievable mix of clean-burning construction equipment, and default values for worker and vendor trips and construction equipment numbers and equipment horsepower.[57] The result of this corrected modeling shows that Project construction will exceed the BAAQMD's threshold for significant emissions of NOx pollutants.[58]

Additionally, in an effort to demonstrate the potential risk posed by the Project to nearby sensitive receptors, SWAPE prepared a screening-level operational health risk assessment.[59] The results of SWAPE's HRA provide substantial evidence that the Project's operational emissions of fine particulate matter will result in a significant health risk impact that was not disclosed in the DEIR. SWAPE used the AERSCREEN model for its screening level HRA.[60] AERCREEN is a screening-level dispersion model recommended by OEHHA and the California Air Pollution Control Officers Association guidance as the appropriate dispersion model for level 2 health risk screening assessments.[61]

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[55] CARB, *Air Quality and Land Use Handbook: A Community Health Perspective* (April 2005) at pp. 8-10.
[56] SWAPE Comments at p. 10.
[57] SWAPE Comments at pp. 7-8 and Attachment A.
[58] *Id.*
[59] *Id.* at pp. 10-13 and Attachment B.
[60] *Id.* at p. 10.
[61] *Id.*

The operational emissions estimates used in SWAPE's health risk screening assessment are based on SWAPE's updated CalEEMod air model for the Project, which corrected the inaccuracies in the City's model outlined in Section III(A) above.[62] Consistent with the recommendations set forth by OEHHA, SWAPE used a residential exposure duration of 30 years.[63] SWAPE's assumptions and formulas are explained more fully in the attached letter.[64]

SWAPE's health risk analysis found that the excess cancer risk to adults, children, infants, and during the third trimester of pregnancy at a sensitive receptor located approximately 1 meter away in the adjacent residences, over the course of Project construction and operation, are approximately 7.3, 48, 66, and 2.7 in one million, respectively.[65] The total (i.e., lifetime) excess operational cancer risk over the course of Project operation (30 years) is approximately 120 in one million.[66] As SWAPE's analysis demonstrates, the infant, child, and lifetime cancer risk from Project operations alone greatly exceeds the BAAQMD threshold of 10 in one million.[67]

As SWAPE notes, screening level health risk assessments are known to be more conservative and are aimed at health protection.[68] However, the purpose of a screening-level health risk assessment is to determine whether a more refined HRA needs to be conducted.

The results of SWAPE's analyses provide substantial evidence that the Project will have significant and unmitigated emissions of NOx during construction. SWAPE provides a detailed discussion of mitigation measures that are available to reduce these construction-related Project emissions.[69] SWAPE's analyses also provide substantial evidence that the Project's operational emissions of fine particulate matter may result in a significant health risk impact that was not disclosed in the DEIR. A more refined HRA needs to be conducted in this case in order to properly disclose, analyze, and mitigate the Project's potentially significant

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[62] *Id*. at pp. 7-8 and Attachment A.
[63] *Id*. at pp. 10-12.
[64] *Id*. at pp. 10-13.
[65] *Id*. at p. 12.
[66] *Id*.
[67] *Id*.
[68] *See id*. at pp. 12-13.
[69] *Id*. at pp. 13-19.

public health impacts. Accordingly, the City must revise and re-circulate the DEIR for public review and comment.

V. The DEIR Fails to Adequately Disclose, Analyze, and Mitigate Traffic Impacts

The City's traffic impact analysis in the DEIR fails to comply with CEQA in several ways.

A. The DEIR Miscalculates the Environmental Baseline by Overestimating Existing Vehicle Trips at the Project Site

Smith Engineering reviewed the DEIR and concluded that it likely underestimates the Project's traffic impacts, by deducting from the traffic analysis a credit for traffic that was not actually representative of existing conditions at the Project site when the DEIR was prepared.[70] According to the DEIR, residents who are leasing apartments on the Project site have been provided with a "notice of relocation" since 2016.[71] This indicates that many tenants were motivated to move elsewhere, resulting in a high likelihood of substantial vacancy rates when the DEIR was prepared.[72]

Rather than calculating the environmental baseline by counting the actual amount of traffic entering and leaving the Project site, or by disclosing the number of *occupied* units at the time the DEIR was prepared, the DEIR assumes that all 208 residential units were occupied and were generating traffic trips to and from the Project site at that time.[73] Smith Engineering concludes that this assumption was invalid, leading to an inaccurate baseline and an underestimation of Project impacts. As a result, the City must revise the DEIR to include documentation of the number of units that were actually occupied at the time the DEIR was prepared.[74]

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[70] Smith Engineering comments at pp. 1-2.
[71] DEIR at p. 2-18.
[72] Smith Engineering comments at p. 2.
[73] *Id.* at pp. 1-2.
[74] *Id.* at p. 2.

B. The DEIR Improperly Uses Different Trip Generation Rates for Existing and Proposed Residential Units on the Project Site

The DEIR incorrectly attempts to compare "apples to oranges" regarding the traffic that will be created by the existing and proposed residents who live on the Project site. The DEIR assumes that the existing residents create 7.32 daily vehicle trips per residential unit, and that future residents will only create 5.44 trips per unit, using estimated trip generation rates for "low-rise" and "mid-rise" apartments, respectively.[75] As a result, the predicted traffic impacts are lessened, because more trips are subtracted as part of the existing baseline and fewer trips are added as part of the expected Project traffic.

The problem with this method, Smith Environmental explains, is that the two different trip generation rates were developed from observations of low- and mid-rise apartments in their typical contexts, with higher buildings set in environments that have more transportation infrastructure and community services that can be conveniently reached by walking.[76] In the case of the Project, however, there is no difference in environmental context between the existing and proposed units. Smith Environmental concludes that "the choice to take advantage of this differential based on building heights alone unfairly favors the Project applicant and is an assumption that is not consistent with the good faith effort to disclose impacts that CEQA demands."[77] The DEIR should be revised to use consistent traffic trip-generation rates for existing and proposed apartments on the same site.

C. The DEIR Does Not Fully Disclose the Project's Traffic Impacts at Key Locations

Smith Environmental reviewed the analysis of traffic impacts at various key intersections near the Project site, and concluded that there is a repeated failure to disclose the actual extent of those impacts.[78] First, the DEIR's analysis of the intersection of North Shoreline Boulevard and the U.S. 101 northbound off-ramp, which already experiences the worst delays ("LOS F"), only considers those vehicles that make it through the intersection during peak commute hours, and not the impacts of vehicles that fail to make it through the intersection due to significant

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[75] *Id.*
[76] *Id.*
[77] *Id.* at pp. 2-3.
[78] *Id.* at pp. 3-4.

delays.[79] This leads to an improper conclusion that the Project's traffic impacts will be less than significant.

Second, the DEIR fails to explain the effects of traffic delays at the intersection of Moffett Boulevard, Central Expressway and Castro Street, caused by the regular approaches and departures of the Caltrain rail line, which blocks the intersection for about 45 seconds and causes extended traffic queues at least 12 times during the peak commute hours.[80] According to Smith Environmental, "this key intersection requires a sophisticated analysis and there is no indication that such an analysis has been done," resulting in underestimated traffic impacts.[81]

D. The DEIR Fails to Analyze the Effects of Parking Space Limitations, Unbundled Parking, and Transportation Network Company Services

The Project would provide only 1.226 parking spaces per residential unit, and parking would be "unbundled," or paid for separately from the apartment rent rather than included as part of the rent. Although this approach of providing minimal and unbundled parking might suppress car ownership at more urban projects, this Project site is not located in a "walkable" neighborhood. The site is separated by more than a half-mile distance and an at-grade crossing of a busy expressway from the Mountain View transit center and the activities and attractions of the Castro Street area, which makes it unattractive to walk or bike to transit or activities at those locations.[82]

There is also available curb parking on nearby neighborhood streets. Smith Environmental concludes that Project residents who own more than one car, or who wish to avoid paying extra for unbundled parking, will simply find ways to park in nearby neighborhoods.[83] The City has already identified neighborhood parking as a topic of significant concern among nearby residents, and yet the DEIR does not even address this controversial issue. Residents have identified environmental impacts that they already associate with increasing competition for street parking in the

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[79] *Id.* at p. 3.
[80] *Id.*
[81] *Id.* at p. 4.
[82] *Id.* at p. 4.
[83] *Id.*

vicinity of the Project site, including human safety and sanitation impacts. As one resident who lives nearby explained:

> "[I]f insufficient parking is provided onsite, public streets will inevitably be used instead. Living near San Veron Ave., we constantly see cars overflowing from the San Veron Apartments. This impacts safety (cars block visibility when exiting driveways) and sanitation (cars aren't moved on street sweeping days). I hope that the EIR will consider a realistic estimate of the number of cars which will accompany the planned expansion based on statistics for similar apartment complexes nearby."[84]

The DEIR also fails to address the predictable rise in activity of transportation network companies (TNCs), or ride sharing services, like Uber and Lyft, which will contribute to traffic impacts. A recent study found that in certain areas, travel by TNCs caused double the vehicle miles traveled (VMT) than would otherwise be present.[85] Smith Environmental concludes that "[p]articularly at a parking-starved complex that is considerably offset from transit hubs and activity centers, such as this Project, TNC usage may become prevalent and considerably add to traffic impacts, because for every passenger trip served, there is an extra trip circulating to access the next service call."[86] The DEIR must address the issue of TNC contributions to Project traffic impacts.

E. Construction Traffic Impacts Are Not Adequately Addressed

Smith Environmental concluded that the DEIR does not present reasonable estimates of the volume of construction haul traffic that will occur, and the proposed construction traffic mitigation measures are inadequate to reduce potentially significant impacts to a below-significant level.[87] The Project would involve hauling 226,220 square feet of demolition materials and 195,000 cubic feet of excavation materials (soil).[88] First, the calculation of a hauling trip rate for demolition

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[84] DEIR Appendix 1, *NOP and Scoping Comments*, at p. 15, email from Albert Jeans to Diana Pancholi dated April 6, 2018.

[85] *Id.* at pp. 4-5.
[86] *Id.* at p. 5.
[87] *Id.* at p. 5.
[88] DEIR at p. 2-19.

materials is insufficient to determine the number of truckloads that will be required, because truckloads are calculated in cubic feet or cubic yards, not by the square footage of the area to be demolished.[89] The density and thickness of the demolished materials must be considered when determining the haul rate, and not just the square footage of the demolition area. Because of this omission in the DEIR, the number of truckloads hauling demolition materials may be greatly underestimated.[90]

Second, the excavation materials (soil) will likely bulk or swell once dug out and placed in trucks, thereby increasing the amount of excavation hauling trips. Most soil, gravel and sand swells 20 to 30 percent above the volume of the excavation, while wet gravel with clay (a likely prospect given the water table levels disclosed in the DEIR) swells to 50 to 60 percent greater than the size of the excavation. Sandstone or limestone swells to 70 to 80 percent greater than the volume of excavation. The DEIR presents no evidence of reasonable estimates of the volume of construction haul traffic based on the actual materials to be excavated. Hence, the claim that filing a traffic control plan approved by the City will mitigate construction traffic impacts (Mitigation Measure TRA-8) is purely speculative and unsubstantiated.[91] This is inadequate.

Deferring the formulation of mitigation measures is generally impermissible.[92] Mitigation measures adopted after Project approval deny the public the opportunity to comment on the Project as modified to mitigate impacts.[93] It is not impractical for the Project Applicant to fully disclose and analyze the potential construction traffic impacts during construction, including a reasonable and full disclosure of construction haul traffic, as part of the DEIR, and to propose specific and enforceable mitigation measures to address those impacts. The DEIR should be revised to include this information and analysis.

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[89] *Id.*
[90] *Id.*
[91] *Id.*; DEIR at p. 3.13-39.
[92] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 308-309; Pub. Resources Code § 21061.
[93] *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1393.

F. Basis for Cumulative Impacts Analysis Is Uncertain

The cumulative impacts analysis in the DEIR makes an unsupported assumption that ambient traffic will grow 2 percent per year. Smith Engineering contests this assumption and questions the facts upon which it is based, especially given "the rapid growth of development in the area, both in Mountain View and in surrounding communities, and revitalization of economic activity of existing uses in recent years."[94] Under CEQA, a correct cumulative impacts analysis would examine a concurrent project development list, and/or an applicable regional traffic forecast model. Both of these options are available to the City, leading Smith Engineering to conclude that the "unsubstantiated background growth assumption" in the DEIR is inadequate and requires further justification.[95]

VI. Conclusion

For all of the forgoing reasons, the City must prepare and recirculate a revised DEIR in order to adequately disclose, analyze, and mitigate the Project's significant impacts to air quality, public health, and traffic, before considering the entitlements for the proposed Project.

Thank you for your consideration of these comments.

Sincerely,

Kyle Jones

KCJ:ljl

Attachments

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[94] *Id.* at p. 5.
[95] *Id.*

ATTACHMENT 1

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

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Kyle Jones
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Subject: Comments on the 777 West Middlefield Road Project

Dear Mr. Jones,

We have reviewed the November 2018 Draft Environmental Impact Report (DEIR) for the 777 West Middlefield Road Project ("Project") located in the City of Mountain View ("City"). The Project proposes to demolish 208 existing, multi-family residential units in order to construct 716 dwelling units in three buildings, including 85 studios, 431 one-bedroom units, and 200 two-bedroom units. Additionally, the Project proposes to construct 878 vehicle parking spaces and 788 bicycle parking spaces across the 9.84-acre Project site.

Our review concludes that the DEIR fails to adequately evaluate the Project's Air Quality impacts. As a result, the health impacts associated with the construction and operation of the proposed Project are underestimated and inadequately addressed. An updated DEIR should be prepared to adequately assess and mitigate the potential health risk the Project may have on the surrounding environment.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The DEIR for the Project relies on emissions calculated from the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod").[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 project-specific values, but CEQA requires that such changes be justified by substantial evidence.[2] Once all of the values are inputted into the model, the Project's

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

construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters were utilized in calculating the Project's air pollutant and GHG emissions, and make known which default values were changed as well as provide a justification for the values selected.[3]

When reviewing the Project's CalEEMod output files, located in Appendix 3.2-1, we found that several of the values inputted into the model are not consistent with information disclosed in the DEIR and are not consistent with guidance set forth by the Bay Area Air Quality Management District (BAAQMD). As a result, emissions associated with the Project are greatly underestimated. An updated DEIR should be prepared that adequately assesses the potential impacts that construction and operation of the Project may have on regional and local air quality.

Underestimated Land Use Size

Review of the Project's CalEEMod output files demonstrates that the land uses proposed by the DEIR were underestimated in the Project's CalEEMod model. As a result, the Project's construction and operational emissions are underestimated.

According to the DEIR, the Project proposes to construct 716 residential units and 878 below-ground vehicle parking spaces (see excerpt below) (Table 2-1, p. 2-5) (*see also* p. 2-14 ["subterranean parking garage would have two levels with a total of 878 parking spaces"]).

Table 2-1. Project Features

Feature	Building A	Building B	Building C	Total
Square Footage (feet)	328,849	311,256	142,236	**782,341**
Dwelling Units (total)	306	266	144	**716**
Studio	42	24	19	**85**
One-Bedroom Units	176	168	87	**431**
Two-Bedroom Units	88	74	38	**200**
Personal Storage Units	306	266	144	**716**
Vehicle Parking Spaces	394	340	144	**878**
Bicycle Parking Spaces	337	293	158	**788**

Source: KTGY Group Incorporated 2018.

However, review of the DEIR's CalEEMod output files demonstrates that the Project Applicant modeled emissions assuming only 847 parking spaces would be constructed (see excerpt below) (Appendix A, pp. 55, pp. 88).

[3] CalEEMod User Guide, p. 7, 13, *available at:* http://www.caleemod.com/ (A key feature of the CalEEMod program is the "remarks" feature, where the user explains why a default setting was replaced by a "user defined" value. These remarks are included in the report.)

777 Middlefield EIR

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	847.00	Space	7.62	338,800.00	0
Other Asphalt Surfaces	49.00	1000sqft	1.12	49,000.00	0
Apartments Mid Rise	716.00	Dwelling Unit	9.84	782,341.00	2048

As you can see in the excerpt above, the Project Applicant underestimates the parking land use size by 31 parking spaces. As previously stated, the land use type and size features are used throughout CalEEMod to determine default variable and emission factors that go into the model's calculations. [4] For example, the square footage of a land use is used for certain calculations such as determining the wall space to be painted (i.e., VOC emissions from architectural coatings) and volume that is heated or cooled (i.e., energy impacts). Similarly, the acreage is used to determine the amount of ground to be prepared, graded, paved, etc.[5] Furthermore, CalEEMod assigns each land use type with its own set of energy usage emission factors.[6] By underestimating the land use from the model, the emissions that would be produced during construction and operation of the entire parking structure are unaccounted for, and as a result, the Project's emissions are underestimated.

Failure to Assess Feasibility of Obtaining Tier 4 Final Equipment

According to the DEIR, the Project's construction emissions will be less than significant with implementation of Mitigation Measures MM AQ-1 and MM AQ-2 (p. 3.2-22). Mitigation Measure MM AQ-1 states, "The Project developer shall ensure that all off-road diesel-powered equipment used during construction is equipped with EPA Tier 4 Final engines" (p. 3.2-22). As a result, the DEIR models construction emissions of air pollutants by assuming that Tier 4 Final off-road equipment will be utilized during construction (Appendix 3.2-1, pp. 56, pp. 89). However, the DEIR fails to assess the feasibility of obtaining an entire fleet of Tier 4 Final equipment for Project construction (Appendix 3.2-1, pp. 56, pp. 89). Due to the limited number of Tier 4 Final construction equipment available, the DEIR should have assessed the feasibility of obtaining construction equipment equipped with Tier 4 Final engines. By failing to demonstrate how the Project will actually comply with this mitigation measure, this measure is unenforceable and thus, the Project Applicant cannot claim the emissions reductions from this measure.

The U.S. EPA's 1998 nonroad engine emission standards were structured as a three-tiered progression. Tier 1 standards were phased-in from 1996 to 2000 and Tier 2 emission standards were phased in from 2001 to 2006. Tier 3 standards, which applied to engines from 37-560 kilowatts (kW) only, were phased in from 2006 to 2008. The Tier 4 emission standards were introduced in 2004 and were phased in from

[4] CalEEMod User's Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/upgrades/2016.3/01_user-39-s-guide2016-3-1.pdf?sfvrsn=2, p. 17

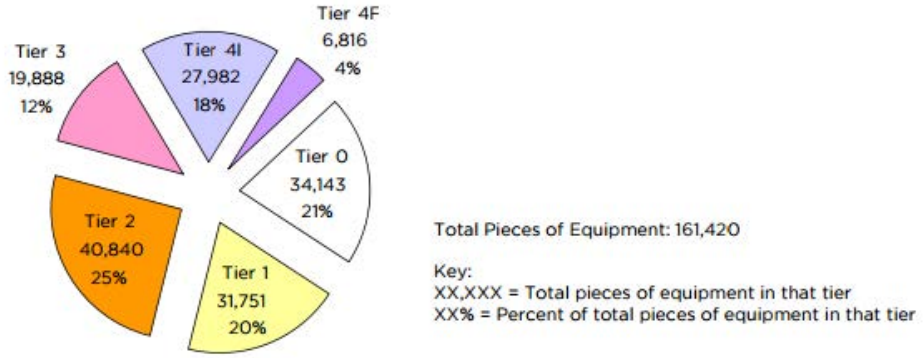
[5] CalEEMod User's Tips, available at: http://www.aqmd.gov/docs/default-source/caleemod/Model/2013.2.2/caleemod-usertips-april2014.pdf?sfvrsn=0, p. 27, p. 11

[6] CalEEMod User's Guide, Appendix D, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/upgrades/2016.3/05_appendix-d2016-3-1.pdf?sfvrsn=2

2008 to 2015.[7] These tiered emission standards, however, are only applicable to newly manufactured nonroad equipment. According to the U.S. EPA, "if products were built before EPA emission standards started to apply, they are generally not affected by the standards or other regulatory requirements."[8] Therefore, pieces of equipment manufactured prior to 2000 are not required to adhere to Tier 2 emission standards, and pieces of equipment manufactured prior to 2006 are not required to adhere to Tier 3 emission standards. Construction equipment often lasts more than 30 years; as a result, Tier 1 equipment and non-certified equipment are currently still in use.[9] It is estimated that of the two million off-road diesel engines currently used in construction, 31 percent were manufactured before the introduction of emissions regulations.[10]

Although Tier 4 Final engines are currently being produced and installed in new off-road construction equipment, the vast majority of existing diesel off-road construction equipment in California is not equipped with Tier 4 Final engines.[11] Based on information and data provided in the *San Francisco Clean Construction Ordinance Implementation Guide for San Francisco Public Projects*, the availability of Tier 4 Final equipment was extremely limited, with 25% of all off-road equipment in the state of California equipped with Tier 2 engines, approximately 12% equipped with Tier 3 engines, approximately 18% equipped with Tier 4 Interim engines, and only 4% equipped with Tier 4 Final engines statewide (see excerpt below).[12]

Figure 4: 2014 Statewide All Fleet Sizes (Pieces of Equipment)



[7] Emission Standards, Nonroad Diesel Engines, *available at:* https://www.dieselnet.com/standards/us/nonroad.php#tier3

[8] "Frequently Asked Questions from Owners and Operators of Nonroad Engines, Vehicles, and Equipment Certified to EPA Standards." United States Environmental Protection Agency, August 2012. *Available at:* http://www.epa.gov/oms/highway-diesel/regs/420f12053.pdf

[9] "Best Practices for Clean Diesel Construction." Northeast Diesel Collaborative, August 2012. *Available at:* http://northeastdiesel.org/pdf/BestPractices4CleanDieselConstructionAug2012.pdf

[10] Northeast Diesel Collaborative Clean Construction Workgroup, *available at:* http://northeastdiesel.org/construction.html

[11] California Industry Air Quality Coalition White Paper, p. 3, *available at:* http://www.agc-ca.org/uploadedFiles/Member_Services/Regulatory-Advocacy-Page-PDFs/White_Paper_CARB_OffRoad.pdf

[12] "San Francisco Clean Construction Ordinance Implementation Guide for San Francisco Public Projects." August 2015, *available at:* https://www.sfdph.org/dph/files/EHSdocs/AirQuality/San_Francisco_Clean_Construction_Ordinance_2015.pdf, p. 6

As demonstrated in the figure above, Tier 4 Final equipment only accounts for 4% of all off-road equipment available in the state of California. Thus, by stating that the Project proposes to use only Tier 4 Final equipment during construction, the DEIR's analysis is relying on a fleet of construction equipment that only accounts for 4% of all off-road equipment available in the state. By failing to evaluate the feasibility of implementing Tier 4 Final mitigation into the Project's construction phases, the Project's estimated mitigated construction emissions are unsupported and the significance determination made within the DEIR should not be relied upon.

