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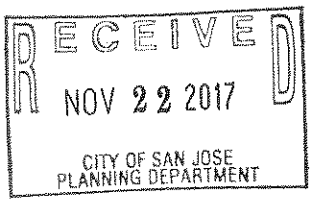
November 22, 2017



VIA HAND DELIVERY
Planning, Building, and Code Enforcement
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WITH COPY HAND DELIVERED AND BY EMAIL TO
Toni Taber, City Clerk
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200 East Santa Clara Street
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Email: cityclerk@sanjoseca.gov

Re: Appeal of the Vesting Tentative Map (T17-026, also referred to as T16-026) for the Bassett Street Residential Project (Aviato)

Dear Ms. Taber:

On behalf of San Jose Residents for Responsible Development ("San Jose Residents"), we are submitting this appeal of the Planning Director's approval of the Vesting Tentative Map (T17-026)[1] for the Bassett Street Residential Project (Aviato) ("Project"), proposed by KT Urban ("Applicant"). The Director of Planning, Building, and Code Enforcement ("Planning Director") approved the Project on November 15, 2017.

We have attached a Notice of Permit Appeal Form, parcel map outlining the subject site and a payment of $500 to cover the fee of the appeal. We have also attached San Jose Residents' comments and consultant comments submitted to the Planning Director on November 14, 2017. Those comments are incorporated herein.

[1] Note, the Vesting Tentative Map number on the agenda is (T17-026), whereas the number on the Vesting Tentative Map is T16-026. http://www.sanjoseca.gov/DocumentCenter/View/73309

Pursuant to the City of San Jose, Municipal Code, section 19.12.230 and Government Code, section 66452.5, San Jose Residents appeals this approval to the City Council. On November 15, 2017, the Planning Director made the following findings:

> Subdivision Map Act Findings: In accordance with Section 66474 of the Government Code of the State of California, the Director of Planning of the City of San José, in consideration of the proposed subdivision shown on the Vesting Tentative Map with the imposed conditions, shall deny approval of a Vesting Tentative Map, if it makes any of the following findings:
>
> a. That the proposed map is not consistent with applicable General and Specific Plans as specified in Section 65451.
>
> b. That the design or improvement of the proposed subdivision is not consistent with applicable General and Specific Plans.
>
> c. That the site is not physically suitable for the type of development.
>
> d. That the site is not physically suitable for the proposed density of development.
>
> e. That the design of the subdivision or the proposed improvements are likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat.
>
> f. That the design of the subdivision or type of improvements is likely to cause serious public health problems.
>
> g. That the design of the subdivision or the type of improvements will conflict with easements, acquired by the public at large, for access through or use of, property within the proposed subdivision.

Based on review of the proposed subdivision, the Director of Planning of the City of San José does not make any such findings to deny the subject subdivision. The project is consistent with the General Plan goals, policies and

land use designation. The project complies with the General Plan goals and policies related to Downtown design, retail/commercial uses in the downtown, growth areas among others. General Plan land use designation of Downtown allows for high-density residential projects with ground floor commercial uses. The project site is physically suitable for the project and proposed density in that it the development intensity is encouraged and expected within the Downtown. Furthermore, the project site does not contain any historic resources or sensitive habitats or wildlife. The project is required to improve the public sidewalks on East Santa Clara, North 4th Street and North 5th Street.

Subdivision Ordinance Findings. In accordance with San Jose Municipal Code (SJMC) section 19.12.130, the Director may approve the Tentative Map if the Director cannot make any of the findings for denial in Government Code section 66474 and the Director has reviewed and considered the information relating to compliance of the project with the California Environmental Quality Act and determines the environmental review to be adequate. Additionally, the Director may approve the project if the Director does not make any of the findings for denial in San Jose Municipal Code Section 19.12.220.

Section 19.12.130 incorporates the findings for denial in Section 66474 of the Government Code specified in Findings Section 1 herein.