Unsubstantiated Change in the Number of Worker and Vendor Trips

Review of the CalEEMod output files demonstrates that the Project Applicant made unsubstantiated changes to the default number of worker and vendor trips required to construct a project of this size. As a result, the Project's construction emissions are significantly underestimated.

According to the "User Entered Comment & Non-Default Data" table, the numbers of worker and vendor trips required throughout construction were substantially changed (see excerpt below) (Appendix 3.2-1, pp. 59, pp. 92).

Table Name	Column Name	Default Value	New Value
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	140.00	1.00
tblTripsAndVMT	VendorTripNumber	140.00	1.00
tblTripsAndVMT	VendorTripNumber	140.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	678.00	160.00
tblTripsAndVMT	WorkerTripNumber	678.00	160.00
tblTripsAndVMT	WorkerTripNumber	678.00	160.00
tblTripsAndVMT	WorkerTripNumber	136.00	75.00

As you can see in the excerpt above, the number of vendor trips and worker trips are completely different from CalEEMod defaults. The presumed number of construction *vendor* trips required to construct a project of this size was reduced from 420 to only 5. The presumed number of construction *worker* trips required to construct a Project of this size was reduced from 2,183 to only 575. However, the Project Applicant provides no justification for the reduction in worker and vendor trips during construction. The CalEEMod trip assumptions are based on a survey of similar sized construction projects conducted by the Sacramento Metropolitan Air Quality Management District (SMAQMD) and thus, without any justification for a deviation, the default assumptions present substantial evidence of the number of construction worker and vendor trips that will presumably occur.[13] Thus, these changes are completely unsubstantiated and significantly underestimate the Project's construction emissions.

[13] "Appendix E Technical Source documentation," CalEEMod User's Guide, July 2013, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/caleemod-appendixe.pdf

Unsubstantiated Change in Construction Equipment

Review of the CalEEMod output files demonstrates that the Project Applicant also made unsubstantiated changes to the off-road construction equipment required for Project construction. Specifically, the Project Applicant changed the default construction equipment list and the default engine horsepower (hp) for those pieces of equipment (see excerpt below) (Appendix 3.2-1).

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	HorsePower	158.00	417.00
tblOffRoadEquipment	HorsePower	89.00	51.00
tblOffRoadEquipment	HorsePower	89.00	51.00
tblOffRoadEquipment	HorsePower	247.00	166.00
tblOffRoadEquipment	HorsePower	97.00	87.00
tblOffRoadEquipment	HorsePower	221.00	700.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	158.00	80.00
tblOffRoadEquipment	HorsePower	89.00	51.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

As you can see in the excerpt above, the DEIR models the Project's construction emissions by making substantial changes in the default construction equipment that will be required. Specifically, the Project Applicant reduced the amount of construction equipment required by approximately 40 pieces. Furthermore, the DEIR substantially reduces the engine hp for many pieces of construction equipment. According to the CalEEMod output files, these changes are "From AQ/GHG data request spreadsheet" (Appendix 3.2-1, pp. 55-56, pp. 88-89). However, review of the DEIR and associated appendices and reference documents demonstrates that the Project Applicant failed to provide the AQ/GHG data request spreadsheet and, as a result, the DEIR fails to justify these changes. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[14] These changes are unreasonable and unsubstantiated, and they should not be used to estimate Project emissions.

Updated Analysis Indicates Significant Pollutant Emissions

In an effort to accurately determine the Project's emissions, we prepared an updated CalEEMod model that includes more site-specific information and correct input parameters (Attachment A). In our model, we corrected the parking lot size. Additionally, our CalEEMod model did not include any Tier 4 Final off-road construction equipment, as there is not substantial evidence that the Project Applicant will be able to procure a fleet Tier 4 Final equipment. Furthermore, since the Project Applicant failed to provide any justifications, we used model defaults for the worker and vendor trips as well as the construction equipment and engine horsepower.

When corrected, site-specific input parameters are used to model emissions, we find that the Project's construction-related NOx emissions exceed the 54 pounds per day (lbs/day) threshold set forth by the Bay Area Air Quality Management District (BAAQMD) (see table below).

Average Daily Construction Emissions (lbs/day)	
Model	**NOx**
DEIR	33
SWAPE	61
Percent Increase	**85%**
BAAQMD Regional Thresholds (lbs/day)	**54**
Threshold Exceeded?	***Yes***

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

When corrected input parameters are used to model the Project's construction emissions, NOx emissions increase by approximately 85% and exceed the BAAQMD's significance thresholds by a substantial margin. Our updated model demonstrates that when the Project's construction emissions are estimated correctly, the Project would result in a significant air quality impact that was not identified in the DEIR. As a result, an updated DEIR should be prepared that includes an updated air pollution model to adequately estimate the Project's emissions, and additional mitigation measures should be identified and incorporated to reduce these emissions to a less-than-significant level.[15]

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The DEIR fails to adequately evaluate the potential health risk impact that the proposed Project would have on nearby sensitive receptors. Specifically, the DEIR: (1) relies upon flawed emissions from a flawed CalEEMod model; and (2) fails to prepare a quantitative operational health risk assessment. As a result, the Project's construction-related health risk impact is greatly underestimated, and its operational health risk is unknown.

Use of Incorrect Emission Estimates in Construction Health Risk Assessment

The DEIR conducts a construction HRA and determines that the health risk posed to the highest offsite residence due to construction emissions is 3 in one million (see excerpt below) (Table 3.2-10, p. 3.2-25).

Table 3.2-10. Project-level Cancer and Chronic Hazard Risks During Construction

Receptor	Cancer Risk[a] (cases per million)	Non-Cancer Hazard Index	Annual PM2.5 Concentration (μg/m³)
Adjacent Temple Receptor	1	< 1	< 0.1
Highest Offsite Resident	3	< 1	< 0.1
Next-Highest Resident	2	< 1	< 0.1
Significance Threshold	*10*	*1*	*0.3*
Exceed Threshold?	*No*	*No*	*No*

Note: μg/m³ = micrograms per cubic meter; PM2.5 = particulate matter no more than 2.5 microns in diameter

[a] The Project-level cancer and chronic hazard risks assumed Tier 4 equipment for all off-road equipment and model year 2010 and newer engines for all haul trucks associated with demolition and soil hauling activities, as required per MM AQ-1 and MM AQ-2 (see Impact AQ-2a).

As a result, the DEIR states that with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, the health risk would be less than significant (p. 3.2-24). This, however, is incorrect. The DEIR's construction HRA relies upon emission estimates from a flawed CalEEMod model to estimate the excess cancer risk posed to nearby residents as a result of emissions generated during construction-related activity. Specifically, our review of the Project's CalEEMod model and corresponding emissions estimates, as discussed in the sections above, found that the model relied upon incorrect and unsubstantiated input parameters in order to estimate the Project's emissions. Because the emissions estimates from the Project's CalEEMod model are underestimated, it is reasonable to assume that the Project's construction-related HRA also underestimates the health risk posed to sensitive receptors near the Project site. As a result, we find the DEIR's HRA and subsequent significance determination to be

[15] See sections titled "Feasible Mitigation Measures Available to Reduce Operational Emissions" on p. 21 of this letter. These measures would effectively reduce operational ROG, DPM, and GHG emissions.

incorrect and unreliable, and the HRA should not be relied upon to determine the significance of the Project's construction-related health impacts.

Failure to Evaluate the Operational Health Risk

The DEIR determines that the Project's operational health risks would be less than significant, without conducting an operational health risk (p. 3.2-27). The DEIR states,

> "The Project is not expected to represent a significant source of operational DPM because traffic to and from the site would consist primarily of light-duty vehicles, which are not substantial emitters of DPM. In addition, no diesel emergency back-up generators or any other major operations-related diesel-fueled equipment is included as part of the Project. Therefore, the Project would not result in any appreciable increases in health risks from DPM or PM2.5 exhaust during operation" (p. 3.2-27).

This justification for failing to conduct an operational health risk assessment is incorrect for several reasons.

First, simply because the Project claims that the "Project is not expected to represent a significant source of operational DPM" (diesel particulate matter) does not meant that an HRA is not required. According to the BAAQMD,

> "For assessing community risks and hazards, a 1,000 foot radius is recommended around the project property boundary."[16]

According to the DEIR, there are multiple sensitive receptors within 1,000 feet of the Project site, including residences immediately adjacent to the site (Table 3.2-3, p. 3.2-7). Therefore, since there are sensitive receptors within 1,000 feet of the Project site, an HRA should be conducted to determine the health risk posed to the nearest sensitive receptor as a result of Project construction and operation.

Second, the omission of a quantified health risk assessment is inconsistent with the most recent guidance published by California's Office of Environmental Health Hazard Assessment (OEHHA). In February of 2015, OEHHA released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*, which was formally adopted in March of 2015.[17] This guidance document describes the types of projects that warrant the preparation of a health risk assessment. According to the DEIR's Traffic Impact Analysis (TIA), Project operation will generate approximately 2,138 net daily vehicle trips as a result of the Project's proposed land uses, which will generate substantial exhaust emissions and expose nearby sensitive receptors to these DPM emissions (Table 7, Appendix 3.13-1, p. 27). The OEHHA document recommends that exposure from projects lasting more than 6 months should be evaluated for the duration of the project, and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual

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[16] "Air Quality Guidelines," BAAQMD, May 2017, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. 5-2

[17] "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

resident (MEIR).[18] 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, per BAAQMD and OEHHA guidelines, health risk impacts from Project operation should be included in a revised CEQA evaluation for the Project.

Updated Health Risk Assessment Indicates Significant Health Impact

In an effort to demonstrate the potential risk posed by Project construction and operation to nearby sensitive receptors, we prepared a simple screening-level HRA (Attachment B). The results of our assessment, as described below, provide substantial evidence that the Project's construction and operational DPM emissions may result in a potentially significant health risk impact that was not previously identified.

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 health-related impacts to sensitive receptors using the annual PM10 exhaust estimates from SWAPE's CalEEMod output files. According to the DEIR, the closest residential receptor is approximately 10 feet, or 3 meters, from the Project site (p. 3.2-7). Consistent with recommendations set forth by OEHHA, we used a residential exposure duration of 30 years, starting from the 3rd trimester stage of life. We also assumed that construction and operation of the Project would occur sequentially, with no gaps between each Project phase. The SWAPE annual CalEEMod model's emissions estimate indicates that construction activities will generate approximately 629 pounds of DPM over the 3-year (or approximately 1,093-day) construction period. The AERSCREEN model relies on a continuous average emission rate to simulate maximum downward concentrations from point, area, and volume emission sources. To account for the variability in equipment usage and truck trips over Project construction, we calculated an average DPM emission rate by the following standard equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{628.6\ lbs}{1{,}093\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.003019\ g/s}$$

[18] "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

[19] "AERSCREEN Released as the EPA Recommended Screening Model," USEPA, April 11, 2011, *available at:* http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf

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

Using this equation, we estimated a construction emission rate of 0.003019 grams per second (g/s). Subtracting the 1,093-day construction duration from the total residential exposure duration of 30 years, we assumed that after Project construction, the MEIR would be exposed to the Project's operational DPM for an additional 27 years. The SWAPE annual CalEEMod output files indicate that operational activities will generate approximately 160 pounds of DPM per year throughout operation. Applying the same equation used to estimate the construction DPM emissions rate, we estimated the following emissions rate for Project operation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{160.2\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.002304\ g/s}$$

Using this equation, we estimated an operational emission rate of 0.002304 g/s. Construction and operational activity were simulated as a 9.84-acre rectangular area source in AERSCREEN, with dimensions of 295 meters by 135 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 concentration from the Project site. EPA guidance suggests that in screening procedures, the annualized average concentration of an air pollutant should be estimated by multiplying the single-hour concentration by 10%.[22] For example, for the MEIR the single-hour concentration estimated by AERSCREEN for Project construction is approximately 2.369 µg/m^3 DPM at approximately 1 meter downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.2369 µg/m^3 for Project construction at the MEIR. For Project operation, the single-hour concentration at the MEIR estimated by AERSCREEN is approximately 1.808 µg/m^3 DPM at approximately 1 meter downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.1808 µg/m^3 for Project operation at the MEIR.

We calculated the excess cancer risk to the residential receptors located closest to the Project site using applicable HRA methodologies prescribed by OEHHA and the BAAQMD. Consistent with the construction schedule proposed by the DEIR, the annualized average concentration for construction was used for the entire 3rd trimester of pregnancy (0.25 years), the infantile stage of life (0-2 years), and the first 0.75-years of the child stages of life (2 to 16 years). The annualized average concentration for operation was used for the remainder of the 30-year exposure period, which makes up the remainder of the child stages of life (2 to 16 years) and adult stages of life (16 to 30 years). Consistent with OEHHA guidance, we used Age Sensitivity Factors (ASFs) to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution.[23] According to the updated guidance, quantified cancer risk

[22] http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf
[23] "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

should be multiplied by a factor of ten during the 3rd trimester of pregnancy and the first two years of life (infant) and should be multiplied by a factor of three during the child stage of life (2 to 16 years). Furthermore, in accordance with guidance set forth by OEHHA, we used 95th percentile breathing rates for infants.[24] We used a cancer potency factor of 1.1 $(mg/kg\text{-}day)^{-1}$ and an averaging time of 25,550 days. Finally, according to OEHHA guidance, we used a Fraction of Time At Home (FAH) Value of 0.85 for the 3rd trimester and infant receptors, 0.72 for the child receptor, and 0.73 for the adult receptor.[25] The results of our calculations are shown below.

The Maximum Exposed Individual at an Existing Residential Receptor (MEIR)					
Activity	**Duration (years)**	**Concentration ($\mu g/m^3$)**	**Breathing Rate (L/kg-day)**	**ASF**	**Cancer Risk**
Construction	0.25	0.2369	361	10	2.7E-06
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	***2.7E-06***
Construction	2.00	0.2369	1090	10	6.6E-05
Infant Exposure Duration	***2.00***			***Infant Exposure***	***6.6E-05***
Construction	0.75	0.2369	572	3	3.3E-06
Operation	13.25	0.1808	572	3	4.5E-05
Child Exposure Duration	***14.00***			***Child Exposure***	***4.8E-05***
Operation	14.00	0.1808	261	1	7.3E-06
Adult Exposure Duration	***14.00***			***Adult Exposure***	***7.3E-06***
Lifetime Exposure Duration	**30.00**			**Lifetime Exposure**	**1.2E-04**

The excess cancer risk posed to adults, children, infants, and during the third trimester of pregnancy at the MEIR located approximately 1 meter away, over the course of Project construction and operation, are approximately 7.3, 48, 66, and 2.7 in one million, respectively. Furthermore, the excess cancer risk over the course of a residential lifetime (30 years) at the MEIR is approximately 120 in one million. Consistent with OEHHA guidance, exposure was assumed to begin in the third trimester of pregnancy to provide the most conservative estimates of air quality hazards. The infant, child, and lifetime cancer risks exceed the BAAQMD's threshold of 10 in one million.

It should be noted that our analysis represents a screening-level HRA, which is known to be more conservative, and tends to err on the side of health protection.[26] The purpose of a screening-level HRA, however, is to determine if a more refined HRA needs to be conducted. If the results of a screening-level health risk assessment are above applicable thresholds, then the Project needs to conduct a more

[24] "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act," June 5, 2015, *available at:* http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588-risk-assessment-guidelines.pdf?sfvrsn=6, p. 19
"Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
[25] "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. 8-5

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

refined HRA that is more representative of site-specific concentrations. 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. As a result, a refined HRA must be prepared to examine air quality impacts generated by Project construction and operation using site-specific meteorology and specific equipment usage schedules. An updated DEIR must be prepared to adequately evaluate the Project's health risk impact, and should include additional mitigation measures to reduce these impacts to a less-than-significant level. [27]

Mitigation Measures Available to Reduce Construction Emissions

Our air quality analysis determined that the Project's construction NOx emissions would exceed thresholds and create a significant impact. Moreover, our health risk assessment demonstrates that Project construction-related DPM emissions would result in a significant health risk impact. Therefore, additional mitigation measures must be identified and incorporated in an updated DEIR to reduce construction NOx and DPM emissions to less than significant levels.

Additional mitigation measures can be found in CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures,* which attempt to reduce Greenhouse Gas (GHG) levels, as well as reduce criteria air pollutants, such as NOx and particulate matter.[28] NOx and DPM are byproducts of diesel fuel combustion, and are emitted by on-road vehicles and by off-road construction equipment. Mitigation for criteria pollutant emissions should include consideration of the following measures in an effort to reduce construction emissions:

Require Implementation of Diesel Control Measures

The Northeast Diesel Collaborative ("NEDC") is a regionally coordinated initiative to reduce diesel emissions, improve public health, and promote clean diesel technology. The NEDC recommends that contracts for all construction projects require the following diesel control measures: [29]

- All diesel generators on site for more than 10 total days must be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85 percent.
- All diesel nonroad construction equipment on site for more than 10 total days must have either (1) engines meeting EPA Tier 4 nonroad emission standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85 percent for engines 50 horse power (hp) and greater and by a minimum of 20 percent for engines less than 50 hp.
    - According to MM AQ-1, the Project proposes to use an entire fleet of Tier 4 Final off-road construction equipment. The Applicant must show proof of availability for use

[27] See mitigation measures listed in section titled "Mitigation Measures Available to Reduce Operational Emissions" on p. 22 of this letter. These measures would effectively reduce operational DPM emissions, as well as ROG and GHG emissions.
[28] http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
[29] Diesel Emission Controls in Construction Projects, *available at:* http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf

during construction of the Project in order to demonstrate consistency with the proposed measure (p. 3.2-22).

- All diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend[30] approved by the original engine manufacturer with sulfur content of 15 parts per million (ppm) or less.

Repower or Replace Older Construction Equipment Engines

The NEDC recognizes that availability of equipment that meets the EPA's newer standards is limited.[31] Due to this limitation, the NEDC proposes actions that can be taken to reduce emissions from existing equipment in the *Best Practices for Clean Diesel Construction* report.[32] These actions include but are not limited to:

- Repowering equipment (i.e. replacing older engines with newer, cleaner engines and leaving the body of the equipment intact).

Engine repower may be a cost-effective emissions reduction strategy when a vehicle or machine has a long useful life and the cost of the engine does not approach the cost of the entire vehicle or machine. Examples of good potential replacement candidates include marine vessels, locomotives, and large construction machines.[33] Older diesel vehicles or machines can be repowered with newer diesel engines or in some cases with engines that operate on alternative fuels (see section "Use Alternative Fuels for Construction Equipment" for details). The original engine is taken out of service and a new engine with reduced emission characteristics is installed. Significant emission reductions can be achieved, depending on the newer engine and the vehicle or machine's ability to accept a more modern engine and emission control system. It should be noted, however, that newer engines or higher tier engines are not necessarily cleaner engines, so it is important that the Project Applicant check the actual emission standard level of the current (existing) and new engines to ensure the repower product is reducing emissions for PM10. [34]

- Replacement of older equipment with equipment meeting the latest emission standards.

Engine replacement can include substituting a cleaner highway engine for a nonroad engine. Diesel equipment may also be replaced with other technologies or fuels. Examples include hybrid switcher locomotives, electric cranes, LNG, CNG, LPG or propane yard tractors, forklifts or loaders. Replacements using natural gas may require changes to fueling infrastructure.[35] Replacements often

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[30] Biodiesel lends are only to be used in conjunction with the technologies which have been verified for use with biodiesel blends and are subject to the following requirements: http://www.arb.ca.gov/diesel/verdev/reg/biodieselcompliance.pdf

[31] http://northeastdiesel.org/pdf/BestPractices4CleanDieselConstructionAug2012.pdf

[32] http://northeastdiesel.org/pdf/BestPractices4CleanDieselConstructionAug2012.pdf

[33] http://www3.epa.gov/otaq/diesel/technologies/engines.htm

[34] Diesel Emissions Reduction Program (DERA): Technologies, Fleets and Projects Information, *available at:* https://nepis.epa.gov/Exe/ZyPDF.cgi/P100CVIS.PDF?Dockey=P100CVIS.PDF

[35] National Clean Diesel Campaign, p. 19 *available at*: https://www.epa.gov/sites/production/files/2017-02/documents/fy17-state-program-guide-2017-02.pdf

require some re-engineering work due to differences in size and configuration. Typically, there are benefits in fuel efficiency, reliability, warranty, and maintenance costs.[36]

Install Retrofit Devices on Existing Construction Equipment

PM emissions from alternatively-fueled construction equipment can be further reduced by installing retrofit devices on existing and/or new equipment. The most common retrofit technologies are retrofit devices for engine exhaust after-treatment. These devices are installed in the exhaust system to reduce emissions and should not impact engine or vehicle operation.[37] It should be noted that actual emissions reductions and costs will depend on specific manufacturers, technologies and applications.

Use Electric and Hybrid Construction Equipment

CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures*[38] report also proposes the use of electric and/or hybrid construction equipment as a way to mitigate criteria pollutant emissions, such as particulate matter. When construction equipment is powered by grid electricity rather than fossil fuel, direct emissions from fuel combustion are replaced with indirect emissions associated with the electricity used to power the equipment. Furthermore, when construction equipment is powered by hybrid-electric drives, emissions from fuel combustion are also greatly reduced and criteria air pollutants would be 100% reduced for equipment running on electricity. Electric construction equipment is available commercially from companies such as Peterson Pacific Corporation[39] and Komptech USA[40], which specialize in the mechanical processing equipment like grinders and shredders. Construction equipment powered by hybrid-electric drives is also commercially available from companies such as Caterpillar[41]. For example, Caterpillar reports that during an 8-hour shift, its D7E hybrid dozer burns 19.5 percent fewer gallons of fuel than a conventional dozer while achieving a 10.3 percent increase in productivity. The D7E model burns 6.2 gallons per hour compared to a conventional dozer which burns 7.7 gallons per hour.[42] Fuel usage and savings are dependent on the make and model of the construction equipment used. The Project Applicant should calculate project-specific savings and provide manufacturer specifications indicating fuel burned per hour.