Based on review of the proposed subdivision, the Director of Planning of the City of San José does not make any such findings to deny the subject subdivision. Additionally, the Addendum prepared for the project does not identify any significant environmental impacts.[2]

This appeal is based on the Vesting Tentative Map's inconsistency with the required findings under the Subdivision Map Act and the City's Subdivision Ordinance Findings, listed above. In our November 14, 2017 comment letter, we explained that the Project would result in significant environmental damage and cause serious public health problems. We identified that the "Project's excess

[2] City of San Jose, Vesting Tentative Map, T16-026, File No. T17-026, Date of Map: May 17, 2017, Approved November 15, 2017.

cancer risk for infantile, child, adult, and lifetime cancer risk all exceed the threshold of significance."[3] We also explained that Project construction may encounter contaminated groundwater, resulting in substantial environmental damage and public health impacts.[4] Therefore, the Planning Director should have denied the Project approval because the Project is likely to cause substantial environmental damage and serious public health problems.[5]

We provided in our comments that pursuant to the General Plan, the City of San Jose requires the completion of air quality modeling for sensitive land uses, such as new residential developments that are located near sources of pollution such as freeways and industrial uses.[6] This policy applies to the proposed project due to its proximity to the Union Pacific Railroad tracks and Highway 87. We provided comments that the air quality analysis is not adequate because the air quality impacts were not adequately evaluated.[7] Therefore, the Planning Director should have denied the approval because "the proposed map is not consistent with applicable General and Specific Plans as specified in Section 65451."[8]

The Planning Director should have denied the Vesting Tentative Map (application based on the City's inability to make the necessary findings. Thank you for your attention to this important matter.

Sincerely,

Linda Sobczynski

LTS:acp

[3] Comments on Aviato Project, p. 13, **Exhibit A.**
[4] Comments on Aviato Project, p. 9.
[5] Planning Director's Subdivision Map Act Finding, subparts (e) & (f).
[6] Comments on Aviato Project, p. 10.
[7] *See* Comments on Aviato Project, section II.B.
[8] Planning Director's Subdivision Map Act Finding, subpart (a).
3944-003acp

EXHIBIT A

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November 14, 2017

VIA EMAIL and OVERNIGHT DELIVERY

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Re: Comments on the Initial Study/Addendum prepared for the Bassett Street Residential Project (Aviato) (SP17-023)

Dear Ms. Hughey, Ms. Taber, and Ms. Le:

These comments are submitted on behalf of San Jose Residents for Responsible Development regarding the Initial Study/Addendum for the Bassett Street Residential Project (Aviato) ("Project"), proposed by KT Urban ("Applicant"). The Project site is 0.77 acres and is comprised of three parcels on the north side of Bassett Street between Terraine Street and North San Pedro Street in downtown San Jose (APNs: 259-23-005; 259-23-006; 259-51-007). As proposed, the Applicant is seeking a Special Use Permit (SP17-023 & T17-026) from the City of San Jose ("City") to allow the construction of 302 square units in an 18-story building and up

to 10,146 square feet of retail on the 0.77 gross acre site. The proposed Project would demolish the existing buildings (totaling approximately 26,800 square feet).

The Addendum, prepared pursuant to California Environmental Quality Act ("CEQA") Guidelines section 15164, evaluates the Project's potential environmental impacts and consistency with the Brandenburg Mixed Use Project/North San Pedro Housing Sites Final Environmental Impact Report ("EIR"); the San Jose Downtown Strategy 2000 Final EIR; and the Final EIR and Supplemental Program EIR for the Envision San Jose 2040 General Plan, and addenda thereto.

We reviewed the environmental review documents with the assistance of experts Matt Hagemann and Hadley Nolan of Soil / Water / Air Protection Enterprise ("SWAPE"). Their attached technical comments are submitted in addition to the comments in this letter.[1] The curricula vitae of these experts are also attached as exhibits to this letter.

In sum, we identified a number of significant deficiencies in the City's analysis, as well as potentially new and more severe impacts than previously analyzed in the EIRs. Furthermore, we identified several mitigation measures not previously analyzed that would reduce potentially significant impacts. Specifically, the Addendum fails to adequately evaluate hazards related to dewatering at the construction site. It does not disclose a potentially hazardous well on the Project site. The Addendum also inadequately analyzes air quality impacts, and our experts provide substantial evidence that there are more severe air quality impacts than previously analyzed. Therefore, an Addendum is not the appropriate means to approve this Project; rather, an EIR is required to address the significant environmental effects, which are described in further detail below.

I. STATEMENT OF INTEREST

San Jose Residents for Responsible Development ("San Jose Residents") is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential impacts associated with Project development.

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[1] *See* Letter from Matt Hagemann and Hadley Nolan to Linda Sobczynski (November 9, 2017) *Comments on the Bassett Street Residential Project (Aviato)* (hereinafter, "SWAPE Comments"), **Exhibit A.**

The association includes Jeff Dreyer Sr., Paul Oller, Mo Salberg, and Alex Caraballo.

The individual members of San Jose Residents live, work, and raise their families in the City of San Jose. They would be directly affected by the Project's impacts. Individual members may also work on the Project itself. They will therefore be first in line to be exposed to any health and safety hazards that may exist on the Project site.

The organizational members of San Jose Residents also have an interest in enforcing the City's planning and zoning laws and the State's environmental laws that encourage sustainable development and ensure a safe working environment for their members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for business and industry to expand in the region, and by making it less desirable for businesses to locate and people to live there. Indeed, continued degradation can, and has, caused restrictions on growth that reduce future employment opportunities. Finally, San Jose Residents' members are concerned about projects that present environmental and land use impacts without providing countervailing economic and community benefits.

II. THE CITY MAY NOT RELY ON PREVIOUS ENVIRONMENTAL ANALYSIS FOR PROJECT APPROVAL

CEQA has two basic purposes, neither of which is satisfied by the City's Addendum. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental impacts of a project before harm is done to the environment.[2] The EIR is the "heart" of this requirement.[3] 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."[4]

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[2] 14 Cal. Code Regs., § 15002(a)(1) ("CEQA Guidelines"); *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal.App.4th 1344, 1354 ("*Berkeley Jets*"); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

[3] *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 84.

[4] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

To fulfill this function, the discussion of impacts in an EIR must be detailed, complete, and "reflect a good faith effort at full disclosure."[5] An adequate EIR must contain facts and analysis, not just an agency's conclusions.[6] CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project.[7]

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring imposition of mitigation measures and by requiring the consideration of environmentally superior alternatives.[8] If an EIR identifies significant impacts, it must then propose and evaluate mitigation measures to minimize these impacts.[9] CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures.[10] Without an adequate analysis and description of feasible mitigation measures, it would be impossible for agencies relying upon the EIR to meet this obligation.

Under CEQA, an EIR must not only discuss measures to avoid or minimize adverse impacts, but must ensure that mitigation conditions are fully enforceable through permit conditions, agreements or other legally binding instruments.[11] A CEQA lead agency is precluded from making the required CEQA findings unless the record shows that all uncertainties regarding the mitigation of impacts have been resolved; an agency may not rely on mitigation measures of uncertain efficacy or feasibility.[12] This approach helps "insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug."[13]

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[5] CEQA Guidelines, § 15151; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 721-722.
[6] *See Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 568.
[7] Pub. Resources Code, § 21100(b)(1); CEQA Guidelines § 15126.2(a).
[8] CEQA Guidelines, § 15002(a)(2) and (3); *Berkeley Jets*, 91 Cal.App.4th at 1354; *Laurel Heights Improvement Ass'n v. Regents of the University of Cal.* (1998) 47 Cal.3d 376, 400.
[9] Pub. Resources Code, §§ 21002.1(a), 21100(b)(3).
[10] *Id.*, §§ 21002-21002.1.
[11] CEQA Guidelines § 15126.4(a)(2).
[12] *Kings County Farm Bur. v. County of Hanford* (1990) 221 Cal.App.3d 692, 727-28 (a groundwater purchase agreement found to be inadequate mitigation because there was no record evidence that replacement water was available).
[13] *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3d 929, 935.
3944-002acp

Following preliminary review of a project to determine whether an activity is subject to CEQA, a lead agency is required to prepare an initial study to determine whether to prepare an EIR or negative declaration, identify whether a program EIR, tiering, or other appropriate process can be used for analysis of the project's environmental effects, or determine whether a previously prepared EIR could be used with the project, among other purposes.[14] CEQA requires an agency to analyze the potential environmental impacts of its proposed actions in an EIR except in certain limited circumstances.[15] A negative declaration may be prepared instead of an EIR when, after preparing an initial study, a lead agency determines that a project "would not have a significant effect on the environment."[16]