Institute a Heavy-Duty Off-Road Vehicle Plan

CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures*[43] report recommends that the Project Applicant provide a detailed plan that discusses a construction vehicle inventory tracking system to

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[36] Cleaner Diesels: Low Cost Ways to Reduce Emissions from Construction Equipment, p. 29 *available at*: https://www.epa.gov/sites/production/files/2015-09/documents/cleaner-diesels-low-cost-ways-to-reduce-emissions-from-construction-equipment.pdf

[37] https://www.epa.gov/verified-diesel-tech/learn-about-verified-technologies-clean-diesel

[38] http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

[39] Peterson Electric Grinders Brochure, *available at:* http://www.petersoncorp.com/wp-content/uploads/peterson_electric_grinders1.pdf

[40] Komptech Green Efficiency Brochure, *available at:* https://www.komptech.com/index.php?eID=tx_nawsecuredl&u=0&g=0&t=1499460496&hash=62966444 9e3954477f6857f98ad1d73f8f2ec20d&file=fileadmin/komptech/brochures/Green_Efficiency_eng_2015.pdf

[41] http://www.cat.com/en_US/products/new/power-systems/electric-power-generation.html

[42] http://s7d2.scene7.com/is/content/Caterpillar/C811572

[43] http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

ensure compliances with construction mitigation measures. The system should include strategies such as requiring hour meters on equipment, documenting the serial number, horsepower, manufacture age, fuel, etc. of all onsite equipment and daily logging of the operating hours of the equipment. Specifically, prior to the construction of a Project the contractor should submit a certified list of all diesel vehicles, construction equipment, and generators to be used on site. [44] The list should include the following: [45]

- Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment.
- Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation.
- For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date.

Implement a Construction Vehicle Inventory Tracking System

CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures*[46] report recommends that the Project Applicant provide a detailed plan that discusses a construction vehicle inventory tracking system to ensure compliances with construction mitigation measures. The system should include strategies such as requiring engine run time meters on equipment, documenting the serial number, horsepower, manufacture age, fuel, etc. of all onsite equipment and daily logging of the operating hours of the equipment. Specifically, for each onroad construction vehicle, nonroad construction equipment, or generator, the contractor should submit to the developer's representative a report prior to bringing said equipment on site that includes: [47]

- Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, and engine serial number.
- The type of emission control technology installed, serial number, make, model, manufacturer, and EPA/CARB verification number/level.
- The Certification Statement[48] signed and printed on the contractor's letterhead.

Furthermore, the contractor should submit to the developer's representative a monthly report that, for each onroad construction vehicle, nonroad construction equipment, or generator onsite, includes: [49]

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[44] Diesel Emission Controls in Construction Projects, *available at:* http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf

[45] USEPA's Construction Fleet Inventory Guide is a useful tool in identifying the information required. http://www2.epa.gov/sites/production/files/2015-09/documents/construction-fleet-inventory-guide.pdf

[46] http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

[47] Diesel Emission Controls in Construction Projects, *available at:* http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf

[48] Diesel Emission Controls in Construction Projects, *available at:* http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf The NEDC Model Certification Statement can be found in Appendix A, p. 10.

[49] Diesel Emission Controls in Construction Projects, *available at:* http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf

- Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.
- Any problems with the equipment or emission controls.
- Certified copies of fuel deliveries for the time period that identify:
    - Source of supply
    - Quantity of fuel
    - Quality of fuel, including sulfur content (percent by weight).

In addition to those measures, we also recommend that the City require the Applicant to implement the following mitigation measures, called "Enhanced Exhaust Control Practices,"[50] that are recommended by the Sacramento Metropolitan Air Quality Management District ("SMAQMD"):

1. The project representative shall submit to the lead agency and District a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project.
    - The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment.
    - The project representative shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.
    - This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment.
    - The District's Equipment List Form can be used to submit this information.
    - The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.
2. The project representative shall provide a plan for approval by the lead agency and District demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NO_X reduction and 45% particulate reduction compared to the most recent CARB fleet average.
    - This plan shall be submitted in conjunction with the equipment inventory.
    - Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.
    - The District's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction.
3. The project representative shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour.

[50] http://www.airquality.org/LandUseTransportation/Documents/Ch3EnhancedExhaustControlFINAL10-2013.pdf

- Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented, and a summary provided to the lead agency and District monthly.
- A visual survey of all in-operation equipment shall be made at least weekly.
- A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.

4. The District and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this mitigation shall supersede other District, state or federal rules or regulations.

These measures offer a cost-effective way to incorporate lower-emitting equipment into the Project's construction fleet, which subsequently reduces NOx and particulate matter emissions released during Project construction. An updated DEIR must be prepared to include additional mitigation measures, as well as include an updated air quality assessment and HRA to ensure that the necessary mitigation measures are implemented to reduce construction emissions. Furthermore, the Project Applicant needs to demonstrate commitment to the implementation of these measures prior to Project approval to ensure that the Project's construction-related emissions are reduced to the maximum extent possible.

Feasible Mitigation Measures Available to Reduce Operational Emissions

Our analysis also demonstrates that the Project's operational-DPM emissions may present a potentially significant impact. In an effort to reduce the Project's emissions, we identified several additional mitigation measures that are applicable to the Project. Additional mitigation measures that could be implemented to reduce operational DPM emissions include, but are not limited to, the following: [51]

Additional, feasible mitigation measures can be found in CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures,* which attempt to reduce GHG levels, as well as reduce criteria air pollutants, such as NOx and particulate matter.[52] Therefore, to reduce the Project's operational DPM emissions, consideration of the following measures should be made:

- Incorporate Bike Lane Street Design (On-Site)
    - Incorporating bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments can reduce VMTs. These improvements can help reduce peak-hour vehicle trips by making commuting by bike easier and more convenient for more people. In addition, improved bicycle facilities can increase access to and from transit hubs, thereby expanding the "catchment area" of the transit stop or station and increasing ridership. Bicycle access can also reduce parking pressure on

[51] http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf
[52] http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

heavily-used and/or heavily-subsidized feeder bus lines and auto-oriented park-and-ride facilities.

- Limit Parking Supply
    - This mitigation measure will change parking requirements and types of supply within the Project site to encourage "smart growth" development and alternative transportation choices by project residents and employees. This can be accomplished in a multi-faceted strategy:
        - Elimination (or reduction) of minimum parking requirements
        - Creation of maximum parking requirements
        - Provision of shared parking
- Implement Subsidized or Discounted Transit Program
    - This project can provide subsidized/discounted daily or monthly public transit passes to incentivize the use of public transport. The project may also provide free transfers between all shuttles and transit to participants. These passes can be partially or wholly subsidized by the employer, school, or development. Many entities use revenue from parking to offset the cost of such a project.

When combined together, these measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduces DPM emissions released during Project operation. An updated DEIR must be prepared to include additional mitigation measures, as well as include an updated HRA to ensure that the necessary mitigation measures are implemented to reduce the operational health risk to below thresholds. The Project Applicant also needs to demonstrate commitment to the implementation of these measures prior to Project approval, to ensure that the Project's operational DPM emissions are reduced to the maximum extent possible.

Sincerely,

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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 100 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.

KAITLYN MARIE HECK

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EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES **B.S. ENVIRONMENTAL SCIENCES & ENVIRONMENTAL SYSTEMS AND SOCIETY** *JUNE 2017*

PROJECT EXPERIENCE

SOIL WATER AIR PROTECTION ENTERPRISE ***SANTA MONICA, CA***

AIR QUALITY SPECIALIST

PROJECT ANALYST: CEQA ANALYSIS & MODELING

- Calculated roadway, stationary source, and cumulative impacts for risk and hazard analyses at proposed land use projects.
- Quantified criteria air pollutant and greenhouse gas emissions released during construction and operational activities of proposed land use projects using CalEEMod and EMFAC2011 emission factors.
- Utilized AERSCREEN, a screening dispersion model, to determine the ambient air concentrations at sensitive receptor locations.
- Organized reports containing figures and tables comparing results of particulate matter analyses to CEQA thresholds.
- Prepared reports that discuss results of the health risk analyses conducted for several land use redevelopment projects.

PROJECT ANALYST: GREENHOUSE GAS MODELING AND DETERMINATION OF SIGNIFICANCE

- Quantified greenhouse gas (GHG) emissions of a "business as usual" scenario for proposed land use projects using CalEEMod.
- Determined compliance of proposed projects with AB 32 GHG reduction targets, with measures described in CARB's Scoping Plan for each land use sector, and with GHG significance thresholds recommended by various Air Quality Management Districts in California.
- Produced tables and figures that compare the results of the GHG analyses to applicable CEQA thresholds and reduction targets.

PROJECT ANALYST: EXPOSURE ASSESSMENT FOR PROP 65 LEAD PRODUCTS

- Calculated human exposure and human health risk for over 50 lead Prop 65 cases.
- Compiled and analyzed laboratory testing data and produced tables, charts, and graphs to exhibit emission levels.
- Compared finalized testing data to Proposition 65 Maximum Allowable Dose Levels (MADLs).
- Prepared final analytical lead exposure Certificate of Merit (COM) reports and organized supporting data for use in environmental enforcement statute Prop 65 cases.

PROJECT ANALYST: EXPOSURE ASSESSMENT FOR PROP 65 ACRYLAMIDE PRODUCTS

- Calculated the human exposure to acrylamide for approximately 15 Prop 65 cases
- Analyzed laboratory testing data to determine the level of consumption required to meet the No Significant Risk Level (NSRL)
- Compared consumption levels to dietary trends in the public in order to determine if the average person will consume enough of a product to exceed the NSRL
- Prepared final analytical exposure COM reports and organized supporting data for use in environmental enforcement statute of Prop 65 cases.

PROJECT ANALYST: EXPOSURE ASSESSMENT FOR WORKERS COMPENSATION CASES

- Calculated the level of contaminant exposure a worker was likely exposed to under their working conditions
- Compiled peer reviewed articles and data demonstrating the effects of human exposure to the case contaminants
- Prepared reports that discuss the contaminant exposure levels and summarized the effects of these contaminants on human health.

Attachment A

777 Middlefield

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	878.00	Space	7.90	351,200.00	0
Other Asphalt Surfaces	49.00	1000sqft	1.12	49,000.00	0
Apartments Mid Rise	716.00	Dwelling Unit	9.84	782,341.00	2048

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)	327.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

777 Middlefield - Santa Clara County, Annual

Project Characteristics - per the DEIR's CalEEMod modeling

Land Use - residential land use size changed to reflect the DEIR

Construction Phase - Contruction schedule per the DEIR

Trips and VMT - hauling trips and distances based of DEIR's CalEEMod modeling

Demolition -

Grading - project site size

Vehicle Trips - Per the DEIR's CalEEMod modeling

Woodstoves - per the DEIR's CalEEMod modeling

Sequestration -

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	260.00
tblConstructionPhase	NumDays	300.00	130.00
tblConstructionPhase	NumDays	300.00	325.00
tblConstructionPhase	NumDays	300.00	325.00
tblConstructionPhase	NumDays	20.00	130.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	10.00	0.00
tblFireplaces	NumberGas	107.40	229.12
tblFireplaces	NumberWood	121.72	0.00
tblGrading	AcresOfGrading	325.00	9.84
tblGrading	MaterialExported	0.00	195,000.00
tblLandUse	LandUseSquareFeet	716,000.00	782,341.00
tblLandUse	LotAcreage	18.84	9.84
tblProjectCharacteristics	CO2IntensityFactor	641.35	327.6
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004

tblSequestration	NumberOfNewTrees	0.00	296.00
tblTripsAndVMT	HaulingTripLength	20.00	13.00
tblTripsAndVMT	HaulingTripLength	20.00	15.00
tblTripsAndVMT	HaulingTripNumber	1,211.00	2,582.00
tblTripsAndVMT	HaulingTripNumber	24,375.00	32,500.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblVehicleTrips	ST_TR	6.39	5.11
tblVehicleTrips	SU_TR	5.86	5.11
tblVehicleTrips	WD_TR	6.65	5.11
tblWoodstoves	NumberCatalytic	14.32	0.00
tblWoodstoves	NumberNoncatalytic	14.32	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

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					
2020	0.8459	12.0268	5.9608	0.0260	1.1303	0.3143	1.4446	0.4005	0.2919	0.6924	0.0000	2,432.8853	2,432.8853	0.2672	0.0000	2,439.5654
2021	0.9208	10.1965	7.1362	0.0414	1.7212	0.1886	1.9098	0.4768	0.1777	0.6545	0.0000	3,877.6645	3,877.6645	0.1814	0.0000	3,882.1998
2022	5.2762	11.1606	8.4935	0.0494	2.1383	0.1983	2.3366	0.5912	0.1873	0.7785	0.0000	4,624.1518	4,624.1518	0.2125	0.0000	4,629.4651
2023	1.3941	0.0492	0.1428	3.9000e-004	0.0348	2.4800e-003	0.0373	9.2500e-003	2.4600e-003	0.0117	0.0000	34.8541	34.8541	1.0200e-003	0.0000	34.8795
Maximum	**5.2762**	**12.0268**	**8.4935**	**0.0494**	**2.1383**	**0.3143**	**2.3366**	**0.5912**	**0.2919**	**0.7785**	**0.0000**	**4,624.1518**	**4,624.1518**	**0.2672**	**0.0000**	**4,629.4651**

2.1 Overall Construction

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					
2020	0.8459	12.0268	5.9608	0.0260	1.1303	0.3143	1.4446	0.4005	0.2919	0.6924	0.0000	2,432.8845	2,432.8845	0.2672	0.0000	2,439.5646
2021	0.9207	10.1964	7.1362	0.0414	1.7212	0.1886	1.9098	0.4768	0.1777	0.6545	0.0000	3,877.6640	3,877.6640	0.1814	0.0000	3,882.1993
2022	5.2762	11.1606	8.4935	0.0494	2.1383	0.1983	2.3366	0.5912	0.1873	0.7785	0.0000	4,624.1512	4,624.1512	0.2125	0.0000	4,629.4645
2023	1.3941	0.0492	0.1428	3.9000e-004	0.0348	2.4800e-003	0.0373	9.2500e-003	2.4600e-003	0.0117	0.0000	34.8541	34.8541	1.0200e-003	0.0000	34.8795
Maximum	**5.2762**	**12.0268**	**8.4935**	**0.0494**	**2.1383**	**0.3143**	**2.3366**	**0.5912**	**0.2919**	**0.7785**	**0.0000**	**4,624.1512**	**4,624.1512**	**0.2672**	**0.0000**	**4,629.4645**

	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	**4-1-2020**	**6-30-2020**	6.4266	6.4266
2	**7-1-2020**	**9-30-2020**	6.4539	6.4539
3	**10-1-2020**	**12-31-2020**	2.5992	2.5992
4	**1-1-2021**	**3-31-2021**	2.2133	2.2133
5	**4-1-2021**	**6-30-2021**	2.1665	2.1665
6	**7-1-2021**	**9-30-2021**	2.1903	2.1903
7	**10-1-2021**	**12-31-2021**	4.5250	4.5250
8	**1-1-2022**	**3-31-2022**	4.0476	4.0476

9	**4-1-2022**	**6-30-2022**	7.3718	7.3718
10	**7-1-2022**	**9-30-2022**	5.4937	5.4937
11	**10-1-2022**	**12-31-2022**	5.5825	5.5825
12	**1-1-2023**	**3-31-2023**	1.4357	1.4357
		Highest	7.3718	7.3718

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	3.8043	0.0861	5.3366	4.4000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	37.3040	37.3040	8.9400e-003	5.2000e-004	37.6838
Energy	0.0334	0.2850	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231	0.0000	1,075.1547	1,075.1547	0.0723	0.0152	1,081.4761
Mobile	0.7789	2.9324	9.1529	0.0329	3.1422	0.0256	3.1678	0.8411	0.0238	0.8649	0.0000	3,012.6467	3,012.6467	0.0960	0.0000	3,015.0478
Waste						0.0000	0.0000		0.0000	0.0000	66.8571	0.0000	66.8571	3.9511	0.0000	165.6356
Water						0.0000	0.0000		0.0000	0.0000	14.8000	52.8053	67.6053	1.5248	0.0365	116.6129
Total	**4.6165**	**3.3035**	**14.6108**	**0.0351**	**3.1422**	**0.0801**	**3.2223**	**0.8411**	**0.0783**	**0.9194**	**81.6571**	**4,177.9107**	**4,259.5678**	**5.6532**	**0.0522**	**4,416.4562**

2.2 Overall Operational

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	3.8043	0.0861	5.3366	4.4000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	37.3040	37.3040	8.9400e-003	5.2000e-004	37.6838
Energy	0.0334	0.2850	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231	0.0000	1,075.1547	1,075.1547	0.0723	0.0152	1,081.4761
Mobile	0.7789	2.9324	9.1529	0.0329	3.1422	0.0256	3.1678	0.8411	0.0238	0.8649	0.0000	3,012.6467	3,012.6467	0.0960	0.0000	3,015.0478
Waste						0.0000	0.0000		0.0000	0.0000	66.8571	0.0000	66.8571	3.9511	0.0000	165.6356
Water						0.0000	0.0000		0.0000	0.0000	14.8000	52.8053	67.6053	1.5248	0.0365	116.6129
Total	**4.6165**	**3.3035**	**14.6108**	**0.0351**	**3.1422**	**0.0801**	**3.2223**	**0.8411**	**0.0783**	**0.9194**	**81.6571**	**4,177.9107**	**4,259.5678**	**5.6532**	**0.0522**	**4,416.4562**

	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**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	209.5680
Total	**209.5680**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading and Mass Excavation - Demo Only	Demolition	4/1/2020	9/29/2020	5	130	
2	Grading and Mass Excavation	Grading	4/1/2020	9/29/2020	5	130	
3	Site Preparation	Site Preparation	4/29/2020	4/28/2020	5	0	
4	Below Grade Construction	Building Construction	9/30/2020	3/30/2021	5	130	
5	Frame/Roofing. Exterior Finishes	Building Construction	3/31/2021	6/28/2022	5	325	
6	Plumbing/Electrical/Drywall	Building Construction	10/1/2021	12/29/2022	5	325	
7	Finishes	Architectural Coating	4/1/2022	3/30/2023	5	260	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 9.02

Residential Indoor: 1,584,241; Residential Outdoor: 528,080; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 24,012 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading and Mass Excavation - Demo Only	Concrete/Industrial Saws	1	8.00	81	0.73
Grading and Mass Excavation - Demo Only	Excavators	3	8.00	158	0.38
Grading and Mass Excavation - Demo Only	Rubber Tired Dozers	2	8.00	247	0.40
Grading and Mass Excavation	Excavators	2	8.00	158	0.38
Grading and Mass Excavation	Graders	1	8.00	187	0.41
Grading and Mass Excavation	Rubber Tired Dozers	1	8.00	247	0.40
Grading and Mass Excavation	Scrapers	2	8.00	367	0.48
Grading and Mass Excavation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Below Grade Construction	Cranes	1	7.00	231	0.29
Below Grade Construction	Forklifts	3	8.00	89	0.20
Below Grade Construction	Generator Sets	1	8.00	84	0.74
Below Grade Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Below Grade Construction	Welders	1	8.00	46	0.45
Frame/Roofing. Exterior Finishes	Cranes	1	7.00	231	0.29
Frame/Roofing. Exterior Finishes	Forklifts	3	8.00	89	0.20
Frame/Roofing. Exterior Finishes	Generator Sets	1	8.00	84	0.74
Frame/Roofing. Exterior Finishes	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Frame/Roofing. Exterior Finishes	Welders	1	8.00	46	0.45
Plumbing/Electrical/Drywall	Cranes	1	7.00	231	0.29

Plumbing/Electrical/Drywall	Forklifts	3	8.00	89	0.20
Plumbing/Electrical/Drywall	Generator Sets	1	8.00	84	0.74
Plumbing/Electrical/Drywall	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Plumbing/Electrical/Drywall	Welders	1	8.00	46	0.45
Finishes	Air Compressors	1	6.00	78	0.48

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
Grading and Mass Excavation - Demo On	6	15.00	0.00	2,582.00	10.80	7.30	13.00	LD_Mix	HDT_Mix	HHDT
Grading and Mass Excavation	8	20.00	0.00	32,500.00	10.80	40.00	15.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Below Grade Construction	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Frame/Roofing. Exterior Finishes	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Plumbing/Electrical/Drywall	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Finishes	1	137.00	0.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading and Mass Excavation - Demo Only - 2020

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					0.1310	0.0000	0.1310	0.0198	0.0000	0.0198	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2153	2.1581	1.4140	2.5200e-003		0.1078	0.1078		0.1002	0.1002	0.0000	220.9910	220.9910	0.0624	0.0000	222.5506
Total	**0.2153**	**2.1581**	**1.4140**	**2.5200e-003**	**0.1310**	**0.1078**	**0.2389**	**0.0198**	**0.1002**	**0.1201**	**0.0000**	**220.9910**	**220.9910**	**0.0624**	**0.0000**	**222.5506**

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	7.8100e-003	0.2857	0.0565	7.1000e-004	0.0142	8.1000e-004	0.0151	3.9100e-003	7.8000e-004	4.6900e-003	0.0000	68.3663	68.3663	3.5000e-003	0.0000	68.4539
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	3.2400e-003	2.3300e-003	0.0244	7.0000e-005	7.7300e-003	5.0000e-005	7.7800e-003	2.0600e-003	5.0000e-005	2.1000e-003	0.0000	6.6315	6.6315	1.6000e-004	0.0000	6.6355
Total	**0.0111**	**0.2880**	**0.0809**	**7.8000e-004**	**0.0220**	**8.6000e-004**	**0.0228**	**5.9700e-003**	**8.3000e-004**	**6.7900e-003**	**0.0000**	**74.9978**	**74.9978**	**3.6600e-003**	**0.0000**	**75.0894**

3.2 Grading and Mass Excavation - Demo Only - 2020

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					0.1310	0.0000	0.1310	0.0198	0.0000	0.0198	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2153	2.1581	1.4140	2.5200e-003		0.1078	0.1078		0.1002	0.1002	0.0000	220.9907	220.9907	0.0624	0.0000	222.5503
Total	**0.2153**	**2.1581**	**1.4140**	**2.5200e-003**	**0.1310**	**0.1078**	**0.2389**	**0.0198**	**0.1002**	**0.1201**	**0.0000**	**220.9907**	**220.9907**	**0.0624**	**0.0000**	**222.5503**

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	7.8100e-003	0.2857	0.0565	7.1000e-004	0.0142	8.1000e-004	0.0151	3.9100e-003	7.8000e-004	4.6900e-003	0.0000	68.3663	68.3663	3.5000e-003	0.0000	68.4539
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	3.2400e-003	2.3300e-003	0.0244	7.0000e-005	7.7300e-003	5.0000e-005	7.7800e-003	2.0600e-003	5.0000e-005	2.1000e-003	0.0000	6.6315	6.6315	1.6000e-004	0.0000	6.6355
Total	**0.0111**	**0.2880**	**0.0809**	**7.8000e-004**	**0.0220**	**8.6000e-004**	**0.0228**	**5.9700e-003**	**8.3000e-004**	**6.7900e-003**	**0.0000**	**74.9978**	**74.9978**	**3.6600e-003**	**0.0000**	**75.0894**