When an EIR has previously been prepared that could apply to the Project, CEQA requires the lead agency to conduct subsequent or supplemental environmental review when one or more of the following events occur:

(a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report;

(b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report; or

(c) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available.[17]

The CEQA Guidelines explain that the lead agency must determine, on the basis of substantial evidence in light of the whole record, if one or more of the following events occur:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new

[14] CEQA Guidelines, §§ 15060, 15063(c).
[15] *See, e.g.*, Pub. Resources Code, § 21100.
[16] *Quail Botanical Gardens v. City of Encinitas* (1994) 29 Cal.App.4th 1597; Pub. Resources Code, § 21080(c).
[17] Pub. Resources Code, § 21166.

significant effects or a substantial increase in the severity of previously identified effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.[18]

Only where *none* of the conditions described above calling for preparation of a subsequent or supplemental EIR have occurred may the lead agency consider preparing a subsequent negative declaration, an Addendum or no further

[18] CEQA Guidelines, § 15162(a)(1)-(3).

documentation.[19] For Addendums specifically, which is what the City claims is applicable to the Project, CEQA allows Addendums to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred.[20]

Here, the City's reliance on CEQA's provisions is misplaced.[21] The City's Addendum does not simply provide "some changes or additions" to the prior EIRs as is allowed under CEQA Guidelines section 15162. Rather, it includes a new substantive analysis for a large development project which was not specifically analyzed in the other EIRs.

Second, as explained further below, SWAPE provides substantial evidence that the Project will result in new and more severe significant impacts than previously analyzed in prior EIRs. And SWAPE recommends new, cost-effective, and feasible mitigation measures that were not considered in the prior EIRs, but that could reduce this Project's significant impacts to a less than significant level.[22] SWAPE's substantial evidence, and the City's lack thereof, requires that the City prepare a subsequent or supplemental EIR to adequately address the Project's potentially significant impacts.[23]

A. The City is required to prepare a subsequent EIR due to new information about hazards and hazardous waste.

1. *New information about the impacts from groundwater dewatering triggers preparation of a subsequent EIR.*

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[19] CEQA Guidelines, § 15162(b).
[20] CEQA Guidelines, § 15164; Initial Study/Addendum, p. 1 ("Pursuant to Section 15164 of the CEQA Guidelines, the City of San Jose has prepared an Addendum . . . because minor changes made to the project, as described below, do not raise important new issues about the significant impacts on the environment.").
[21] CEQA Guidelines, § 15164.
[22] IS/Addendum, p. 32 ("The project would, however, contribute cumulatively to the significant operational emissions impact identified in the Brandenburg and Downtown Strategy FEIR's.").
[23] CEQA Guidelines, § 15162 ("no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one of more of the following [triggering actions has occurred]"); § 15164 ("The [agency's] explanation [to not prepare a subsequent EIR pursuant to Section 15162] must be supported by substantial evidence.").
3911-002acp

The Project will require excavation that will result in extensive dewatering during construction. Yet, the Addendum, Appendix C, and prior EIRs fail to disclose the impacts that may result from this dewatering.

Under CEQA Guidelines, section 15162(a)(3), an agency must prepare an EIR if there is new information of substantial importance, which could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete and which will result in a significant effect that was not discussed in the previous EIR. A project may have a significant impact if it would violate any water quality standards or waste discharge requirement, create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or otherwise substantially degrade water quality.[24]

Here, the City must prepare a subsequent EIR because new information about groundwater and changes in the Project reveal a potentially significant water quality impact. New information shows that groundwater is present at depths as shallow as 15 feet in depth beneath the Project site.[25] Changes in the proposed Project require excavation to reach a depth of 41 feet, as opposed to excavation up to 25 feet, as described in the 2003 Brandenburg EIR.[26] Therefore, more extensive dewatering will be required during construction.[27] A subsequent EIR is required because of changes in the Project[28] and because it was not known and could not have been known at the time the prior EIR was certified that excavation will reach depths of 41 feet for this Project.[29] Therefore, impacts from extensive dewatering, up to 41 feet, were not adequately analyzed.