3.3 Grading and Mass Excavation - 2020

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					0.4077	0.0000	0.4077	0.2174	0.0000	0.2174	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2893	3.2628	2.0773	4.0300e-003		0.1413	0.1413		0.1300	0.1300	0.0000	354.1479	354.1479	0.1145	0.0000	357.0114
Total	**0.2893**	**3.2628**	**2.0773**	**4.0300e-003**	**0.4077**	**0.1413**	**0.5490**	**0.2174**	**0.1300**	**0.3474**	**0.0000**	**354.1479**	**354.1479**	**0.1145**	**0.0000**	**357.0114**

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	0.1088	3.9156	0.7836	0.0100	0.2067	0.0117	0.2184	0.0568	0.0112	0.0680	0.0000	968.7832	968.7832	0.0477	0.0000	969.9753
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	4.3200e-003	3.1000e-003	0.0325	1.0000e-004	0.0103	7.0000e-005	0.0104	2.7400e-003	6.0000e-005	2.8000e-003	0.0000	8.8419	8.8419	2.2000e-004	0.0000	8.8474
Total	**0.1131**	**3.9187**	**0.8161**	**0.0101**	**0.2170**	**0.0118**	**0.2288**	**0.0596**	**0.0113**	**0.0708**	**0.0000**	**977.6251**	**977.6251**	**0.0479**	**0.0000**	**978.8227**

3.3 Grading and Mass Excavation - 2020

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					0.4077	0.0000	0.4077	0.2174	0.0000	0.2174	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2893	3.2628	2.0773	4.0300e-003		0.1413	0.1413		0.1300	0.1300	0.0000	354.1475	354.1475	0.1145	0.0000	357.0110
Total	**0.2893**	**3.2628**	**2.0773**	**4.0300e-003**	**0.4077**	**0.1413**	**0.5490**	**0.2174**	**0.1300**	**0.3474**	**0.0000**	**354.1475**	**354.1475**	**0.1145**	**0.0000**	**357.0110**

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	0.1088	3.9156	0.7836	0.0100	0.2067	0.0117	0.2184	0.0568	0.0112	0.0680	0.0000	968.7832	968.7832	0.0477	0.0000	969.9753
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	4.3200e-003	3.1000e-003	0.0325	1.0000e-004	0.0103	7.0000e-005	0.0104	2.7400e-003	6.0000e-005	2.8000e-003	0.0000	8.8419	8.8419	2.2000e-004	0.0000	8.8474
Total	**0.1131**	**3.9187**	**0.8161**	**0.0101**	**0.2170**	**0.0118**	**0.2288**	**0.0596**	**0.0113**	**0.0708**	**0.0000**	**977.6251**	**977.6251**	**0.0479**	**0.0000**	**978.8227**

3.4 Site Preparation - 2020

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	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
Off-Road	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
Total	**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**

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	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
Total	**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**

3.4 Site Preparation - 2020

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	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
Off-Road	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
Total	**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**

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	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
Total	**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**

3.5 Below Grade Construction - 2020

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	0.0710	0.6427	0.5644	9.0000e-004		0.0374	0.0374		0.0352	0.0352	0.0000	77.5893	77.5893	0.0189	0.0000	78.0626
Total	**0.0710**	**0.6427**	**0.5644**	**9.0000e-004**		**0.0374**	**0.0374**		**0.0352**	**0.0352**	**0.0000**	**77.5893**	**77.5893**	**0.0189**	**0.0000**	**78.0626**

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	0.0701	1.7017	0.4347	5.9700e-003	0.1709	0.0139	0.1849	0.0494	0.0133	0.0627	0.0000	571.6847	571.6847	0.0160	0.0000	572.0839
Worker	0.0761	0.0547	0.5735	1.7200e-003	0.1817	1.1700e-003	0.1829	0.0483	1.0800e-003	0.0494	0.0000	155.8495	155.8495	3.8200e-003	0.0000	155.9450
Total	**0.1462**	**1.7564**	**1.0081**	**7.6900e-003**	**0.3526**	**0.0151**	**0.3678**	**0.0977**	**0.0144**	**0.1121**	**0.0000**	**727.5342**	**727.5342**	**0.0198**	**0.0000**	**728.0289**

3.5 Below Grade Construction - 2020

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	0.0710	0.6427	0.5644	9.0000e-004		0.0374	0.0374		0.0352	0.0352	0.0000	77.5893	77.5893	0.0189	0.0000	78.0625
Total	**0.0710**	**0.6427**	**0.5644**	**9.0000e-004**		**0.0374**	**0.0374**		**0.0352**	**0.0352**	**0.0000**	**77.5893**	**77.5893**	**0.0189**	**0.0000**	**78.0625**

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	0.0701	1.7017	0.4347	5.9700e-003	0.1709	0.0139	0.1849	0.0494	0.0133	0.0627	0.0000	571.6847	571.6847	0.0160	0.0000	572.0839
Worker	0.0761	0.0547	0.5735	1.7200e-003	0.1817	1.1700e-003	0.1829	0.0483	1.0800e-003	0.0494	0.0000	155.8495	155.8495	3.8200e-003	0.0000	155.9450
Total	**0.1462**	**1.7564**	**1.0081**	**7.6900e-003**	**0.3526**	**0.0151**	**0.3678**	**0.0977**	**0.0144**	**0.1121**	**0.0000**	**727.5342**	**727.5342**	**0.0198**	**0.0000**	**728.0289**

3.5 Below Grade 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	0.0599	0.5491	0.5221	8.5000e-004		0.0302	0.0302		0.0284	0.0284	0.0000	72.9657	72.9657	0.0176	0.0000	73.4058
Total	**0.0599**	**0.5491**	**0.5221**	**8.5000e-004**		**0.0302**	**0.0302**		**0.0284**	**0.0284**	**0.0000**	**72.9657**	**72.9657**	**0.0176**	**0.0000**	**73.4058**

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	0.0511	1.3694	0.3599	5.5600e-003	0.1607	5.0700e-003	0.1658	0.0464	4.8500e-003	0.0513	0.0000	532.6487	532.6487	0.0141	0.0000	533.0020
Worker	0.0664	0.0460	0.4929	1.5600e-003	0.1709	1.0800e-003	0.1720	0.0455	9.9000e-004	0.0464	0.0000	141.4585	141.4585	3.2200e-003	0.0000	141.5389
Total	**0.1175**	**1.4153**	**0.8528**	**7.1200e-003**	**0.3316**	**6.1500e-003**	**0.3378**	**0.0919**	**5.8400e-003**	**0.0977**	**0.0000**	**674.1072**	**674.1072**	**0.0174**	**0.0000**	**674.5409**

3.5 Below Grade Construction - 2021

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	0.0599	0.5491	0.5221	8.5000e-004		0.0302	0.0302		0.0284	0.0284	0.0000	72.9657	72.9657	0.0176	0.0000	73.4057
Total	**0.0599**	**0.5491**	**0.5221**	**8.5000e-004**		**0.0302**	**0.0302**		**0.0284**	**0.0284**	**0.0000**	**72.9657**	**72.9657**	**0.0176**	**0.0000**	**73.4057**

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	0.0511	1.3694	0.3599	5.5600e-003	0.1607	5.0700e-003	0.1658	0.0464	4.8500e-003	0.0513	0.0000	532.6487	532.6487	0.0141	0.0000	533.0020
Worker	0.0664	0.0460	0.4929	1.5600e-003	0.1709	1.0800e-003	0.1720	0.0455	9.9000e-004	0.0464	0.0000	141.4585	141.4585	3.2200e-003	0.0000	141.5389
Total	**0.1175**	**1.4153**	**0.8528**	**7.1200e-003**	**0.3316**	**6.1500e-003**	**0.3378**	**0.0919**	**5.8400e-003**	**0.0977**	**0.0000**	**674.1072**	**674.1072**	**0.0174**	**0.0000**	**674.5409**

3.6 Frame/Roofing. Exterior Finishes - 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	0.1882	1.7258	1.6409	2.6700e-003		0.0949	0.0949		0.0892	0.0892	0.0000	229.3209	229.3209	0.0553	0.0000	230.7040
Total	**0.1882**	**1.7258**	**1.6409**	**2.6700e-003**		**0.0949**	**0.0949**		**0.0892**	**0.0892**	**0.0000**	**229.3209**	**229.3209**	**0.0553**	**0.0000**	**230.7040**

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	0.1607	4.3038	1.1310	0.0175	0.5051	0.0159	0.5210	0.1459	0.0152	0.1611	0.0000	1,674.0389	1,674.0389	0.0444	0.0000	1,675.1491
Worker	0.2086	0.1444	1.5491	4.9200e-003	0.5371	3.3800e-003	0.5405	0.1428	3.1100e-003	0.1460	0.0000	444.5839	444.5839	0.0101	0.0000	444.8366
Total	**0.3693**	**4.4482**	**2.6801**	**0.0224**	**1.0422**	**0.0193**	**1.0615**	**0.2887**	**0.0183**	**0.3071**	**0.0000**	**2,118.6227**	**2,118.6227**	**0.0545**	**0.0000**	**2,119.9858**

3.6 Frame/Roofing. Exterior Finishes - 2021

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	0.1882	1.7258	1.6409	2.6700e-003		0.0949	0.0949		0.0892	0.0892	0.0000	229.3206	229.3206	0.0553	0.0000	230.7038
Total	**0.1882**	**1.7258**	**1.6409**	**2.6700e-003**		**0.0949**	**0.0949**		**0.0892**	**0.0892**	**0.0000**	**229.3206**	**229.3206**	**0.0553**	**0.0000**	**230.7038**

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	0.1607	4.3038	1.1310	0.0175	0.5051	0.0159	0.5210	0.1459	0.0152	0.1611	0.0000	1,674.0389	1,674.0389	0.0444	0.0000	1,675.1491
Worker	0.2086	0.1444	1.5491	4.9200e-003	0.5371	3.3800e-003	0.5405	0.1428	3.1100e-003	0.1460	0.0000	444.5839	444.5839	0.0101	0.0000	444.8366
Total	**0.3693**	**4.4482**	**2.6801**	**0.0224**	**1.0422**	**0.0193**	**1.0615**	**0.2887**	**0.0183**	**0.3071**	**0.0000**	**2,118.6227**	**2,118.6227**	**0.0545**	**0.0000**	**2,119.9858**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	0.1084	0.9916	1.0391	1.7100e-003		0.0514	0.0514		0.0483	0.0483	0.0000	147.1455	147.1455	0.0353	0.0000	148.0268
Total	**0.1084**	**0.9916**	**1.0391**	**1.7100e-003**		**0.0514**	**0.0514**		**0.0483**	**0.0483**	**0.0000**	**147.1455**	**147.1455**	**0.0353**	**0.0000**	**148.0268**

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	0.0968	2.5434	0.6908	0.0111	0.3240	8.9000e-003	0.3329	0.0936	8.5100e-003	0.1021	0.0000	1,063.2871	1,063.2871	0.0277	0.0000	1,063.9804
Worker	0.1249	0.0831	0.9132	3.0400e-003	0.3445	2.1200e-003	0.3466	0.0916	1.9500e-003	0.0936	0.0000	274.8042	274.8042	5.8200e-003	0.0000	274.9496
Total	**0.2217**	**2.6265**	**1.6041**	**0.0141**	**0.6685**	**0.0110**	**0.6795**	**0.1852**	**0.0105**	**0.1957**	**0.0000**	**1,338.0913**	**1,338.0913**	**0.0336**	**0.0000**	**1,338.9300**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	0.1084	0.9916	1.0391	1.7100e-003		0.0514	0.0514		0.0483	0.0483	0.0000	147.1454	147.1454	0.0353	0.0000	148.0267
Total	**0.1084**	**0.9916**	**1.0391**	**1.7100e-003**		**0.0514**	**0.0514**		**0.0483**	**0.0483**	**0.0000**	**147.1454**	**147.1454**	**0.0353**	**0.0000**	**148.0267**

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	0.0968	2.5434	0.6908	0.0111	0.3240	8.9000e-003	0.3329	0.0936	8.5100e-003	0.1021	0.0000	1,063.2871	1,063.2871	0.0277	0.0000	1,063.9804
Worker	0.1249	0.0831	0.9132	3.0400e-003	0.3445	2.1200e-003	0.3466	0.0916	1.9500e-003	0.0936	0.0000	274.8042	274.8042	5.8200e-003	0.0000	274.9496
Total	**0.2217**	**2.6265**	**1.6041**	**0.0141**	**0.6685**	**0.0110**	**0.6795**	**0.1852**	**0.0105**	**0.1957**	**0.0000**	**1,338.0913**	**1,338.0913**	**0.0336**	**0.0000**	**1,338.9300**

3.7 Plumbing/Electrical/Drywall - 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	0.0627	0.5753	0.5470	8.9000e-004		0.0316	0.0316		0.0297	0.0297	0.0000	76.4403	76.4403	0.0184	0.0000	76.9013
Total	**0.0627**	**0.5753**	**0.5470**	**8.9000e-004**		**0.0316**	**0.0316**		**0.0297**	**0.0297**	**0.0000**	**76.4403**	**76.4403**	**0.0184**	**0.0000**	**76.9013**

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	0.0536	1.4346	0.3770	5.8200e-003	0.1684	5.3100e-003	0.1737	0.0486	5.0800e-003	0.0537	0.0000	558.0130	558.0130	0.0148	0.0000	558.3830
Worker	0.0695	0.0482	0.5164	1.6400e-003	0.1790	1.1300e-003	0.1802	0.0476	1.0400e-003	0.0487	0.0000	148.1946	148.1946	3.3700e-003	0.0000	148.2789
Total	**0.1231**	**1.4827**	**0.8934**	**7.4600e-003**	**0.3474**	**6.4400e-003**	**0.3538**	**0.0962**	**6.1200e-003**	**0.1024**	**0.0000**	**706.2076**	**706.2076**	**0.0182**	**0.0000**	**706.6619**

3.7 Plumbing/Electrical/Drywall - 2021

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	0.0627	0.5753	0.5470	8.9000e-004		0.0316	0.0316		0.0297	0.0297	0.0000	76.4402	76.4402	0.0184	0.0000	76.9013
Total	**0.0627**	**0.5753**	**0.5470**	**8.9000e-004**		**0.0316**	**0.0316**		**0.0297**	**0.0297**	**0.0000**	**76.4402**	**76.4402**	**0.0184**	**0.0000**	**76.9013**

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	0.0536	1.4346	0.3770	5.8200e-003	0.1684	5.3100e-003	0.1737	0.0486	5.0800e-003	0.0537	0.0000	558.0130	558.0130	0.0148	0.0000	558.3830
Worker	0.0695	0.0482	0.5164	1.6400e-003	0.1790	1.1300e-003	0.1802	0.0476	1.0400e-003	0.0487	0.0000	148.1946	148.1946	3.3700e-003	0.0000	148.2789
Total	**0.1231**	**1.4827**	**0.8934**	**7.4600e-003**	**0.3474**	**6.4400e-003**	**0.3538**	**0.0962**	**6.1200e-003**	**0.1024**	**0.0000**	**706.2076**	**706.2076**	**0.0182**	**0.0000**	**706.6619**

3.7 Plumbing/Electrical/Drywall - 2022

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	0.2210	2.0222	2.1191	3.4900e-003		0.1048	0.1048		0.0986	0.0986	0.0000	300.0842	300.0842	0.0719	0.0000	301.8815
Total	**0.2210**	**2.0222**	**2.1191**	**3.4900e-003**		**0.1048**	**0.1048**		**0.0986**	**0.0986**	**0.0000**	**300.0842**	**300.0842**	**0.0719**	**0.0000**	**301.8815**

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	0.1974	5.1870	1.4089	0.0226	0.6608	0.0181	0.6789	0.1908	0.0174	0.2082	0.0000	2,168.4359	2,168.4359	0.0566	0.0000	2,169.8497
Worker	0.2547	0.1695	1.8624	6.2000e-003	0.7025	4.3200e-003	0.7069	0.1868	3.9800e-003	0.1908	0.0000	560.4275	560.4275	0.0119	0.0000	560.7240
Total	**0.4520**	**5.3565**	**3.2713**	**0.0288**	**1.3633**	**0.0225**	**1.3858**	**0.3777**	**0.0213**	**0.3990**	**0.0000**	**2,728.8634**	**2,728.8634**	**0.0684**	**0.0000**	**2,730.5737**

3.7 Plumbing/Electrical/Drywall - 2022

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	0.2210	2.0222	2.1191	3.4900e-003		0.1048	0.1048		0.0986	0.0986	0.0000	300.0838	300.0838	0.0719	0.0000	301.8811
Total	**0.2210**	**2.0222**	**2.1191**	**3.4900e-003**		**0.1048**	**0.1048**		**0.0986**	**0.0986**	**0.0000**	**300.0838**	**300.0838**	**0.0719**	**0.0000**	**301.8811**

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	0.1974	5.1870	1.4089	0.0226	0.6608	0.0181	0.6789	0.1908	0.0174	0.2082	0.0000	2,168.4359	2,168.4359	0.0566	0.0000	2,169.8497
Worker	0.2547	0.1695	1.8624	6.2000e-003	0.7025	4.3200e-003	0.7069	0.1868	3.9800e-003	0.1908	0.0000	560.4275	560.4275	0.0119	0.0000	560.7240
Total	**0.4520**	**5.3565**	**3.2713**	**0.0288**	**1.3633**	**0.0225**	**1.3858**	**0.3777**	**0.0213**	**0.3990**	**0.0000**	**2,728.8634**	**2,728.8634**	**0.0684**	**0.0000**	**2,730.5737**

3.8 Finishes - 2022

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	4.2145					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.1380	0.1777	2.9000e-004		8.0100e-003	8.0100e-003		8.0100e-003	8.0100e-003	0.0000	25.0219	25.0219	1.6300e-003	0.0000	25.0626
Total	**4.2346**	**0.1380**	**0.1777**	**2.9000e-004**		**8.0100e-003**	**8.0100e-003**		**8.0100e-003**	**8.0100e-003**	**0.0000**	**25.0219**	**25.0219**	**1.6300e-003**	**0.0000**	**25.0626**

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	0.0386	0.0257	0.2823	9.4000e-004	0.1065	6.6000e-004	0.1071	0.0283	6.0000e-004	0.0289	0.0000	84.9455	84.9455	1.8000e-003	0.0000	84.9904
Total	**0.0386**	**0.0257**	**0.2823**	**9.4000e-004**	**0.1065**	**6.6000e-004**	**0.1071**	**0.0283**	**6.0000e-004**	**0.0289**	**0.0000**	**84.9455**	**84.9455**	**1.8000e-003**	**0.0000**	**84.9904**

3.8 Finishes - 2022

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	4.2145					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.1380	0.1777	2.9000e-004		8.0100e-003	8.0100e-003		8.0100e-003	8.0100e-003	0.0000	25.0219	25.0219	1.6300e-003	0.0000	25.0626
Total	**4.2346**	**0.1380**	**0.1777**	**2.9000e-004**		**8.0100e-003**	**8.0100e-003**		**8.0100e-003**	**8.0100e-003**	**0.0000**	**25.0219**	**25.0219**	**1.6300e-003**	**0.0000**	**25.0626**

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	0.0386	0.0257	0.2823	9.4000e-004	0.1065	6.6000e-004	0.1071	0.0283	6.0000e-004	0.0289	0.0000	84.9455	84.9455	1.8000e-003	0.0000	84.9904
Total	**0.0386**	**0.0257**	**0.2823**	**9.4000e-004**	**0.1065**	**6.6000e-004**	**0.1071**	**0.0283**	**6.0000e-004**	**0.0289**	**0.0000**	**84.9455**	**84.9455**	**1.8000e-003**	**0.0000**	**84.9904**

3.8 Finishes - 2023

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	1.3762					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1300e-003	0.0417	0.0580	1.0000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003	0.0000	8.1704	8.1704	4.9000e-004	0.0000	8.1826
Total	**1.3823**	**0.0417**	**0.0580**	**1.0000e-004**		**2.2700e-003**	**2.2700e-003**		**2.2700e-003**	**2.2700e-003**	**0.0000**	**8.1704**	**8.1704**	**4.9000e-004**	**0.0000**	**8.1826**

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	0.0118	7.5400e-003	0.0848	2.9000e-004	0.0348	2.1000e-004	0.0350	9.2500e-003	1.9000e-004	9.4400e-003	0.0000	26.6837	26.6837	5.3000e-004	0.0000	26.6968
Total	**0.0118**	**7.5400e-003**	**0.0848**	**2.9000e-004**	**0.0348**	**2.1000e-004**	**0.0350**	**9.2500e-003**	**1.9000e-004**	**9.4400e-003**	**0.0000**	**26.6837**	**26.6837**	**5.3000e-004**	**0.0000**	**26.6968**

3.8 Finishes - 2023

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	1.3762					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1300e-003	0.0417	0.0580	1.0000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003	0.0000	8.1704	8.1704	4.9000e-004	0.0000	8.1826
Total	**1.3823**	**0.0417**	**0.0580**	**1.0000e-004**		**2.2700e-003**	**2.2700e-003**		**2.2700e-003**	**2.2700e-003**	**0.0000**	**8.1704**	**8.1704**	**4.9000e-004**	**0.0000**	**8.1826**

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	0.0118	7.5400e-003	0.0848	2.9000e-004	0.0348	2.1000e-004	0.0350	9.2500e-003	1.9000e-004	9.4400e-003	0.0000	26.6837	26.6837	5.3000e-004	0.0000	26.6968
Total	**0.0118**	**7.5400e-003**	**0.0848**	**2.9000e-004**	**0.0348**	**2.1000e-004**	**0.0350**	**9.2500e-003**	**1.9000e-004**	**9.4400e-003**	**0.0000**	**26.6837**	**26.6837**	**5.3000e-004**	**0.0000**	**26.6968**

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	0.7789	2.9324	9.1529	0.0329	3.1422	0.0256	3.1678	0.8411	0.0238	0.8649	0.0000	3,012.6467	3,012.6467	0.0960	0.0000	3,015.0478
Unmitigated	0.7789	2.9324	9.1529	0.0329	3.1422	0.0256	3.1678	0.8411	0.0238	0.8649	0.0000	3,012.6467	3,012.6467	0.0960	0.0000	3,015.0478

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	3,658.76	3,658.76	3658.76	8,450,299	8,450,299
Enclosed Parking with Elevator	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	3,658.76	3,658.76	3,658.76	8,450,299	8,450,299