In addition, SWAPE provides substantial evidence that the Project site may have potentially contaminated groundwater, making the impact a new or more severe significant impact.[30] In 2001, a consultant documented contaminated

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[24] CEQA Guidelines, Appendix G (Water Quality).
[25] IS/Addendum, p. 61.
[26] CEQA Guidelines, § 15162(a)(1) ("Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.")
[27] IS/Addendum, p. 61.
[28] CEQA Guidelines, § 15162(a)(1).
[29] CEQA Guidelines, § 15162(a)(3).
[30] CEQA Guidelines, §15162(a)(1), (3)(A-B).

groundwater at 355 North San Pedro Street, which is adjacent to 199 Bassett Street.[31] The consultant documented benzene at concentrations of 16 parts per billion.[32] Pursuant to San Francisco Bay Regional Water Quality Control Board laws and regulations, this concentration of benzene is three times the allowable limit that may be discharged from dewatering efforts into stormwater drains.[33]

However, the 2003 EIR contains only a summary report discussing that Underground Storage Tanks (USTs) present potential contamination to soil and groundwater with no investigation into whether the groundwater was contaminated at the Project site. Yet the Addendum asserts, without providing substantial evidence, that dewatering is not anticipated to create a significant hazard to the public or the environment.

SWAPE provides expert opinion, constituting substantial evidence, that the Project's excavation to a depth of 41 feet in an area where potentially contaminated groundwater is 15 feet below ground surface may cause an unanalyzed significant impact on surface water bodies, public utilities, and the public, including construction workers, if the contamination is not adequately identified, analyzed and mitigated during dewatering activities.[34] The City is required to prepare an EIR to discuss this potential groundwater contamination because there is new information of substantial importance and project changes showing potentially contaminated groundwater may result in a significant environmental effect.

2. The Addendum fails to disclose and evaluate a nearby well.

According to documents filed with the State Water Resources Control Board, there is a well located on the Project site that has not been identified in the Phase I Environmental Assessment[35] and was not discussed in the Addendum.[36] CEQA does

[31] SWAPE Letter, p. 2.
[32] SWAPE Letter, p. 2.
[33] SWAPE Letter, p. 2.
[34] SWAPE Letter, p. 2.
[35] Addendum, Appendix C.
[36] SWAPE Letter, p. 3 (citing https://geotracker.waterboards.ca.gov/regulators/deliverable_documents/4051131308/MAPS_METROSCAN.pdf).

not require technical perfection in an environmental review document, but rather adequacy, completeness, and a good-faith effort at full disclosure.[37]

The Addendum fails as an information disclosure document because it does not include information pertaining to this well, and any data generated from investigation of the well, including soil and groundwater analytical data.[38] Because the Addendum failed to disclose the existence of this well, it is unclear if the well is leaking or was properly abandoned and if it poses a risk during earth-moving activities. The City must prepare an EIR to disclose and evaluate the potential risk associated with this well.

B. The City cannot rely on the Addendum for Project approval because the Project will result in new, significant air quality impacts that were not identified in the previous EIRs.

The City of San Jose requires the completion of air quality modeling for sensitive land uses such as new residential developments that are located near sources of pollution such as freeways and industrial uses.[39] This policy applies to the proposed project due to its proximity to the Union Pacific Railroad tracks and Highway 87.[40] Previous EIRs did not complete this analysis for the proposed Project. Consequently, the Addendum prepared a community risk assessment to evaluate emissions of diesel particulate matter ("DPM") and PM2.5 during construction activities as part of its air quality analysis.[41] The Addendum concluded that the community risk impact will be "new less than significant impact with mitigation incorporated (less than significant impact with mitigation)."[42]

Based on this conclusion, the City believes it does not need to prepare a subsequent EIR because the new information does not show a *significant* effect.[43] However, this conclusion — that the impact is new, but *less than significant with*

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[37] CEQA Guidelines, § 15003, subd. (i) (citing *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692).
[38] SWAPE Letter, p. 3.
[39] IS/Addendum, p. 27 (citing General Plan Policy MS-11.1).
[40] IS/Addendum, p. 37.
[41] IS/Addendum, p. 35.
[42] IS/Addendum, p. 36.
[43] *See* CEQA Guidelines, § 15162(a)(3)(A); *see, e.g.*, IS/Addendum, p. 1 of 3, (". . . minor changes to the project . . . do not raise important new issues about the significant impacts on the environment.").

mitigation — is unsupported by substantial evidence and cannot be used as the basis for not preparing a subsequent EIR.[44] The Addendum (1) incorrectly calculated the community risk impact. (As explained in further detail below, the impact is more severe than what the Addendum reports.) And, (2) the Addendum relies on unenforceable, infeasible mitigation measures, which will not be able to reduce the new, significant impact to less than significant levels. Pursuant to CEQA Guidelines sections 15164(a) and 15162(a)(3)(A), a subsequent EIR is required because a correctly calculated community risk demonstrates this new impact will be significant. The City must prepare a subsequent EIR that includes enforceable, feasible mitigation measures to reduce the new, significant health risk impact.

First, the Addendum incorrectly calculated the risk posed to nearby residential receptors as a result of exposure to DPM emissions because it only looked at Project *construction* and failed to evaluate the risk associated with exposure to emissions released during Project *operation*.[45] This is inconsistent with the Bay Area Air Quality Management District ("BAAQMD") guidelines, which recognize that "operational emissions typically represent the majority of a project's air quality impacts."[46] For example, during operation, truck deliveries to this Project's commercial land uses will generate large amounts of diesel exhaust. Long-term exposure to DPM, a known human carcinogen, and other toxic air contaminants, will result in a significant health risk impact. By failing to consider construction and operational emissions, the Addendum underestimates the community risk.

Second, the Addendum includes an infeasible and unenforceable mitigation measure, Mitigation Measure AIR-1.1,[47] to reduce the community risk impact to less than significant levels. Mitigation Measure AIR-1.1 calls for Tier 4 construction equipment, which have lower construction related toxic air contaminant emissions, such as DPM, than their higher emitting counterparts.[48] However, the City has offered no evidence that the Applicant will be able to obtain Tier 4 construction

[44] CEQA Guidelines, § 15164(e) (explanation supporting decision not to prepare a subsequent EIR must be supported by substantial evidence).
[45] SWAPE Letter, pp. 3-4.
[46] BAAQMD, CEQA Air Quality Guidelines (May 2010), *available at* http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx; *see also* SWAPE Letter, p. 4.
[47] Appendix A refers to this Mitigation Measure as "AQ-1."
[48] IS/Addendum, p. 36.
3944-002acp

equipment as part of the mitigation measure.[49] Under CEQA, mitigation measures must be fully enforceable through permit conditions, agreements or other legally binding instruments.[50] A CEQA lead agency may not rely on mitigation measures of uncertain efficacy or feasibility.[51] This approach helps "insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug."[52]

As SWAPE explains, although Tier 4 equipment is available for purchase, this equipment is costlier and less available than the higher emitting equipment.[53] Unless the Applicant is able to demonstrate feasibility of obtaining Tier 4 equipment, this mitigation measure should not be solely relied upon to reduce emissions. Additionally, the mitigation measure includes no requirement that the entire fleet be comprised of Tier 4 equipment.[54] Therefore, the measure's efficacy in reducing emissions is uncertain and cannot be relied upon to reduce the community risk impact to less than significant levels

What's more, when SWAPE correctly calculated the Project's air quality impacts — by taking into consideration both construction and operational emissions — it found that the Project will exceed BAAQMD's threshold of significance with respect to local community risk and hazard impacts by far more than what the Addendum reported.[55] One of the factors that BAAQMD uses in determining if the community risk impact will be significant is if there will be an excess cancer risk level of more than 10 in one million.[56]