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
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	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
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
Other Asphalt Surfaces	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	745.0544	745.0544	0.0660	9.1000e-003	749.4141
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	745.0544	745.0544	0.0660	9.1000e-003	749.4141
NaturalGas Mitigated	0.0334	0.2850	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231	0.0000	330.1003	330.1003	6.3300e-003	6.0500e-003	332.0619
NaturalGas Unmitigated	0.0334	0.2850	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231	0.0000	330.1003	330.1003	6.3300e-003	6.0500e-003	332.0619

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					
Apartments Mid Rise	6.18585e+006	0.0334	0.2850	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231	0.0000	330.1003	330.1003	6.3300e-003	6.0500e-003	332.0619
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
Other Asphalt Surfaces	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
Total		**0.0334**	**0.2850**	**0.1213**	**1.8200e-003**		**0.0231**	**0.0231**		**0.0231**	**0.0231**	**0.0000**	**330.1003**	**330.1003**	**6.3300e-003**	**6.0500e-003**	**332.0619**

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					
Apartments Mid Rise	6.18585e+006	0.0334	0.2850	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231	0.0000	330.1003	330.1003	6.3300e-003	6.0500e-003	332.0619
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
Other Asphalt Surfaces	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
Total		**0.0334**	**0.2850**	**0.1213**	**1.8200e-003**		**0.0231**	**0.0231**		**0.0231**	**0.0231**	**0.0000**	**330.1003**	**330.1003**	**6.3300e-003**	**6.0500e-003**	**332.0619**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	2.9559e+006	439.2373	0.0389	5.3600e-003	441.8075
Enclosed Parking with Elevator	2.05803e+006	305.8171	0.0271	3.7300e-003	307.6066
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**745.0543**	**0.0660**	**9.0900e-003**	**749.4141**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	2.9559e+006	439.2373	0.0389	5.3600e-003	441.8075
Enclosed Parking with Elevator	2.05803e+006	305.8171	0.0271	3.7300e-003	307.6066
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**745.0543**	**0.0660**	**9.0900e-003**	**749.4141**

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	3.8043	0.0861	5.3366	4.4000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	37.3040	37.3040	8.9400e-003	5.2000e-004	37.6838
Unmitigated	3.8043	0.0861	5.3366	4.4000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	37.3040	37.3040	8.9400e-003	5.2000e-004	37.6838

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	0.5591					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0813					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.8900e-003	0.0247	0.0105	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	28.6032	28.6032	5.5000e-004	5.2000e-004	28.7732
Landscaping	0.1610	0.0614	5.3261	2.8000e-004		0.0295	0.0295		0.0295	0.0295	0.0000	8.7008	8.7008	8.3900e-003	0.0000	8.9106
Total	**3.8043**	**0.0861**	**5.3366**	**4.4000e-004**		**0.0315**	**0.0315**		**0.0315**	**0.0315**	**0.0000**	**37.3040**	**37.3040**	**8.9400e-003**	**5.2000e-004**	**37.6838**

6.2 Area by SubCategory

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	0.5591					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0813					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.8900e-003	0.0247	0.0105	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	28.6032	28.6032	5.5000e-004	5.2000e-004	28.7732
Landscaping	0.1610	0.0614	5.3261	2.8000e-004		0.0295	0.0295		0.0295	0.0295	0.0000	8.7008	8.7008	8.3900e-003	0.0000	8.9106
Total	**3.8043**	**0.0861**	**5.3366**	**4.4000e-004**		**0.0315**	**0.0315**		**0.0315**	**0.0315**	**0.0000**	**37.3040**	**37.3040**	**8.9400e-003**	**5.2000e-004**	**37.6838**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	67.6053	1.5248	0.0365	116.6129
Unmitigated	67.6053	1.5248	0.0365	116.6129

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	46.6503 / 29.41	67.6053	1.5248	0.0365	116.6129
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**67.6053**	**1.5248**	**0.0365**	**116.6129**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	46.6503 / 29.41	67.6053	1.5248	0.0365	116.6129
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**67.6053**	**1.5248**	**0.0365**	**116.6129**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	66.8571	3.9511	0.0000	165.6356
Unmitigated	66.8571	3.9511	0.0000	165.6356

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	329.36	66.8571	3.9511	0.0000	165.6356
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**66.8571**	**3.9511**	**0.0000**	**165.6356**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	329.36	66.8571	3.9511	0.0000	165.6356
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**66.8571**	**3.9511**	**0.0000**	**165.6356**

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

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	209.5680	0.0000	0.0000	209.5680

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	296	209.5680	0.0000	0.0000	209.5680
Total		**209.5680**	**0.0000**	**0.0000**	**209.5680**

777 Middlefield

Santa Clara County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	878.00	Space	7.90	351,200.00	0
Other Asphalt Surfaces	49.00	1000sqft	1.12	49,000.00	0
Apartments Mid Rise	716.00	Dwelling Unit	9.84	782,341.00	2048

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)	327.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

777 Middlefield - Santa Clara County, Summer

Project Characteristics - per the DEIR's CalEEMod modeling

Land Use - residential land use size changed to reflect the DEIR

Construction Phase - Contruction schedule per the DEIR

Trips and VMT - hauling trips and distances based of DEIR's CalEEMod modeling

Demolition -

Grading - project site size

Vehicle Trips - Per the DEIR's CalEEMod modeling

Woodstoves - per the DEIR's CalEEMod modeling

Sequestration -

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	260.00
tblConstructionPhase	NumDays	300.00	130.00
tblConstructionPhase	NumDays	300.00	325.00
tblConstructionPhase	NumDays	300.00	325.00
tblConstructionPhase	NumDays	20.00	130.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	10.00	0.00
tblFireplaces	NumberGas	107.40	229.12
tblFireplaces	NumberWood	121.72	0.00
tblGrading	AcresOfGrading	325.00	9.84
tblGrading	MaterialExported	0.00	195,000.00
tblLandUse	LandUseSquareFeet	716,000.00	782,341.00
tblLandUse	LotAcreage	18.84	9.84
tblProjectCharacteristics	CO2IntensityFactor	641.35	327.6
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004

tblSequestration	NumberOfNewTrees	0.00	296.00
tblTripsAndVMT	HaulingTripLength	20.00	13.00
tblTripsAndVMT	HaulingTripLength	20.00	15.00
tblTripsAndVMT	HaulingTripNumber	1,211.00	2,582.00
tblTripsAndVMT	HaulingTripNumber	24,375.00	32,500.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblVehicleTrips	ST_TR	6.39	5.11
tblVehicleTrips	SU_TR	5.86	5.11
tblVehicleTrips	WD_TR	6.65	5.11
tblWoodstoves	NumberCatalytic	14.32	0.00
tblWoodstoves	NumberNoncatalytic	14.32	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2020	13.1340	184.6067	90.0627	0.3210	14.4441	4.0253	20.1412	5.0863	3.7261	10.3668	0.0000	32,826.9707	32,826.9707	4.9730	0.0000	32,951.2955
2021	11.4298	121.8920	90.1672	0.5142	21.7405	2.3064	24.0469	6.0008	2.1723	8.1731	0.0000	53,116.6524	53,116.6524	2.4532	0.0000	53,177.9826
2022	59.4340	168.7316	133.9282	0.7734	33.7372	2.0526	36.7718	9.3000	1.9389	12.1645	0.0000	79,860.5339	79,860.5339	3.6318	0.0000	79,951.3290
2023	43.5812	1.5140	4.7455	0.0129	1.1254	0.0774	1.2028	0.2985	0.0769	0.3754	0.0000	1,269.5106	1,269.5106	0.0364	0.0000	1,270.4197
Maximum	**59.4340**	**184.6067**	**133.9282**	**0.7734**	**33.7372**	**4.0253**	**36.7718**	**9.3000**	**3.7261**	**12.1645**	**0.0000**	**79,860.5339**	**79,860.5339**	**4.9730**	**0.0000**	**79,951.3290**

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2020	13.1340	184.6067	90.0627	0.3210	14.4441	4.0253	20.1412	5.0863	3.7261	10.3668	0.0000	32,826.9707	32,826.9707	4.9730	0.0000	32,951.2955
2021	11.4298	121.8920	90.1672	0.5142	21.7405	2.3064	24.0469	6.0008	2.1723	8.1731	0.0000	53,116.6524	53,116.6524	2.4532	0.0000	53,177.9826
2022	59.4340	168.7316	133.9282	0.7734	33.7372	2.0526	36.7718	9.3000	1.9389	12.1645	0.0000	79,860.5339	79,860.5339	3.6318	0.0000	79,951.3290
2023	43.5812	1.5140	4.7455	0.0129	1.1254	0.0774	1.2028	0.2985	0.0769	0.3754	0.0000	1,269.5106	1,269.5106	0.0364	0.0000	1,270.4197
Maximum	**59.4340**	**184.6067**	**133.9282**	**0.7734**	**33.7372**	**4.0253**	**36.7718**	**9.3000**	**3.7261**	**12.1645**	**0.0000**	**79,860.5339**	**79,860.5339**	**4.9730**	**0.0000**	**79,951.3290**

	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**

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	lb/day										lb/day					
Area	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866
Energy	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
Mobile	4.9356	15.5843	52.9562	0.1916	17.8745	0.1404	18.0149	4.7710	0.1308	4.9018		19,340.6694	19,340.6694	0.5896		19,355.4088
Total	**27.3733**	**22.2622**	**114.6864**	**0.2330**	**17.8745**	**0.9526**	**18.8271**	**4.7710**	**0.9429**	**5.7139**	**0.0000**	**27,101.6738**	**27,101.6738**	**0.8391**	**0.1403**	**27,164.4700**

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	lb/day										lb/day					
Area	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866
Energy	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
Mobile	4.9356	15.5843	52.9562	0.1916	17.8745	0.1404	18.0149	4.7710	0.1308	4.9018		19,340.6694	19,340.6694	0.5896		19,355.4088
Total	**27.3733**	**22.2622**	**114.6864**	**0.2330**	**17.8745**	**0.9526**	**18.8271**	**4.7710**	**0.9429**	**5.7139**	**0.0000**	**27,101.6738**	**27,101.6738**	**0.8391**	**0.1403**	**27,164.4700**

	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	Grading and Mass Excavation - Demo Only	Demolition	4/1/2020	9/29/2020	5	130	
2	Grading and Mass Excavation	Grading	4/1/2020	9/29/2020	5	130	
3	Site Preparation	Site Preparation	4/29/2020	4/28/2020	5	0	
4	Below Grade Construction	Building Construction	9/30/2020	3/30/2021	5	130	
5	Frame/Roofing. Exterior Finishes	Building Construction	3/31/2021	6/28/2022	5	325	
6	Plumbing/Electrical/Drywall	Building Construction	10/1/2021	12/29/2022	5	325	
7	Finishes	Architectural Coating	4/1/2022	3/30/2023	5	260	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 9.02

Residential Indoor: 1,584,241; Residential Outdoor: 528,080; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 24,012 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading and Mass Excavation - Demo Only	Concrete/Industrial Saws	1	8.00	81	0.73
Grading and Mass Excavation - Demo Only	Excavators	3	8.00	158	0.38

Grading and Mass Excavation - Demo Only	Rubber Tired Dozers	2	8.00	247	0.40
Grading and Mass Excavation	Excavators	2	8.00	158	0.38
Grading and Mass Excavation	Graders	1	8.00	187	0.41
Grading and Mass Excavation	Rubber Tired Dozers	1	8.00	247	0.40
Grading and Mass Excavation	Scrapers	2	8.00	367	0.48
Grading and Mass Excavation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Below Grade Construction	Cranes	1	7.00	231	0.29
Below Grade Construction	Forklifts	3	8.00	89	0.20
Below Grade Construction	Generator Sets	1	8.00	84	0.74
Below Grade Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Below Grade Construction	Welders	1	8.00	46	0.45
Frame/Roofing. Exterior Finishes	Cranes	1	7.00	231	0.29
Frame/Roofing. Exterior Finishes	Forklifts	3	8.00	89	0.20
Frame/Roofing. Exterior Finishes	Generator Sets	1	8.00	84	0.74
Frame/Roofing. Exterior Finishes	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Frame/Roofing. Exterior Finishes	Welders	1	8.00	46	0.45
Plumbing/Electrical/Drywall	Cranes	1	7.00	231	0.29
Plumbing/Electrical/Drywall	Forklifts	3	8.00	89	0.20
Plumbing/Electrical/Drywall	Generator Sets	1	8.00	84	0.74
Plumbing/Electrical/Drywall	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Plumbing/Electrical/Drywall	Welders	1	8.00	46	0.45
Finishes	Air Compressors	1	6.00	78	0.48

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
Grading and Mass Excavation - Demo On	6	15.00	0.00	2,582.00	10.80	7.30	13.00	LD_Mix	HDT_Mix	HHDT
Grading and Mass Excavation	8	20.00	0.00	32,500.00	10.80	40.00	15.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Below Grade Construction	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Frame/Roofing. Exterior Finishes	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Plumbing/Electrical/Drywall	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Finishes	1	137.00	0.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading and Mass Excavation - Demo Only - 2020

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	lb/day										lb/day					
Fugitive Dust					2.0158	0.0000	2.0158	0.3052	0.0000	0.3052			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419		3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**2.0158**	**1.6587**	**3.6745**	**0.3052**	**1.5419**	**1.8471**		**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Grading and Mass Excavation - Demo Only - 2020

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	lb/day										lb/day					
Hauling	0.1182	4.3299	0.8289	0.0110	0.2258	0.0124	0.2382	0.0619	0.0119	0.0738		1,171.3722	1,171.3722	0.0578		1,172.8180
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
Worker	0.0521	0.0320	0.4126	1.2100e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		120.9010	120.9010	2.9600e-003		120.9749
Total	**0.1703**	**4.3619**	**1.2415**	**0.0122**	**0.3490**	**0.0132**	**0.3622**	**0.0946**	**0.0126**	**0.1072**		**1,292.2732**	**1,292.2732**	**0.0608**		**1,293.7930**

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	lb/day										lb/day					
Fugitive Dust					2.0158	0.0000	2.0158	0.3052	0.0000	0.3052			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419	0.0000	3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**2.0158**	**1.6587**	**3.6745**	**0.3052**	**1.5419**	**1.8471**	**0.0000**	**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Grading and Mass Excavation - Demo Only - 2020

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	lb/day										lb/day					
Hauling	0.1182	4.3299	0.8289	0.0110	0.2258	0.0124	0.2382	0.0619	0.0119	0.0738		1,171.3722	1,171.3722	0.0578		1,172.8180
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
Worker	0.0521	0.0320	0.4126	1.2100e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		120.9010	120.9010	2.9600e-003		120.9749
Total	**0.1703**	**4.3619**	**1.2415**	**0.0122**	**0.3490**	**0.0132**	**0.3622**	**0.0946**	**0.0126**	**0.1072**		**1,292.2732**	**1,292.2732**	**0.0608**		**1,293.7930**

3.3 Grading and Mass Excavation - 2020

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	lb/day										lb/day					
Fugitive Dust					6.2720	0.0000	6.2720	3.3446	0.0000	3.3446			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.2720**	**2.1739**	**8.4459**	**3.3446**	**2.0000**	**5.3446**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.3 Grading and Mass Excavation - 2020

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	lb/day										lb/day					
Hauling	1.6495	59.2407	11.5650	0.1554	3.2782	0.1785	3.4566	0.8986	0.1707	1.0693		16,579.9479	16,579.9479	0.7892		16,599.6767
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
Worker	0.0695	0.0427	0.5501	1.6200e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		161.2013	161.2013	3.9400e-003		161.2999
Total	**1.7190**	**59.2834**	**12.1151**	**0.1570**	**3.4425**	**0.1795**	**3.6220**	**0.9422**	**0.1717**	**1.1138**		**16,741.1492**	**16,741.1492**	**0.7931**		**16,760.9766**

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	lb/day										lb/day					
Fugitive Dust					6.2720	0.0000	6.2720	3.3446	0.0000	3.3446			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.2720**	**2.1739**	**8.4459**	**3.3446**	**2.0000**	**5.3446**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.3 Grading and Mass Excavation - 2020

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	lb/day										lb/day					
Hauling	1.6495	59.2407	11.5650	0.1554	3.2782	0.1785	3.4566	0.8986	0.1707	1.0693		16,579.9479	16,579.9479	0.7892		16,599.6767
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
Worker	0.0695	0.0427	0.5501	1.6200e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		161.2013	161.2013	3.9400e-003		161.2999
Total	**1.7190**	**59.2834**	**12.1151**	**0.1570**	**3.4425**	**0.1795**	**3.6220**	**0.9422**	**0.1717**	**1.1138**		**16,741.1492**	**16,741.1492**	**0.7931**		**16,760.9766**

3.4 Site Preparation - 2020

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	lb/day										lb/day					
Fugitive Dust	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
Off-Road	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
Total	**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**

3.4 Site Preparation - 2020

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	lb/day										lb/day					
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	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
Total	**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**

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	lb/day										lb/day					
Fugitive Dust	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
Off-Road	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
Total	**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**

3.4 Site Preparation - 2020

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	lb/day										lb/day					
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	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
Total	**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**

3.5 Below Grade Construction - 2020

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	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Below Grade Construction - 2020

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	lb/day										lb/day					
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
Vendor	2.0795	49.2701	12.8188	0.1785	5.2510	0.4156	5.6666	1.5099	0.3976	1.9075		18,855.3072	18,855.3072	0.5205		18,868.3189
Worker	2.3775	1.4599	18.8123	0.0553	5.6189	0.0351	5.6540	1.4904	0.0323	1.5227		5,513.0837	5,513.0837	0.1349		5,516.4567
Total	**4.4570**	**50.7300**	**31.6311**	**0.2338**	**10.8699**	**0.4507**	**11.3206**	**3.0003**	**0.4299**	**3.4302**		**24,368.3909**	**24,368.3909**	**0.6554**		**24,384.7755**

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	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Below Grade Construction - 2020

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	lb/day										lb/day					
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
Vendor	2.0795	49.2701	12.8188	0.1785	5.2510	0.4156	5.6666	1.5099	0.3976	1.9075		18,855.3072	18,855.3072	0.5205		18,868.3189
Worker	2.3775	1.4599	18.8123	0.0553	5.6189	0.0351	5.6540	1.4904	0.0323	1.5227		5,513.0837	5,513.0837	0.1349		5,516.4567
Total	**4.4570**	**50.7300**	**31.6311**	**0.2338**	**10.8699**	**0.4507**	**11.3206**	**3.0003**	**0.4299**	**3.4302**		**24,368.3909**	**24,368.3909**	**0.6554**		**24,384.7755**

3.5 Below Grade 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Below Grade Construction - 2021

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	lb/day										lb/day					
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
Vendor	1.6114	42.2089	11.2716	0.1768	5.2513	0.1605	5.4118	1.5100	0.1535	1.6635		18,683.3679	18,683.3679	0.4897		18,695.6100
Worker	2.2026	1.3050	17.2368	0.0534	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		5,321.5944	5,321.5944	0.1209		5,324.6171
Total	**3.8140**	**43.5139**	**28.5084**	**0.2302**	**10.8702**	**0.1946**	**11.0648**	**3.0004**	**0.1849**	**3.1853**		**24,004.9623**	**24,004.9623**	**0.6106**		**24,020.2271**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Below Grade Construction - 2021

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	lb/day										lb/day					
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
Vendor	1.6114	42.2089	11.2716	0.1768	5.2513	0.1605	5.4118	1.5100	0.1535	1.6635		18,683.3679	18,683.3679	0.4897		18,695.6100
Worker	2.2026	1.3050	17.2368	0.0534	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		5,321.5944	5,321.5944	0.1209		5,324.6171
Total	**3.8140**	**43.5139**	**28.5084**	**0.2302**	**10.8702**	**0.1946**	**11.0648**	**3.0004**	**0.1849**	**3.1853**		**24,004.9623**	**24,004.9623**	**0.6106**		**24,020.2271**

3.6 Frame/Roofing. Exterior Finishes - 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 Frame/Roofing. Exterior Finishes - 2021

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	lb/day										lb/day					
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
Vendor	1.6114	42.2089	11.2716	0.1768	5.2513	0.1605	5.4118	1.5100	0.1535	1.6635		18,683.3679	18,683.3679	0.4897		18,695.6100
Worker	2.2026	1.3050	17.2368	0.0534	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		5,321.5944	5,321.5944	0.1209		5,324.6171
Total	**3.8140**	**43.5139**	**28.5084**	**0.2302**	**10.8702**	**0.1946**	**11.0648**	**3.0004**	**0.1849**	**3.1853**		**24,004.9623**	**24,004.9623**	**0.6106**		**24,020.2271**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 Frame/Roofing. Exterior Finishes - 2021

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	lb/day										lb/day					
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
Vendor	1.6114	42.2089	11.2716	0.1768	5.2513	0.1605	5.4118	1.5100	0.1535	1.6635		18,683.3679	18,683.3679	0.4897		18,695.6100
Worker	2.2026	1.3050	17.2368	0.0534	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		5,321.5944	5,321.5944	0.1209		5,324.6171
Total	**3.8140**	**43.5139**	**28.5084**	**0.2302**	**10.8702**	**0.1946**	**11.0648**	**3.0004**	**0.1849**	**3.1853**		**24,004.9623**	**24,004.9623**	**0.6106**		**24,020.2271**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	lb/day										lb/day					
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
Vendor	1.5123	38.9094	10.7310	0.1750	5.2517	0.1397	5.3914	1.5101	0.1336	1.6437		18,501.5658	18,501.5658	0.4767		18,513.4836
Worker	2.0525	1.1711	15.8834	0.0514	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		5,128.0901	5,128.0901	0.1086		5,130.8048
Total	**3.5648**	**40.0805**	**26.6144**	**0.2264**	**10.8706**	**0.1731**	**11.0437**	**3.0005**	**0.1644**	**3.1649**		**23,629.6559**	**23,629.6559**	**0.5853**		**23,644.2884**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	lb/day										lb/day					
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
Vendor	1.5123	38.9094	10.7310	0.1750	5.2517	0.1397	5.3914	1.5101	0.1336	1.6437		18,501.5658	18,501.5658	0.4767		18,513.4836
Worker	2.0525	1.1711	15.8834	0.0514	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		5,128.0901	5,128.0901	0.1086		5,130.8048
Total	**3.5648**	**40.0805**	**26.6144**	**0.2264**	**10.8706**	**0.1731**	**11.0437**	**3.0005**	**0.1644**	**3.1649**		**23,629.6559**	**23,629.6559**	**0.5853**		**23,644.2884**

3.7 Plumbing/Electrical/Drywall - 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.7 Plumbing/Electrical/Drywall - 2021