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[49] *See* SWAPE Letter, pp. 8-9.
[50] CEQA Guidelines § 15126.4(a)(2).
[51] *Kings County Farm Bur. v. County of Hanford* (1990) 221 Cal.App.3d 692, 727-28 (a groundwater purchase agreement found to be inadequate mitigation because there was no record evidence that replacement water was available).
[52] *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3d 929, 935.
[53] SWAPE Letter, p. 9.
[54] IS/Addendum, p. 35 (Tier 4 engines or equivalent are required for equipment larger than 25 horsepower).
[55] SWAPE Letter, p. 5; CEQA Guidelines, § 15065 ("A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.").
[56] BAAQMD, CEQA Air Quality Guidelines (May 2010), p. 2-5, *available at* http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx (BAAQMD considers an excess cancer risk level of more than 10 in one million to be significant).
3944-002acp

SWAPE details its calculations in its comments. To summarize, SWAPE prepared a screening-level health risk assessment in accordance with OEHHA guidance.[57] SWAPE calculated the excess cancer risk to the residential receptors located closest to the Project site.[58] OEHHA recommends using Age Sensitivity Factors ("ASF") to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution.[59] SWAPE's calculations, which are summarized in the table below, reveal that the Project's excess cancer risk for infantile, child, adult, and lifetime cancer risk all exceed the threshold of significance.[60] For example, the excess cancer risk for an infant is 79 in one million.[61]

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	1.94	0.23	1090	10	7.3E-05
Operation	0.06	0.64	1090	10	6.3E-06
Infant Exposure Duration	*2.00*			*Infant Exposure*	*7.9E-05*
Operation	14.00	0.64	572	3	2.3E-04
Child Exposure Duration	*14.00*			*Child Exposure*	*2.3E-04*
Operation	14.00	0.64	261	1	3.5E-05
Adult Exposure Duration	*14.00*			*Adult Exposure*	*3.5E-05*
Lifetime Exposure Duration	30.00			Lifetime Exposure	3.46E-04

Through its screening-level health risk assessment, SWAPE has provided substantial evidence that the Project would result in a new, significant health risk impact that is more severe than what is reported in the Addendum.[62] Consequently, the City has failed to support its finding that the Project will have a less than

[57] SWAPE Letter, pp. 5-8.
[58] SWAPE Letter, p. 4.
[59] SWAPE Letter, p. 7.
[60] SWAPE Letter, p. 7.
[61] SWAPE Letter, p. 7.
[62] SWAPE Letter, pp. 7-8.
3911-002acp

significant effect with mitigation because it has (1) erroneously underestimated the community risk and (2) impermissibly considered unenforceable, infeasible mitigation measures that will not reduce the impact to less than significant.

Because there is a new, significant impact that was not addressed in previous EIRs, the City is required to prepare a subsequent EIR in accordance with CEQA Guidelines section 15162(a)(3)(A). In that EIR, the City must include a community risk assessment, which will consider both construction and operational emissions. The EIR should also include additional feasible, certain, enforceable, and cost-effective mitigation measures to reduce the Project's significant community risk impact to less than significant.

SWAPE recommends the following measures to reduce construction emissions including, among others:

- Requiring implementation of Diesel Control Measures, such as requiring that only ultra-low sulfur diesel fuel or a biodiesel blend, with a low sulfur content, is used;[63]
- Repowering or replacing older construction equipment engines with newer, cleaner engines;[64]
- Installing retrofit devices on existing construction equipment on the exhaust system to reduce emissions;[65]
- Using electric and hybrid construction equipment;[66] and, among others,
- Instituting a heavy-duty off-road vehicle plan (i.e., tracking vehicle inventory to see what emission control technology is installed).[67]

The measures to reduce operation emissions include, among others:

- Increasing pedestrian and bicycle access to reduce vehicle-miles traveled around the Project site;[68]

[63] SWAPE Letter, p. 11.
[64] SWAPE Letter, pp. 11-12.
[65] SWAPE Letter, pp. 12-13.
[66] SWAPE Letter, p. 12.
[67] SWAPE Letter, pp. 13-16.
[68] SWAPE Letter, pp. 16-17.
3944-002acp

- Limiting parking supply;[69] and, among others,
- Promoting incentives to reduce driving.[70]

These measures provide a cost-effective, feasible way to reduce emissions and must be incorporated to reduce the significant community risk this Project will pose. Moreover, if the City intends to rely on Mitigation Measure AIR-1, which requires implementing Tier 4 equipment, the City must ensure that the Applicant is able to meet this requirement.