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	lb/day										lb/day					
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
Vendor	1.6114	42.2089	11.2716	0.1768	5.2513	0.1605	5.4118	1.5100	0.1535	1.6635		18,683.3679	18,683.3679	0.4897		18,695.6100
Worker	2.2026	1.3050	17.2368	0.0534	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		5,321.5944	5,321.5944	0.1209		5,324.6171
Total	**3.8140**	**43.5139**	**28.5084**	**0.2302**	**10.8702**	**0.1946**	**11.0648**	**3.0004**	**0.1849**	**3.1853**		**24,004.9623**	**24,004.9623**	**0.6106**		**24,020.2271**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.7 Plumbing/Electrical/Drywall - 2021

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	lb/day										lb/day					
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
Vendor	1.6114	42.2089	11.2716	0.1768	5.2513	0.1605	5.4118	1.5100	0.1535	1.6635		18,683.3679	18,683.3679	0.4897		18,695.6100
Worker	2.2026	1.3050	17.2368	0.0534	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		5,321.5944	5,321.5944	0.1209		5,324.6171
Total	**3.8140**	**43.5139**	**28.5084**	**0.2302**	**10.8702**	**0.1946**	**11.0648**	**3.0004**	**0.1849**	**3.1853**		**24,004.9623**	**24,004.9623**	**0.6106**		**24,020.2271**

3.7 Plumbing/Electrical/Drywall - 2022

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.7 Plumbing/Electrical/Drywall - 2022

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	lb/day										lb/day					
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
Vendor	1.5123	38.9094	10.7310	0.1750	5.2517	0.1397	5.3914	1.5101	0.1336	1.6437		18,501.5658	18,501.5658	0.4767		18,513.4836
Worker	2.0525	1.1711	15.8834	0.0514	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		5,128.0901	5,128.0901	0.1086		5,130.8048
Total	**3.5648**	**40.0805**	**26.6144**	**0.2264**	**10.8706**	**0.1731**	**11.0437**	**3.0005**	**0.1644**	**3.1649**		**23,629.6559**	**23,629.6559**	**0.5853**		**23,644.2884**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.7 Plumbing/Electrical/Drywall - 2022

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	lb/day										lb/day					
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
Vendor	1.5123	38.9094	10.7310	0.1750	5.2517	0.1397	5.3914	1.5101	0.1336	1.6437		18,501.5658	18,501.5658	0.4767		18,513.4836
Worker	2.0525	1.1711	15.8834	0.0514	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		5,128.0901	5,128.0901	0.1086		5,130.8048
Total	**3.5648**	**40.0805**	**26.6144**	**0.2264**	**10.8706**	**0.1731**	**11.0437**	**3.0005**	**0.1644**	**3.1649**		**23,629.6559**	**23,629.6559**	**0.5853**		**23,644.2884**

3.8 Finishes - 2022

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**43.2098**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.8 Finishes - 2022

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	lb/day										lb/day					
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
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
Worker	0.4111	0.2346	3.1813	0.0103	1.1254	6.6900e-003	1.1321	0.2985	6.1600e-003	0.3047		1,027.1175	1,027.1175	0.0218		1,027.6612
Total	**0.4111**	**0.2346**	**3.1813**	**0.0103**	**1.1254**	**6.6900e-003**	**1.1321**	**0.2985**	**6.1600e-003**	**0.3047**		**1,027.1175**	**1,027.1175**	**0.0218**		**1,027.6612**

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**43.2098**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.8 Finishes - 2022

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	lb/day										lb/day					
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
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
Worker	0.4111	0.2346	3.1813	0.0103	1.1254	6.6900e-003	1.1321	0.2985	6.1600e-003	0.3047		1,027.1175	1,027.1175	0.0218		1,027.6612
Total	**0.4111**	**0.2346**	**3.1813**	**0.0103**	**1.1254**	**6.6900e-003**	**1.1321**	**0.2985**	**6.1600e-003**	**0.3047**		**1,027.1175**	**1,027.1175**	**0.0218**		**1,027.6612**

3.8 Finishes - 2023

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**43.1970**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Finishes - 2023

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	lb/day										lb/day					
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
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
Worker	0.3843	0.2111	2.9344	9.9100e-003	1.1254	6.5600e-003	1.1320	0.2985	6.0300e-003	0.3046		988.0626	988.0626	0.0195		988.5507
Total	**0.3843**	**0.2111**	**2.9344**	**9.9100e-003**	**1.1254**	**6.5600e-003**	**1.1320**	**0.2985**	**6.0300e-003**	**0.3046**		**988.0626**	**988.0626**	**0.0195**		**988.5507**

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**43.1970**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Finishes - 2023

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	lb/day										lb/day					
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
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
Worker	0.3843	0.2111	2.9344	9.9100e-003	1.1254	6.5600e-003	1.1320	0.2985	6.0300e-003	0.3046		988.0626	988.0626	0.0195		988.5507
Total	**0.3843**	**0.2111**	**2.9344**	**9.9100e-003**	**1.1254**	**6.5600e-003**	**1.1320**	**0.2985**	**6.0300e-003**	**0.3046**		**988.0626**	**988.0626**	**0.0195**		**988.5507**

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	lb/day										lb/day					
Mitigated	4.9356	15.5843	52.9562	0.1916	17.8745	0.1404	18.0149	4.7710	0.1308	4.9018		19,340.6694	19,340.6694	0.5896		19,355.4088
Unmitigated	4.9356	15.5843	52.9562	0.1916	17.8745	0.1404	18.0149	4.7710	0.1308	4.9018		19,340.6694	19,340.6694	0.5896		19,355.4088

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	3,658.76	3,658.76	3658.76	8,450,299	8,450,299
Enclosed Parking with Elevator	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	3,658.76	3,658.76	3,658.76	8,450,299	8,450,299

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
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	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
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
Other Asphalt Surfaces	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	lb/day										lb/day					
NaturalGas Mitigated	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
NaturalGas Unmitigated	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747

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	lb/day										lb/day					
Apartments Mid Rise	16947.5	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
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
Other Asphalt Surfaces	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
Total		**0.1828**	**1.5618**	**0.6646**	**9.9700e-003**		**0.1263**	**0.1263**		**0.1263**	**0.1263**		**1,993.8263**	**1,993.8263**	**0.0382**	**0.0366**	**2,005.6747**

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	lb/day										lb/day					
Apartments Mid Rise	16.9475	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
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
Other Asphalt Surfaces	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
Total		**0.1828**	**1.5618**	**0.6646**	**9.9700e-003**		**0.1263**	**0.1263**		**0.1263**	**0.1263**		**1,993.8263**	**1,993.8263**	**0.0382**	**0.0366**	**2,005.6747**

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	lb/day										lb/day					
Mitigated	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866
Unmitigated	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866

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	lb/day										lb/day					
Architectural Coating	3.0634					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.8839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5189	4.4342	1.8869	0.0283		0.3585	0.3585		0.3585	0.3585	0.0000	5,660.6118	5,660.6118	0.1085	0.1038	5,694.2500
Landscaping	1.7888	0.6819	59.1787	3.1300e-003		0.3274	0.3274		0.3274	0.3274		106.5663	106.5663	0.1028		109.1367
Total	**22.2549**	**5.1161**	**61.0656**	**0.0314**		**0.6859**	**0.6859**		**0.6859**	**0.6859**	**0.0000**	**5,767.1781**	**5,767.1781**	**0.2113**	**0.1038**	**5,803.3866**

6.2 Area by SubCategory

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	lb/day										lb/day					
Architectural Coating	3.0634					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.8839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5189	4.4342	1.8869	0.0283		0.3585	0.3585		0.3585	0.3585	0.0000	5,660.6118	5,660.6118	0.1085	0.1038	5,694.2500
Landscaping	1.7888	0.6819	59.1787	3.1300e-003		0.3274	0.3274		0.3274	0.3274		106.5663	106.5663	0.1028		109.1367
Total	**22.2549**	**5.1161**	**61.0656**	**0.0314**		**0.6859**	**0.6859**		**0.6859**	**0.6859**	**0.0000**	**5,767.1781**	**5,767.1781**	**0.2113**	**0.1038**	**5,803.3866**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

777 Middlefield

Santa Clara County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	878.00	Space	7.90	351,200.00	0
Other Asphalt Surfaces	49.00	1000sqft	1.12	49,000.00	0
Apartments Mid Rise	716.00	Dwelling Unit	9.84	782,341.00	2048

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)	327.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

777 Middlefield - Santa Clara County, Winter

Project Characteristics - per the DEIR's CalEEMod modeling

Land Use - residential land use size changed to reflect the DEIR

Construction Phase - Contruction schedule per the DEIR

Trips and VMT - hauling trips and distances based of DEIR's CalEEMod modeling

Demolition -

Grading - project site size

Vehicle Trips - Per the DEIR's CalEEMod modeling

Woodstoves - per the DEIR's CalEEMod modeling

Sequestration -

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	260.00
tblConstructionPhase	NumDays	300.00	130.00
tblConstructionPhase	NumDays	300.00	325.00
tblConstructionPhase	NumDays	300.00	325.00
tblConstructionPhase	NumDays	20.00	130.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	10.00	0.00
tblFireplaces	NumberGas	107.40	229.12
tblFireplaces	NumberWood	121.72	0.00
tblGrading	AcresOfGrading	325.00	9.84
tblGrading	MaterialExported	0.00	195,000.00
tblLandUse	LandUseSquareFeet	716,000.00	782,341.00
tblLandUse	LotAcreage	18.84	9.84
tblProjectCharacteristics	CO2IntensityFactor	641.35	327.6
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004

tblSequestration	NumberOfNewTrees	0.00	296.00
tblTripsAndVMT	HaulingTripLength	20.00	13.00
tblTripsAndVMT	HaulingTripLength	20.00	15.00
tblTripsAndVMT	HaulingTripNumber	1,211.00	2,582.00
tblTripsAndVMT	HaulingTripNumber	24,375.00	32,500.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblTripsAndVMT	VendorTripLength	7.30	40.00
tblVehicleTrips	ST_TR	6.39	5.11
tblVehicleTrips	SU_TR	5.86	5.11
tblVehicleTrips	WD_TR	6.65	5.11
tblWoodstoves	NumberCatalytic	14.32	0.00
tblWoodstoves	NumberNoncatalytic	14.32	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2020	13.2114	185.8362	91.2886	0.3168	14.4441	4.0294	20.1456	5.0863	3.7300	10.3710	0.0000	32,378.3600	32,378.3600	5.0241	0.0000	32,503.9634
2021	11.8052	125.9134	88.2480	0.5036	21.7405	2.3085	24.0489	6.0008	2.1743	8.1751	0.0000	52,042.7858	52,042.7858	2.4585	0.0000	52,104.2496
2022	60.0084	174.2250	130.8884	0.7570	33.7372	2.0545	36.7747	9.3000	1.9407	12.1672	0.0000	78,215.1079	78,215.1079	3.6389	0.0000	78,306.0795
2023	43.6090	1.5605	4.4983	0.0121	1.1254	0.0774	1.2028	0.2985	0.0769	0.3754	0.0000	1,189.2786	1,189.2786	0.0349	0.0000	1,190.1498
Maximum	**60.0084**	**185.8362**	**130.8884**	**0.7570**	**33.7372**	**4.0294**	**36.7747**	**9.3000**	**3.7300**	**12.1672**	**0.0000**	**78,215.1079**	**78,215.1079**	**5.0241**	**0.0000**	**78,306.0795**

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2020	13.2114	185.8362	91.2886	0.3168	14.4441	4.0294	20.1456	5.0863	3.7300	10.3710	0.0000	32,378.3600	32,378.3600	5.0241	0.0000	32,503.9634
2021	11.8052	125.9134	88.2480	0.5036	21.7405	2.3085	24.0489	6.0008	2.1743	8.1751	0.0000	52,042.7858	52,042.7858	2.4585	0.0000	52,104.2496
2022	60.0084	174.2250	130.8884	0.7570	33.7372	2.0545	36.7747	9.3000	1.9407	12.1672	0.0000	78,215.1079	78,215.1079	3.6389	0.0000	78,306.0795
2023	43.6090	1.5605	4.4983	0.0121	1.1254	0.0774	1.2028	0.2985	0.0769	0.3754	0.0000	1,189.2786	1,189.2786	0.0349	0.0000	1,190.1498
Maximum	**60.0084**	**185.8362**	**130.8884**	**0.7570**	**33.7372**	**4.0294**	**36.7747**	**9.3000**	**3.7300**	**12.1672**	**0.0000**	**78,215.1079**	**78,215.1079**	**5.0241**	**0.0000**	**78,306.0795**

	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**

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	lb/day										lb/day					
Area	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866
Energy	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
Mobile	4.2432	16.4743	52.2548	0.1786	17.8745	0.1410	18.0155	4.7710	0.1313	4.9023		18,035.2477	18,035.2477	0.5940		18,050.0979
Total	**26.6809**	**23.1522**	**113.9850**	**0.2200**	**17.8745**	**0.9531**	**18.8276**	**4.7710**	**0.9435**	**5.7144**	**0.0000**	**25,796.2522**	**25,796.2522**	**0.8435**	**0.1403**	**25,859.1592**

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	lb/day										lb/day					
Area	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866
Energy	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
Mobile	4.2432	16.4743	52.2548	0.1786	17.8745	0.1410	18.0155	4.7710	0.1313	4.9023		18,035.2477	18,035.2477	0.5940		18,050.0979
Total	**26.6809**	**23.1522**	**113.9850**	**0.2200**	**17.8745**	**0.9531**	**18.8276**	**4.7710**	**0.9435**	**5.7144**	**0.0000**	**25,796.2522**	**25,796.2522**	**0.8435**	**0.1403**	**25,859.1592**

	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	Grading and Mass Excavation - Demo Only	Demolition	4/1/2020	9/29/2020	5	130	
2	Grading and Mass Excavation	Grading	4/1/2020	9/29/2020	5	130	
3	Site Preparation	Site Preparation	4/29/2020	4/28/2020	5	0	
4	Below Grade Construction	Building Construction	9/30/2020	3/30/2021	5	130	
5	Frame/Roofing. Exterior Finishes	Building Construction	3/31/2021	6/28/2022	5	325	
6	Plumbing/Electrical/Drywall	Building Construction	10/1/2021	12/29/2022	5	325	
7	Finishes	Architectural Coating	4/1/2022	3/30/2023	5	260	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 9.02

Residential Indoor: 1,584,241; Residential Outdoor: 528,080; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 24,012 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading and Mass Excavation - Demo Only	Concrete/Industrial Saws	1	8.00	81	0.73
Grading and Mass Excavation - Demo Only	Excavators	3	8.00	158	0.38

Grading and Mass Excavation - Demo Only	Rubber Tired Dozers	2	8.00	247	0.40
Grading and Mass Excavation	Excavators	2	8.00	158	0.38
Grading and Mass Excavation	Graders	1	8.00	187	0.41
Grading and Mass Excavation	Rubber Tired Dozers	1	8.00	247	0.40
Grading and Mass Excavation	Scrapers	2	8.00	367	0.48
Grading and Mass Excavation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Below Grade Construction	Cranes	1	7.00	231	0.29
Below Grade Construction	Forklifts	3	8.00	89	0.20
Below Grade Construction	Generator Sets	1	8.00	84	0.74
Below Grade Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Below Grade Construction	Welders	1	8.00	46	0.45
Frame/Roofing. Exterior Finishes	Cranes	1	7.00	231	0.29
Frame/Roofing. Exterior Finishes	Forklifts	3	8.00	89	0.20
Frame/Roofing. Exterior Finishes	Generator Sets	1	8.00	84	0.74
Frame/Roofing. Exterior Finishes	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Frame/Roofing. Exterior Finishes	Welders	1	8.00	46	0.45
Plumbing/Electrical/Drywall	Cranes	1	7.00	231	0.29
Plumbing/Electrical/Drywall	Forklifts	3	8.00	89	0.20
Plumbing/Electrical/Drywall	Generator Sets	1	8.00	84	0.74
Plumbing/Electrical/Drywall	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Plumbing/Electrical/Drywall	Welders	1	8.00	46	0.45
Finishes	Air Compressors	1	6.00	78	0.48

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
Grading and Mass Excavation - Demo On	6	15.00	0.00	2,582.00	10.80	7.30	13.00	LD_Mix	HDT_Mix	HHDT
Grading and Mass Excavation	8	20.00	0.00	32,500.00	10.80	40.00	15.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Below Grade Construction	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Frame/Roofing. Exterior Finishes	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Plumbing/Electrical/Drywall	9	684.00	142.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT
Finishes	1	137.00	0.00	0.00	10.80	40.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading and Mass Excavation - Demo Only - 2020

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	lb/day										lb/day					
Fugitive Dust					2.0158	0.0000	2.0158	0.3052	0.0000	0.3052			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419		3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**2.0158**	**1.6587**	**3.6745**	**0.3052**	**1.5419**	**1.8471**		**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Grading and Mass Excavation - Demo Only - 2020

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	lb/day										lb/day					
Hauling	0.1228	4.3945	0.9211	0.0107	0.2258	0.0127	0.2385	0.0619	0.0122	0.0741		1,142.8649	1,142.8649	0.0614		1,144.3997
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
Worker	0.0555	0.0391	0.3823	1.1100e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		111.0699	111.0699	2.7500e-003		111.1388
Total	**0.1782**	**4.4336**	**1.3034**	**0.0118**	**0.3490**	**0.0135**	**0.3625**	**0.0946**	**0.0129**	**0.1074**		**1,253.9348**	**1,253.9348**	**0.0641**		**1,255.5385**

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	lb/day										lb/day					
Fugitive Dust					2.0158	0.0000	2.0158	0.3052	0.0000	0.3052			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419	0.0000	3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**2.0158**	**1.6587**	**3.6745**	**0.3052**	**1.5419**	**1.8471**	**0.0000**	**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Grading and Mass Excavation - Demo Only - 2020

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	lb/day										lb/day					
Hauling	0.1228	4.3945	0.9211	0.0107	0.2258	0.0127	0.2385	0.0619	0.0122	0.0741		1,142.8649	1,142.8649	0.0614		1,144.3997
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
Worker	0.0555	0.0391	0.3823	1.1100e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		111.0699	111.0699	2.7500e-003		111.1388
Total	**0.1782**	**4.4336**	**1.3034**	**0.0118**	**0.3490**	**0.0135**	**0.3625**	**0.0946**	**0.0129**	**0.1074**		**1,253.9348**	**1,253.9348**	**0.0641**		**1,255.5385**

3.3 Grading and Mass Excavation - 2020

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	lb/day										lb/day					
Fugitive Dust					6.2720	0.0000	6.2720	3.3446	0.0000	3.3446			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.2720**	**2.1739**	**8.4459**	**3.3446**	**2.0000**	**5.3446**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.3 Grading and Mass Excavation - 2020

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	lb/day										lb/day					
Hauling	1.7067	60.3173	12.7074	0.1521	3.2782	0.1823	3.4604	0.8986	0.1744	1.0730		16,221.1220	16,221.1220	0.8339		16,241.9685
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
Worker	0.0739	0.0521	0.5097	1.4900e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		148.0932	148.0932	3.6700e-003		148.1850
Total	**1.7806**	**60.3695**	**13.2171**	**0.1535**	**3.4425**	**0.1833**	**3.6258**	**0.9422**	**0.1753**	**1.1175**		**16,369.2153**	**16,369.2153**	**0.8375**		**16,390.1535**

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	lb/day										lb/day					
Fugitive Dust					6.2720	0.0000	6.2720	3.3446	0.0000	3.3446			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.2720**	**2.1739**	**8.4459**	**3.3446**	**2.0000**	**5.3446**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.3 Grading and Mass Excavation - 2020

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	lb/day										lb/day					
Hauling	1.7067	60.3173	12.7074	0.1521	3.2782	0.1823	3.4604	0.8986	0.1744	1.0730		16,221.1220	16,221.1220	0.8339		16,241.9685
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
Worker	0.0739	0.0521	0.5097	1.4900e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		148.0932	148.0932	3.6700e-003		148.1850
Total	**1.7806**	**60.3695**	**13.2171**	**0.1535**	**3.4425**	**0.1833**	**3.6258**	**0.9422**	**0.1753**	**1.1175**		**16,369.2153**	**16,369.2153**	**0.8375**		**16,390.1535**

3.4 Site Preparation - 2020

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	lb/day										lb/day					
Fugitive Dust	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
Off-Road	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
Total	**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**

3.4 Site Preparation - 2020

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	lb/day										lb/day					
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	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
Total	**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**

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	lb/day										lb/day					
Fugitive Dust	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
Off-Road	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
Total	**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**

3.4 Site Preparation - 2020

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	lb/day										lb/day					
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	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
Total	**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**

3.5 Below Grade Construction - 2020

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	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Below Grade Construction - 2020

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	lb/day										lb/day					
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
Vendor	2.1254	51.3626	13.1990	0.1775	5.2510	0.4169	5.6679	1.5099	0.3988	1.9087		18,750.3012	18,750.3012	0.5321		18,763.6029
Worker	2.5289	1.7834	17.4314	0.0508	5.6189	0.0351	5.6540	1.4904	0.0323	1.5227		5,064.7886	5,064.7886	0.1256		5,067.9276
Total	**4.6543**	**53.1460**	**30.6304**	**0.2284**	**10.8699**	**0.4519**	**11.3218**	**3.0003**	**0.4311**	**3.4314**		**23,815.0898**	**23,815.0898**	**0.6576**		**23,831.5305**

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	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Below Grade Construction - 2020

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	lb/day										lb/day					
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
Vendor	2.1254	51.3626	13.1990	0.1775	5.2510	0.4169	5.6679	1.5099	0.3988	1.9087		18,750.3012	18,750.3012	0.5321		18,763.6029
Worker	2.5289	1.7834	17.4314	0.0508	5.6189	0.0351	5.6540	1.4904	0.0323	1.5227		5,064.7886	5,064.7886	0.1256		5,067.9276
Total	**4.6543**	**53.1460**	**30.6304**	**0.2284**	**10.8699**	**0.4519**	**11.3218**	**3.0003**	**0.4311**	**3.4314**		**23,815.0898**	**23,815.0898**	**0.6576**		**23,831.5305**

3.5 Below Grade 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Below Grade Construction - 2021

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	lb/day										lb/day					
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
Vendor	1.6547	43.9309	11.6359	0.1758	5.2513	0.1615	5.4128	1.5100	0.1544	1.6644		18,579.0150	18,579.0150	0.5010		18,591.5406
Worker	2.3470	1.5937	15.9129	0.0491	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		4,889.0140	4,889.0140	0.1122		4,891.8200
Total	**4.0017**	**45.5246**	**27.5488**	**0.2249**	**10.8702**	**0.1956**	**11.0659**	**3.0004**	**0.1859**	**3.1863**		**23,468.0290**	**23,468.0290**	**0.6133**		**23,483.3605**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Below Grade Construction - 2021

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	lb/day										lb/day					
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
Vendor	1.6547	43.9309	11.6359	0.1758	5.2513	0.1615	5.4128	1.5100	0.1544	1.6644		18,579.0150	18,579.0150	0.5010		18,591.5406
Worker	2.3470	1.5937	15.9129	0.0491	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		4,889.0140	4,889.0140	0.1122		4,891.8200
Total	**4.0017**	**45.5246**	**27.5488**	**0.2249**	**10.8702**	**0.1956**	**11.0659**	**3.0004**	**0.1859**	**3.1863**		**23,468.0290**	**23,468.0290**	**0.6133**		**23,483.3605**

3.6 Frame/Roofing. Exterior Finishes - 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 Frame/Roofing. Exterior Finishes - 2021

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	lb/day										lb/day					
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
Vendor	1.6547	43.9309	11.6359	0.1758	5.2513	0.1615	5.4128	1.5100	0.1544	1.6644		18,579.0150	18,579.0150	0.5010		18,591.5406
Worker	2.3470	1.5937	15.9129	0.0491	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		4,889.0140	4,889.0140	0.1122		4,891.8200
Total	**4.0017**	**45.5246**	**27.5488**	**0.2249**	**10.8702**	**0.1956**	**11.0659**	**3.0004**	**0.1859**	**3.1863**		**23,468.0290**	**23,468.0290**	**0.6133**		**23,483.3605**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 Frame/Roofing. Exterior Finishes - 2021

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	lb/day										lb/day					
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
Vendor	1.6547	43.9309	11.6359	0.1758	5.2513	0.1615	5.4128	1.5100	0.1544	1.6644		18,579.0150	18,579.0150	0.5010		18,591.5406
Worker	2.3470	1.5937	15.9129	0.0491	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		4,889.0140	4,889.0140	0.1122		4,891.8200
Total	**4.0017**	**45.5246**	**27.5488**	**0.2249**	**10.8702**	**0.1956**	**11.0659**	**3.0004**	**0.1859**	**3.1863**		**23,468.0290**	**23,468.0290**	**0.6133**		**23,483.3605**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	lb/day										lb/day					
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
Vendor	1.5534	40.4648	11.0819	0.1740	5.2517	0.1406	5.3923	1.5101	0.1345	1.6446		18,397.5363	18,397.5363	0.4877		18,409.7284
Worker	2.1935	1.4297	14.6046	0.0473	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		4,711.4602	4,711.4602	0.1005		4,713.9729
Total	**3.7468**	**41.8944**	**25.6865**	**0.2213**	**10.8706**	**0.1740**	**11.0446**	**3.0005**	**0.1653**	**3.1658**		**23,108.9965**	**23,108.9965**	**0.5882**		**23,123.7013**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Frame/Roofing. Exterior Finishes - 2022

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	lb/day										lb/day					
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
Vendor	1.5534	40.4648	11.0819	0.1740	5.2517	0.1406	5.3923	1.5101	0.1345	1.6446		18,397.5363	18,397.5363	0.4877		18,409.7284
Worker	2.1935	1.4297	14.6046	0.0473	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		4,711.4602	4,711.4602	0.1005		4,713.9729
Total	**3.7468**	**41.8944**	**25.6865**	**0.2213**	**10.8706**	**0.1740**	**11.0446**	**3.0005**	**0.1653**	**3.1658**		**23,108.9965**	**23,108.9965**	**0.5882**		**23,123.7013**

3.7 Plumbing/Electrical/Drywall - 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.7 Plumbing/Electrical/Drywall - 2021

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	lb/day										lb/day					
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
Vendor	1.6547	43.9309	11.6359	0.1758	5.2513	0.1615	5.4128	1.5100	0.1544	1.6644		18,579.0150	18,579.0150	0.5010		18,591.5406
Worker	2.3470	1.5937	15.9129	0.0491	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		4,889.0140	4,889.0140	0.1122		4,891.8200
Total	**4.0017**	**45.5246**	**27.5488**	**0.2249**	**10.8702**	**0.1956**	**11.0659**	**3.0004**	**0.1859**	**3.1863**		**23,468.0290**	**23,468.0290**	**0.6133**		**23,483.3605**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.7 Plumbing/Electrical/Drywall - 2021

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	lb/day										lb/day					
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
Vendor	1.6547	43.9309	11.6359	0.1758	5.2513	0.1615	5.4128	1.5100	0.1544	1.6644		18,579.0150	18,579.0150	0.5010		18,591.5406
Worker	2.3470	1.5937	15.9129	0.0491	5.6189	0.0341	5.6530	1.4904	0.0314	1.5218		4,889.0140	4,889.0140	0.1122		4,891.8200
Total	**4.0017**	**45.5246**	**27.5488**	**0.2249**	**10.8702**	**0.1956**	**11.0659**	**3.0004**	**0.1859**	**3.1863**		**23,468.0290**	**23,468.0290**	**0.6133**		**23,483.3605**

3.7 Plumbing/Electrical/Drywall - 2022

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.7 Plumbing/Electrical/Drywall - 2022

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	lb/day										lb/day					
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
Vendor	1.5534	40.4648	11.0819	0.1740	5.2517	0.1406	5.3923	1.5101	0.1345	1.6446		18,397.5363	18,397.5363	0.4877		18,409.7284
Worker	2.1935	1.4297	14.6046	0.0473	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		4,711.4602	4,711.4602	0.1005		4,713.9729
Total	**3.7468**	**41.8944**	**25.6865**	**0.2213**	**10.8706**	**0.1740**	**11.0446**	**3.0005**	**0.1653**	**3.1658**		**23,108.9965**	**23,108.9965**	**0.5882**		**23,123.7013**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.7 Plumbing/Electrical/Drywall - 2022

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	lb/day										lb/day					
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
Vendor	1.5534	40.4648	11.0819	0.1740	5.2517	0.1406	5.3923	1.5101	0.1345	1.6446		18,397.5363	18,397.5363	0.4877		18,409.7284
Worker	2.1935	1.4297	14.6046	0.0473	5.6189	0.0334	5.6523	1.4904	0.0307	1.5211		4,711.4602	4,711.4602	0.1005		4,713.9729
Total	**3.7468**	**41.8944**	**25.6865**	**0.2213**	**10.8706**	**0.1740**	**11.0446**	**3.0005**	**0.1653**	**3.1658**		**23,108.9965**	**23,108.9965**	**0.5882**		**23,123.7013**

3.8 Finishes - 2022

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**43.2098**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.8 Finishes - 2022

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	lb/day										lb/day					
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
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
Worker	0.4393	0.2864	2.9252	9.4700e-003	1.1254	6.6900e-003	1.1321	0.2985	6.1600e-003	0.3047		943.6697	943.6697	0.0201		944.1729
Total	**0.4393**	**0.2864**	**2.9252**	**9.4700e-003**	**1.1254**	**6.6900e-003**	**1.1321**	**0.2985**	**6.1600e-003**	**0.3047**		**943.6697**	**943.6697**	**0.0201**		**944.1729**

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**43.2098**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.8 Finishes - 2022

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	lb/day										lb/day					
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
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
Worker	0.4393	0.2864	2.9252	9.4700e-003	1.1254	6.6900e-003	1.1321	0.2985	6.1600e-003	0.3047		943.6697	943.6697	0.0201		944.1729
Total	**0.4393**	**0.2864**	**2.9252**	**9.4700e-003**	**1.1254**	**6.6900e-003**	**1.1321**	**0.2985**	**6.1600e-003**	**0.3047**		**943.6697**	**943.6697**	**0.0201**		**944.1729**

3.8 Finishes - 2023

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**43.1970**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Finishes - 2023

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	lb/day										lb/day					
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
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
Worker	0.4121	0.2575	2.6872	9.1000e-003	1.1254	6.5600e-003	1.1320	0.2985	6.0300e-003	0.3046		907.8305	907.8305	0.0180		908.2808
Total	**0.4121**	**0.2575**	**2.6872**	**9.1000e-003**	**1.1254**	**6.5600e-003**	**1.1320**	**0.2985**	**6.0300e-003**	**0.3046**		**907.8305**	**907.8305**	**0.0180**		**908.2808**

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	lb/day										lb/day					
Archit. Coating	43.0053					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**43.1970**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Finishes - 2023

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	lb/day										lb/day					
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
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
Worker	0.4121	0.2575	2.6872	9.1000e-003	1.1254	6.5600e-003	1.1320	0.2985	6.0300e-003	0.3046		907.8305	907.8305	0.0180		908.2808
Total	**0.4121**	**0.2575**	**2.6872**	**9.1000e-003**	**1.1254**	**6.5600e-003**	**1.1320**	**0.2985**	**6.0300e-003**	**0.3046**		**907.8305**	**907.8305**	**0.0180**		**908.2808**

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	lb/day										lb/day					
Mitigated	4.2432	16.4743	52.2548	0.1786	17.8745	0.1410	18.0155	4.7710	0.1313	4.9023		18,035.2477	18,035.2477	0.5940		18,050.0979
Unmitigated	4.2432	16.4743	52.2548	0.1786	17.8745	0.1410	18.0155	4.7710	0.1313	4.9023		18,035.2477	18,035.2477	0.5940		18,050.0979

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	3,658.76	3,658.76	3658.76	8,450,299	8,450,299
Enclosed Parking with Elevator	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	3,658.76	3,658.76	3,658.76	8,450,299	8,450,299

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
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	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
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
Other Asphalt Surfaces	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	lb/day										lb/day					
NaturalGas Mitigated	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
NaturalGas Unmitigated	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747

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	lb/day										lb/day					
Apartments Mid Rise	16947.5	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
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
Other Asphalt Surfaces	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
Total		**0.1828**	**1.5618**	**0.6646**	**9.9700e-003**		**0.1263**	**0.1263**		**0.1263**	**0.1263**		**1,993.8263**	**1,993.8263**	**0.0382**	**0.0366**	**2,005.6747**

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	lb/day										lb/day					
Apartments Mid Rise	16.9475	0.1828	1.5618	0.6646	9.9700e-003		0.1263	0.1263		0.1263	0.1263		1,993.8263	1,993.8263	0.0382	0.0366	2,005.6747
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
Other Asphalt Surfaces	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
Total		**0.1828**	**1.5618**	**0.6646**	**9.9700e-003**		**0.1263**	**0.1263**		**0.1263**	**0.1263**		**1,993.8263**	**1,993.8263**	**0.0382**	**0.0366**	**2,005.6747**

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	lb/day										lb/day					
Mitigated	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866
Unmitigated	22.2549	5.1161	61.0656	0.0314		0.6859	0.6859		0.6859	0.6859	0.0000	5,767.1781	5,767.1781	0.2113	0.1038	5,803.3866

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	lb/day										lb/day					
Architectural Coating	3.0634					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.8839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5189	4.4342	1.8869	0.0283		0.3585	0.3585		0.3585	0.3585	0.0000	5,660.6118	5,660.6118	0.1085	0.1038	5,694.2500
Landscaping	1.7888	0.6819	59.1787	3.1300e-003		0.3274	0.3274		0.3274	0.3274		106.5663	106.5663	0.1028		109.1367
Total	**22.2549**	**5.1161**	**61.0656**	**0.0314**		**0.6859**	**0.6859**		**0.6859**	**0.6859**	**0.0000**	**5,767.1781**	**5,767.1781**	**0.2113**	**0.1038**	**5,803.3866**

6.2 Area by SubCategory

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	lb/day										lb/day					
Architectural Coating	3.0634					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.8839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5189	4.4342	1.8869	0.0283		0.3585	0.3585		0.3585	0.3585	0.0000	5,660.6118	5,660.6118	0.1085	0.1038	5,694.2500
Landscaping	1.7888	0.6819	59.1787	3.1300e-003		0.3274	0.3274		0.3274	0.3274		106.5663	106.5663	0.1028		109.1367
Total	**22.2549**	**5.1161**	**61.0656**	**0.0314**		**0.6859**	**0.6859**		**0.6859**	**0.6859**	**0.0000**	**5,767.1781**	**5,767.1781**	**0.2113**	**0.1038**	**5,803.3866**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

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 B

777middlefieldconstruction

Start date and time 12/06/18 14:49:59

AERSCREEN 16216

777 Middlefield Construction

777 Middlefield Construction

---------- DATA ENTRY VALIDATION ----------

	METRIC	ENGLISH
** AREADATA **	---	---
Emission Rate:	0.302E-02 g/s	0.240E-01 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	295.00 meters	967.85 feet
Area Source Width:	135.00 meters	442.91 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	81438	
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 OFF




 AERSCREEN output file:
 777middlefieldconstruction.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 12/06/18 14:51:52

****

```
  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  ***

 *****************************************


  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  ***

 *******************************************


  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  ***
 *******************************************

  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  ***


FLOWSECTOR   ended 12/06/18 14:52:13
```

```
REFINE       started 12/06/18 14:52:13


 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


REFINE       ended 12/06/18 14:52:17


 ***********************************************

 AERSCREEN Finished Successfully

 With no errors or warnings

 Check log file for details

 ************************************************


 Ending date and time  12/06/18 14:52:17
```

777middlefieldconstruction_max_conc_distance

```
 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
   0.23688E+01         1.00      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
   0.25243E+01        25.00      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
   0.26645E+01        50.00      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
   0.27874E+01        75.00      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
   0.28957E+01       100.00      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
   0.29957E+01       125.00      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
*  0.30828E+01       150.00      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
   0.24258E+01       175.00      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
   0.18770E+01       200.00      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
   0.15874E+01       225.00      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
   0.13956E+01       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
   0.12409E+01       275.00      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
   0.11132E+01       300.00      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
   0.10064E+01       325.00      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
   0.91642E+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
 310.0    2.0
```

```
  0.83914E+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
  0.77228E+00       400.00      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
  0.71437E+00       425.00      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
  0.66339E+00       450.00      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
  0.61821E+00       475.00      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
  0.57831E+00       500.00      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
  0.54286E+00       525.00      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
  0.51058E+00       550.00      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
  0.48164E+00       575.00      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
  0.45559E+00       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
  0.43158E+00       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
  0.40984E+00       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
  0.39005E+00       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
  0.37187E+00       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
  0.35486E+00       725.00      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
  0.33916E+00       750.00      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
```

```
  0.32469E+00       775.00      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
  0.31130E+00       800.00      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
  0.29889E+00       825.00      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
  0.28736E+00       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
  0.27647E+00       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
  0.26626E+00       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
  0.25668E+00       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
  0.24765E+00       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
  0.23918E+00       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
  0.23121E+00      1000.00      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
  0.22371E+00      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
  0.21663E+00      1050.00      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
  0.20995E+00      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
  0.20358E+00      1100.00      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
  0.19751E+00      1125.00      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
  0.19176E+00      1150.00      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
```

```
  0.18630E+00      1175.00      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
  0.18111E+00      1200.00      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
  0.17617E+00      1225.00      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
  0.17147E+00      1250.00      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
  0.16699E+00      1275.00      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
  0.16270E+00      1300.00      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
  0.15857E+00      1325.00      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
  0.15463E+00      1350.00      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
  0.15086E+00      1375.00      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
  0.14725E+00      1400.00      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
  0.14379E+00      1425.00      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
  0.14047E+00      1450.00      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
  0.13727E+00      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
  0.13417E+00      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
  0.13119E+00      1525.00      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
  0.12833E+00      1550.00      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
```

```
  0.12558E+00      1575.00      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
  0.12293E+00      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
 310.0    2.0
  0.12037E+00      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
  0.11791E+00      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
  0.11554E+00      1675.00      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
  0.11325E+00      1700.00      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
  0.11103E+00      1725.00      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
  0.10889E+00      1750.00      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
  0.10683E+00      1775.00      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
  0.10483E+00      1800.00      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
  0.10289E+00      1825.00      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
  0.10102E+00      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
  0.99210E-01      1875.00      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
  0.97454E-01      1900.00      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
  0.95752E-01      1925.00      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
  0.94102E-01      1950.00      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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  0.92501E-01      1975.00      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
  0.90944E-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
  0.89427E-01      2025.00      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
  0.87954E-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
  0.86523E-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
  0.85132E-01      2100.00      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
  0.83780E-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
  0.82465E-01      2150.00      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
  0.81181E-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
  0.79928E-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
  0.78708E-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
  0.77520E-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
  0.76363E-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
  0.75236E-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
  0.74137E-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
  0.73067E-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
```

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  0.72022E-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
  0.71004E-01      2400.00      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
  0.70011E-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
  0.69043E-01      2450.00      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
  0.68100E-01      2475.00      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
  0.67177E-01      2500.00      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
  0.66275E-01      2525.00      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
  0.66077E-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
  0.65200E-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
  0.64343E-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
  0.63506E-01      2625.00      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
  0.62687E-01      2650.00      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
  0.61887E-01      2675.00      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
  0.61103E-01      2700.00      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
  0.60337E-01      2725.00      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
  0.59588E-01      2750.00      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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  0.58854E-01      2775.00      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
  0.58136E-01      2800.00      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
  0.57433E-01      2825.00      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
  0.56744E-01      2850.00      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
  0.56070E-01      2875.00      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
  0.55409E-01      2900.00      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
  0.54762E-01      2925.00      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
  0.54128E-01      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
  0.53506E-01      2975.00      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
  0.52897E-01      3000.00      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
  0.52299E-01      3025.00      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
  0.51714E-01      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
  0.51139E-01      3075.00      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
  0.50576E-01      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
  0.50023E-01      3125.00      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
  0.49480E-01      3150.00      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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  0.48948E-01      3175.00      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
  0.48425E-01      3200.00      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
  0.47912E-01      3225.00      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
  0.47408E-01      3250.00      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
  0.46914E-01      3275.00      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
  0.46428E-01      3300.00      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
  0.45951E-01      3325.00      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
  0.45483E-01      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
  0.45022E-01      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
  0.44570E-01      3400.00      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
  0.44125E-01      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
  0.43688E-01      3450.00      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
  0.43259E-01      3475.00      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
  0.42836E-01      3500.00      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
  0.42421E-01      3525.00      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
  0.42013E-01      3550.00      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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  0.41612E-01      3575.00      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
  0.41217E-01      3600.00      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
  0.40828E-01      3625.00      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
  0.40446E-01      3650.00      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
  0.40070E-01      3675.00      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
  0.39700E-01      3700.00      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
  0.39336E-01      3725.00      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
  0.38978E-01      3750.00      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
  0.38625E-01      3775.00      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
  0.38278E-01      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
  0.37936E-01      3825.00      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
  0.37599E-01      3850.00      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
  0.37268E-01      3875.00      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
  0.36941E-01      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
  0.36620E-01      3925.00      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
  0.36303E-01      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
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  0.35991E-01      3975.00      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
  0.35684E-01      4000.00      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
  0.35381E-01      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
  0.35082E-01      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
  0.34788E-01      4075.00      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
  0.34498E-01      4100.00      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
  0.34213E-01      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
  0.33931E-01      4150.00      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
  0.33653E-01      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
  0.33380E-01      4200.00      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
  0.33110E-01      4225.00      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
  0.32844E-01      4250.00      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
  0.32581E-01      4275.00      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
  0.32322E-01      4300.00      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
  0.32067E-01      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
  0.31815E-01      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
```

```
  0.31567E-01      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
  0.31322E-01      4400.00      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
  0.31080E-01      4425.00      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
  0.30841E-01      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
  0.30606E-01      4475.00      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
  0.30374E-01      4500.00      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
  0.30144E-01      4525.00      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
  0.29918E-01      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
  0.29694E-01      4575.00      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
  0.29474E-01      4600.00      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
  0.29256E-01      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
  0.29041E-01      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
  0.28829E-01      4675.00      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
  0.28619E-01      4700.00      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
  0.28413E-01      4725.00      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
  0.28208E-01      4750.00      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
```

```
  0.28006E-01      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
  0.27807E-01      4800.00      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
  0.27610E-01      4825.00      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
  0.27416E-01      4850.00      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
  0.27224E-01      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
  0.27034E-01      4900.00      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
  0.26846E-01      4925.00      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
  0.26661E-01      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
  0.26478E-01      4975.00      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
  0.26297E-01      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
```

777middlefieldoperation

Start date and time 12/06/18 14:53:53

AERSCREEN 16216

777 Middlefield Operation

---------- DATA ENTRY VALIDATION ----------

	METRIC	ENGLISH
** AREADATA **	----------	----------
Emission Rate:	0.230E-02 g/s	0.183E-01 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	295.00 meters	967.85 feet
Area Source Width:	135.00 meters	442.91 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	81438	
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 OFF





 AERSCREEN output file:

 777middlefieldoperation.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 12/06/18 14:54:30

****

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  ***

 ******************************************


  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  ***
 *******************************************

  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  ***

****************************************************
```

```
                              777middlefieldoperation
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  ***

 *******************************************


  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  ***


FLOWSECTOR   ended 12/06/18 14:54:51


REFINE       started 12/06/18 14:54:51
```

```
 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


REFINE       ended 12/06/18 14:54:54


 ***********************************************

 AERSCREEN Finished Successfully

 With no errors or warnings

 Check log file for details

 ***********************************************


 Ending date and time  12/06/18 14:54:55
```

777middlefieldoperation_max_conc_distance

```
 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
   0.18076E+01         1.00      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
   0.19262E+01        25.00      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
   0.20333E+01        50.00      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
   0.21270E+01        75.00      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
   0.22097E+01       100.00      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
   0.22860E+01       125.00      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
*  0.23525E+01       150.00      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
   0.18511E+01       175.00      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
   0.14323E+01       200.00      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
   0.12114E+01       225.00      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
   0.10650E+01       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
   0.94695E+00       275.00      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
   0.84943E+00       300.00      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
   0.76795E+00       325.00      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
   0.69932E+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
 310.0    2.0
```

```
  0.64034E+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
  0.58932E+00       400.00      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
  0.54513E+00       425.00      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
  0.50622E+00       450.00      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
  0.47175E+00       475.00      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
  0.44130E+00       500.00      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
  0.41425E+00       525.00      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
  0.38962E+00       550.00      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
  0.36753E+00       575.00      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
  0.34765E+00       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
  0.32934E+00       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
  0.31274E+00       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
  0.29764E+00       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
  0.28377E+00       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
  0.27079E+00       725.00      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
  0.25881E+00       750.00      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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  0.24777E+00       775.00      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
  0.23755E+00       800.00      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
  0.22808E+00       825.00      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
  0.21928E+00       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
  0.21097E+00       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
  0.20318E+00       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
  0.19587E+00       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
  0.18898E+00       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
  0.18251E+00       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
  0.17643E+00      1000.00      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
  0.17071E+00      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
  0.16531E+00      1050.00      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
  0.16021E+00      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
  0.15535E+00      1100.00      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
  0.15072E+00      1125.00      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
  0.14633E+00      1150.00      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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  0.14216E+00      1175.00      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
  0.13820E+00      1200.00      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
  0.13444E+00      1225.00      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
  0.13085E+00      1250.00      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
  0.12743E+00      1275.00      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
  0.12415E+00      1300.00      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
  0.12101E+00      1325.00      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
  0.11800E+00      1350.00      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
  0.11512E+00      1375.00      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
  0.11237E+00      1400.00      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
  0.10973E+00      1425.00      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
  0.10719E+00      1450.00      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
  0.10475E+00      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
  0.10238E+00      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
  0.10011E+00      1525.00      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
  0.97930E-01      1550.00      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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  0.95828E-01      1575.00      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
  0.93805E-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
 310.0    2.0
  0.91856E-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
  0.89978E-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
  0.88171E-01      1675.00      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
  0.86418E-01      1700.00      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
  0.84727E-01      1725.00      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
  0.83095E-01      1750.00      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
  0.81518E-01      1775.00      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
  0.79993E-01      1800.00      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
  0.78518E-01      1825.00      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
  0.77090E-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
  0.75706E-01      1875.00      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
  0.74366E-01      1900.00      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
  0.73068E-01      1925.00      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
  0.71808E-01      1950.00      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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  0.70587E-01      1975.00      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
  0.69399E-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
  0.68241E-01      2025.00      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
  0.67117E-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
  0.66025E-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
  0.64963E-01      2100.00      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
  0.63932E-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
  0.62928E-01      2150.00      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
  0.61949E-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
  0.60992E-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
  0.60061E-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
  0.59155E-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
  0.58272E-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
  0.57412E-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
  0.56573E-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
  0.55756E-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
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  0.54960E-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
  0.54183E-01      2400.00      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
  0.53425E-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
  0.52686E-01      2450.00      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
  0.51967E-01      2475.00      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
  0.51262E-01      2500.00      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
  0.50574E-01      2525.00      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
  0.50423E-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
  0.49754E-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
  0.49100E-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
  0.48461E-01      2625.00      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
  0.47836E-01      2650.00      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
  0.47225E-01      2675.00      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
  0.46627E-01      2700.00      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
  0.46043E-01      2725.00      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
  0.45471E-01      2750.00      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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  0.44911E-01      2775.00      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
  0.44363E-01      2800.00      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
  0.43827E-01      2825.00      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
  0.43301E-01      2850.00      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
  0.42787E-01      2875.00      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
  0.42282E-01      2900.00      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
  0.41789E-01      2925.00      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
  0.41305E-01      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
  0.40830E-01      2975.00      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
  0.40365E-01      3000.00      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
  0.39909E-01      3025.00      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
  0.39462E-01      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
  0.39024E-01      3075.00      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
  0.38594E-01      3100.00      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
  0.38172E-01      3125.00      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
  0.37758E-01      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
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  0.37352E-01      3175.00      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
  0.36953E-01      3200.00      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
  0.36561E-01      3225.00      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
  0.36177E-01      3250.00      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
  0.35800E-01      3275.00      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
  0.35429E-01      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
  0.35065E-01      3325.00      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
  0.34707E-01      3350.00      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
  0.34356E-01      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
  0.34011E-01      3400.00      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
  0.33671E-01      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
  0.33338E-01      3450.00      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
  0.33010E-01      3475.00      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
  0.32688E-01      3500.00      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
  0.32371E-01      3525.00      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
  0.32060E-01      3550.00      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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  0.31753E-01      3575.00      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
  0.31452E-01      3600.00      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
  0.31156E-01      3625.00      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
  0.30864E-01      3650.00      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
  0.30577E-01      3675.00      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
  0.30295E-01      3700.00      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
  0.30017E-01      3725.00      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
  0.29744E-01      3750.00      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
  0.29474E-01      3775.00      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
  0.29209E-01      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
  0.28949E-01      3825.00      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
  0.28692E-01      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
  0.28439E-01      3875.00      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
  0.28190E-01      3900.00      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
  0.27944E-01      3925.00      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
  0.27702E-01      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
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  0.27464E-01      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
  0.27230E-01      4000.00      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
  0.26999E-01      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
  0.26771E-01      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
  0.26547E-01      4075.00      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
  0.26325E-01      4100.00      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
  0.26107E-01      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
  0.25892E-01      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
  0.25681E-01      4175.00      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
  0.25472E-01      4200.00      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
  0.25266E-01      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
  0.25063E-01      4250.00      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
  0.24862E-01      4275.00      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
  0.24665E-01      4300.00      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
  0.24470E-01      4325.00      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
  0.24278E-01      4350.00      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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  0.24088E-01      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
  0.23901E-01      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
  0.23717E-01      4425.00      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
  0.23535E-01      4450.00      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
  0.23355E-01      4475.00      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
  0.23178E-01      4500.00      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
  0.23003E-01      4525.00      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
  0.22830E-01      4550.00      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
  0.22660E-01      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
  0.22491E-01      4600.00      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
  0.22325E-01      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
  0.22161E-01      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
  0.21999E-01      4675.00      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
  0.21839E-01      4700.00      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
  0.21682E-01      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
  0.21526E-01      4750.00      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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  0.21372E-01      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
  0.21219E-01      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
  0.21069E-01      4825.00      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
  0.20921E-01      4850.00      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
  0.20774E-01      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
  0.20629E-01      4900.00      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
  0.20486E-01      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
  0.20345E-01      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
  0.20205E-01      4975.00      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
  0.20067E-01      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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ATTACHMENT 2

SMITH ENGINEERING & MANAGEMENT

January 10, 2019

Mr. Kyle Jones
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Subject: 777 West Middlefield Road DEIR (SCH # 2018032072)
P 18066

Dear Mr. Jones:

Per your request, I reviewed the Draft Environmental Impact Report for the 777 West Middlefield Road Project (the "Project") in the City of Mountain View (the "City"). My review is with respect to transportation and circulation considerations.

My qualifications to perform this review include registration as a Civil and Traffic Engineer in California and 50 years professional consulting practice in these fields. I have both prepared and reviewed the Transportation and Traffic sections of environmental documents pursuant to the California Environmental Quality Act ("CEQA"). My professional resume is attached hereto. Technical comments on the DEIR follow:

Trip Generation Credits Deducted From the Project's Trip Generation Based on Prior Use of the Site Are Excessive

The DEIR's trip generation analysis allows a trip deduction from the proposed Project's trip generation for the total 208 existing low-rise apartment units at full ITE *Trip Generation, 10th Edition* trip rates for low-rise apartments. However, for this deduction to be valid, the 208 units would have to have been fully occupied at the time "existing condition" traffic counts were conducted. Otherwise, the DEIR is deducting trip generation credits for traffic that was not present and represented in the existing conditions traffic data base. The DEIR discloses at page 2-18 that in October, 2016 existing leaseholders and subsequently all new

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leases were placed on notice that construction that would necessitate vacation of their units might occur as soon as 18 months from that date. This suggests that existing tenants at that time would have become more motivated to move elsewhere and that many of the people who subsequently became new tenants would have viewed their tenancy as short-term transitional housing while they find more suitable housing for purchase or long-term rental).

These circumstances indicate a high likelihood that there was substantial vacancy among the existing 208 units when the DEIR was prepared. Hence, to the extent there was vacancy, the analysis deducted traffic that was not present in the existing-conditions traffic counts. What the DEIR should have done is count the actual traffic entering and leaving the project site and deducted only that amount or counted the number of *occupied* units at the time the DEIR was prepared and deducted the theoretical generation of only that number of units. At this point the only recourse is the latter approach – convincingly documenting the number of occupied units at the time of the existing-conditions counts and deducting the theoretical trip generation for only that number of occupied units. This error in the DEIR resulted in an underestimation of traffic impacts.

The Trip Generation Analysis Takes Advantage of a Differential Between Low-Rise and Mid-Rise Apartment Trip Generation Rates that Are Not Relevant to Units Developed on the Same Site

The traffic analysis takes advantage of differential rates of trip generation for low-rise apartments (the existing use) and mid-rise apartments (the proposed use), according to Trip Generation, 10th edition. This amounts to 1.88 trips per day higher incremental deduction for units demolished over the addition for units created (the units to be demolished are assumed to create a trip credit of 7.32 daily trips per unit; the proposed new units are assumed to generate only 5.44 daily trips). The problem is that the ITE data is developed from observations of mid-rise and low-rise apartment buildings on different sites and in different communities. The observed differences in trip rates are not just reflective of how tall the apartment buildings are; they mostly reflect differences in the context of the environments in which low-rise and mid-rise apartments tend to be set.

That is to say, the higher buildings tend to be set in environments where there is more transportation infrastructure supporting non-automotive transportation and more community facilities and services that can be conveniently reached by walking, whereas the low-rise apartments tend to be set in environments where these circumstances are less true. However, in the case of the subject Project, there is no difference in environmental context – the environmental context is identical. Hence, the choice to take advantage of this differential based on building heights alone unfairly favors the Project applicant and is an assumption

that is not consistent with the good faith effort to disclose impacts that CEQA demands. The analysis should use a consistent trip generation rate for the existing and new apartment units on the same site. If the DEIR had used consistent trip-generation rates for both the existing and the proposed apartments, traffic impacts would be much more significant.

The DEIR Does Not Fully Disclose the Project's Traffic Impacts at Key Locations

One example of the DEIR's repeated failure to fully disclose traffic impacts is at Intersection # 1, the intersection of North Shoreline Boulevard and the U.S. 101 northbound off-ramp. This intersection is disclosed to be at LOS F (the worst traffic conditions) through all of the analysis scenarios considered in the DEIR. The Project escapes being found to have a significant impact because the changes in delay and critical ICU ("Intersection Capacity Utilization – a measure of actual conflicting vehicle movements passing through the intersection in a peak hour as a percentage of an assumed theoretical capacity of conflicting vehicle movements through a point in the intersection) are lower than the thresholds that apply when an intersection is already experiencing the worst traffic conditions[1]. However, in a tiny footnote, the analysis tables (Table 3.13-6 for instance) state as follows: *"The calculated LOS does not reflect the unmet vehicle demand that cannot get through the intersection during the peak hour. Field observations indicate that the intersection operates at LOS F with 80+ seconds of average delay during one or both peak hours."* What this means is that the analysis didn't compute the actual change in delay and critical ICU that the Project would cause – only that of Project trips that succeed in completing passage through the intersection during the peak hour. Therefore, the DEIR fails to disclose the true impact and the increase in severity of impacts that the Project would cause at this location. This is inadequate.

Another example is Intersection # 16, the intersection of Moffett Boulevard, Central Expressway and Castro Street. The Castro Street approach to and departure from this intersection is crossed at-grade by the Caltrain rail line. When trains pass, as they frequently do in peak periods, the grade crossing gates block movements through the intersection to and from Castro Street, and that traffic forms extended queues. The DEIR fails to provide any indication of

[1] In Mountain View, for significant impact to be found at an intersection already experiencing LOS F conditions, the Project must cause an increase in average critical movement delay of at least 4 seconds or greater *and* an increase of ICU of 0.01 (1%) or greater.

whether and how the consequences of train passage are taken into consideration in the traffic impact analysis. Since approximately 12 trains pass through the grade crossing in the peak hours, according to the current operating schedule, and each passage closes the gates for about 45 seconds, there is a significant time loss on this approach and departure. Also, since the crossing times are irregular (not at even intervals), the queues from a crossing may be compounded by the fact that the queues caused by a prior train crossing have yet to dissipate. This key intersection requires a sophisticated analysis and there is no indication that such an analysis has been done. As a result, traffic impacts are underestimated.

Consequences of Parking Space Limitations, Unbundling of Parking Fees from Apartment Rent, and the Rise of Transportation Network Company Services Have Not Been Adequately Analyzed

The Project includes an aggregate of 1.226 parking spaces per residential unit or .959 spaces per bedroom. There are 734 spaces associated with the 572 market rate units (1.283 spaces per unit) and 144 spaces associated with the affordable units (1 space per unit). Although the DEIR avoids disclosing how many parking spaces were provided with the 208 existing rental units, the Project will clearly provide much less parking per unit than in the existing complex. The parking is also “unbundled” meaning that it is paid for separately from the apartment rent rather than included as part of the rent.

In the theory of New Urbanist planners, minimizing the parking supply and unbundling parking fees from the rent will cause people to own fewer cars and rely less on personal autos for travel and more on alternate modes. However, in a suburban context like this site, which is separated by more than a half-mile distance and an at-grade crossing of a busy expressway from the Mountain View transit center and the activities and attractions of the Castro Street area, which makes it unattractive to walk or bike to transit or activities at those locations, and where there is available curb parking on nearby neighborhood streets, people who own more than one car and feel they need more than one car, and people who simply don’t want to pay extra for “unbundled” parking will just find ways to park in nearby neighborhoods. In a tight rental housing market, even people who want to keep and park multiple cars may choose to rent at the proposed parking-limited facility and take their chances with finding free parking in the neighborhood. While parking impacts are no longer considered an environmental impact per se under CEQA, this is a significant concern among neighbors that should be clearly addressed in the DEIR, but it is not.

In addition, the DEIR has completely failed to address the effects of the rise in activity of transportation network companies (“TNCs” sometimes called ride sharing services) like Uber and Lyft and their contributions to traffic impacts. A

recent San Francisco study[2] found that travel by TNCs caused *double* the vehicle miles traveled (VMT) in key areas than would normally be accounted for by growth in population and employment if the TNCs did not exist. Particularly at a parking-starved complex that is considerably offset from transit hubs and activity centers, such as this Project, TNC usage may become prevalent and considerably add to traffic impacts, because for every passenger trip served, there is an extra trip circulating to access the next service call. The DEIR must address the issue of TNC contributions to Project traffic impacts.

Construction Traffic Impacts Are Not Addressed Adequately

The DEIR discloses that the Project would involve hauling 226,220 square feet of demolition materials and 195,000 cubic feet of excavation materials. Since the hauling trip rate for the demolition materials in truckloads depends on the cubic feet or cubic yards of the demolished materials, the density and thickness of the demolished materials must be considered, rather than just the square footage of the demolition area. Because of this omission in the DEIR, the number of truckloads hauling demolition materials is undisclosed.

Similarly, because the "bulking" or "swell" factors (in laymen's terms, the difference between the size of the hole dug and the volume of haul materials that must be moved when dug out and placed in trucks) varies greatly dependent on the character of the material excavated, the amount of excavation hauling trips that will be necessary is also uncertain. For example, ordinary soil, dry gravel and dry sand swells 20 to 30 percent above the volume of the excavation. Wet gravel with clay, which is a likely prospect given the water table levels disclosed in the DEIR, swells to 50 to 60 percent greater than the size of the excavation dug. Sandstone or limestone swells to 70 to 80 percent greater than the volume of the excavation. The DEIR presents no evidence of reasonable estimates of the volume of construction haul traffic based on the actual materials to be excavated. Hence, since the volume of demolition and excavation haul traffic is completely unknown, the claim that filing a hauling plan approved by the City will mitigate construction traffic impacts is purely speculative and unsubstantiated. This is inadequate.

Basis for Cumulative Impacts Analysis Is Uncertain

The cumulative impacts analysis assumes an ambient traffic growth of 2 percent per year between the baseline and the cumulative forecast year. It is unclear what data over what period of time this assumption is based on. Given the rapid growth of development in the area, both in Mountain View and in surrounding communities, and revitalization of economic activity of existing uses in recent years, it is questionable whether this assumption is reasonably factually based.

[2] *Transportation Network Companies and Congestion Report*, San Francisco Metropolitan Transportation Authority, 2018.

Given the ready availability of concurrent project development lists and regional traffic forecast models, this unsubstantiated background growth assumption is inadequate. Further justification for the cumulative analysis background traffic levels is needed.

Conclusion

This concludes my current comments on the 777 W. Middlefield Project DEIR. Given all of the foregoing, the DEIR's evaluation of impacts on transportation is inadequate. It should be completely revised in light of these comments and must be recirculated in draft status.

Sincerely,

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Smith Engineering & Management, 1993 to present. President.
DKS Associates, 1979 to 1993. Founder, Vice President, Principal Transportation Engineer.
De Leuw, Cather & Company, 1968 to 1979. Senior Transportation Planner.
Personal specialties and project experience include:

Litigation Consulting. Provides consultation, investigations and expert witness testimony in highway design, transit design and traffic engineering matters including condemnations involving transportation access issues; traffic accidents involving highway design or traffic engineering factors; land use and development matters involving access and transportation impacts; parking and other traffic and transportation matters.

Urban Corridor Studies/Alternatives Analysis. Principal-in-charge for State Route (SR) 102 Feasibility Study, a 35-mile freeway alignment study north of Sacramento. Consultant on I-280 Interstate Transfer Concept Program, San Francisco, an AA/EIS for completion of I-280, demolition of Embarcadero freeway, substitute light rail and commuter rail projects. Principal-in-charge, SR 238 corridor freeway/expressway design/environmental study, Hayward (Calif.) Project manager, Sacramento Northeast Area multi-modal transportation corridor study. Transportation planner for I-80N West Terminal Study, and Harbor Drive Traffic Study, Portland, Oregon. Project manager for design of surface segment of Woodward Corridor LRT, Detroit, Michigan. Directed staff on I-80 National Strategic Corridor Study (Sacramento-San Francisco), US 101-Sonoma freeway operations study, SR 92 freeway operations study, I-880 freeway operations study, SR 152 alignment studies, Sacramento RTD light rail systems study, Tasman Corridor LRT AA/EIS, Fremont-Warm Springs BART extension plan/EIR, SRs 70/99 freeway alternatives study, and Richmond Parkway (SR 93) design study.

Area Transportation Plans. Principal-in charge for transportation element of City of Los Angeles General Plan Framework, shaping nations largest city two decades into 21'st century. Project manager for the transportation element of 300-acre Mission Bay development in downtown San Francisco. Mission Bay involves 7 million gsf office/commercial space, 8,500 dwelling units, and community facilities. Transportation features include relocation of commuter rail station; extension of MUNI-Metro LRT; a multi-modal terminal for LRT, commuter rail and local bus; removal of a quarter mile elevated freeway; replacement by new ramps and a boulevard; an internal roadway network overcoming constraints imposed by an internal tidal basin; freeway structures and rail facilities; and concept plans for 20,000 structured parking spaces. Principal-in-charge for circulation plan to accommodate 9 million gsf of office/commercial growth in downtown Bellevue (Wash.). Principal-in-charge for 64 acre, 2 million gsf multi-use complex for FMC adjacent to San Jose International Airport. Project manager for transportation element of Sacramento Capitol Area Plan for the state governmental complex, and for Downtown Sacramento Redevelopment Plan. Project manager for Napa (Calif.) General Plan Circulation Element and Downtown Riverfront Redevelopment Plan, on parking program for downtown Walnut Creek, on downtown transportation plan for San Mateo and redevelopment plan for downtown Mountain View (Calif.), for traffic circulation and safety plans for California cities of Davis, Pleasant Hill and Hayward, and for Salem, Oregon.

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Transportation Centers. Project manager for Daly City Intermodal Study which developed a $7 million surface bus terminal, traffic access, parking and pedestrian circulation improvements at the Daly City BART station plus development of functional plans for a new BART station at Colma. Project manager for design of multi-modal terminal (commuter rail, light rail, bus) at Mission Bay, San Francisco. In Santa Clarita Long Range Transit Development Program, responsible for plan to relocate system's existing timed-transfer hub and development of three satellite transfer hubs. Performed airport ground transportation system evaluations for San Francisco International, Oakland International, Sea-Tac International, Oakland International, Los Angeles International, and San Diego Lindberg.

Campus Transportation. Campus transportation planning assignments for UC Davis, UC Berkeley, UC Santa Cruz and UC San Francisco Medical Center campuses; San Francisco State University; University of San Francisco; and the University of Alaska and others. Also developed master plans for institutional campuses including medical centers, headquarters complexes and research & development facilities.

Special Event Facilities. Evaluations and design studies for football/baseball stadiums, indoor sports arenas, horse and motor racing facilities, theme parks, fairgrounds and convention centers, ski complexes and destination resorts throughout western United States.

Parking. Parking programs and facilities for large area plans and individual sites including downtowns, special event facilities, university and institutional campuses and other large site developments; numerous parking feasibility and operations studies for parking structures and surface facilities; also, resident preferential parking .

Transportation System Management & Traffic Restraint. Project manager on FHWA program to develop techniques and guidelines for neighborhood street traffic limitation. Project manager for Berkeley, (Calif.), Neighborhood Traffic Study, pioneered application of traffic restraint techniques in the U.S. Developed residential traffic plans for Menlo Park, Santa Monica, Santa Cruz, Mill Valley, Oakland, Palo Alto, Piedmont, San Mateo County, Pasadena, Santa Ana and others. Participated in development of photo/radar speed enforcement device and experimented with speed humps. Co-author of Institute of Transportation Engineers reference publication on neighborhood traffic control.

Bicycle Facilities. Project manager to develop an FHWA manual for bicycle facility design and planning, on bikeway plans for Del Mar, (Calif.), the UC Davis and the City of Davis. Consultant to bikeway plans for Eugene, Oregon, Washington, D.C., Buffalo, New York, and Skokie, Illinois. Consultant to U.S. Bureau of Reclamation for development of hydraulically efficient, bicycle safe drainage inlets. Consultant on FHWA research on effective retrofits of undercrossing and overcrossing structures for bicyclists, pedestrians, and handicapped.

MEMBERSHIPS

Institute of Transportation Engineers Transportation Research Board

PUBLICATIONS AND AWARDS

Residential Street Design and Traffic Control, with W. Homburger *et al*. Prentice Hall, 1989.

Co-recipient, Progressive Architecture Citation, *Mission Bay Master Plan*, with I.M. Pei WRT Associated, 1984.

Residential Traffic Management, State of the Art Report, U.S. Department of Transportation, 1979.

Improving The Residential Street Environment, with Donald Appleyard et al., U.S. Department of Transportation, 1979.

Strategic Concepts in Residential Neighborhood Traffic Control, International Symposium on Traffic Control Systems, Berkeley, California, 1979.

Planning and Design of Bicycle Facilities: Pitfalls and New Directions, Transportation Research Board, Research Record 570, 1976.

Co-recipient, Progressive Architecture Award, *Livable Urban Streets, San Francisco Bay Area and London*, with Donald Appleyard, 1979.

APPENDICES ARE AVAILABLE UPON REQUEST

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