III. Conclusion

The City may not rely on the Addendum to approve the Project. San Jose Residents provides substantial evidence that the Project's Phase I ESA fails to assess potentially significant impacts from groundwater contamination and a well. Also, the Addendum failed to assess new and more severe significant impacts on air quality and public health. For these reasons, we urge the City to prepare a revised analysis in an EIR, as required by CEQA and to identify and implement all feasible mitigation measures available to reduce the Project's significant, site-specific impacts to less than significant levels before the City considers approving the Project.

Sincerely,

Linda Sobczynski

Linda Sobczynski

Attachments

LTS:acp

[69] SWAPE Letter, p. 17.
[70] SWAPE Letter, pp. 17-19.
3944-002acp

EXHIBIT A

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

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November 9, 2017

Linda Sobczynski
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Subject: Comments on the Bassett Street Residential Project (Aviato)

Dear Ms. Sobczynski:

We have reviewed the September 2017 Initial Study/Addendum (IS/Addendum) for the Bassett Street Residential Project (Aviato) ("Project") located in downtown San Jose. The 0.77-acre project site is comprised of three parcels located on Bassett Street between Terraine Street and North San Pedro Street in downtown San José. The site is currently developed with two commercial/warehouse buildings. As proposed, the project would demolish the existing buildings (totaling approximately 26,800 square feet) and construct an 18-story tower with up to 302 residential units and approximately 7,821 square feet of ground floor retail. The project proposes approximately 7,821 square feet of retail space, of which 1,996 square feet would be restaurant and 5,825 square feet would be retail space. In addition, there would be a 1,458-square foot leasing office and a lobby. An approximately 2,652 square foot fitness area located at the northwest corner of the site is proposed on the second floor. A common terrace area and amenity space is proposed on the southwest corner of the fifth floor. A pool deck and a common terrace area is proposed on the 17th floor. Three retail parking stalls (behind the retail space) are proposed on the first floor. In addition, the project proposes four levels of below-grade parking which would contain approximately 302 parking stalls.

Our review concludes that IS/Addendum fails to adequately evaluate the Project's Hazards and Hazardous Waste and Air Quality impacts. As a result, emissions and health impacts associated with the construction and operation of the proposed Project are underestimated and inadequately addressed. A Project-specific Draft Environmental Impact Report (DEIR) should be prepared to adequately assess and mitigate the potential hazard, air quality, and health risk impacts that the Project may have on the surrounding environment.

Hazards and Hazardous Waste

Impacts from Dewatering of Groundwater Require a Subsequent EIR

Groundwater is present beneath the Project site at depths as shallow as 15 feet in depth (IS/Addendum, p. 61). Because excavation of the Project will reach to depths of 41 feet, extensive dewatering will be required for construction of subterranean parking. The need to excavate to depths of 41 feet was not analyzed in the 2003 Brandenburg EIR, which stated that excavation would reach a depth of 25 feet.[1] Despite this change, the IS/Addendum does not evaluate this increased amount of dewatering. The IS/Addendum also does not characterize the quality of the groundwater and therefore does not disclose potentially significant environmental impacts that may result from discharge of potentially contaminated water to the City of San Jose's storm drains or sewer systems.

The Geotracker website identifies a former underground storage tank site (UST) at 355 N. San Pedro St., directly across the street from the Project, where contamination from petroleum hydrocarbons in soil and groundwater was documented. The site, part of the Brandenburg Properties[2], documented contamination in groundwater in 2001, including benzene at concentrations of 16 parts per billion in a sample obtained from a "hydropunch" well (355-HP-2) completed on Bassett Street, directly adjacent to the Project.[3]

However, the 2003 Brandenburg EIR contains only a summary report discussing that USTs present potential contamination to soil and groundwater. The summary report did not actually conduct further soil or groundwater testing to determine if the groundwater was contaminated at the Project site. The IS/Addendum, which relies on the analysis in the 2003 Brandenburg EIR, calls for discharge of water generated during dewatering to be discharged to the storm drain system and concludes:

> Dewatering during construction is not anticipated to create a significant hazard to the public or the environment (p. 78).

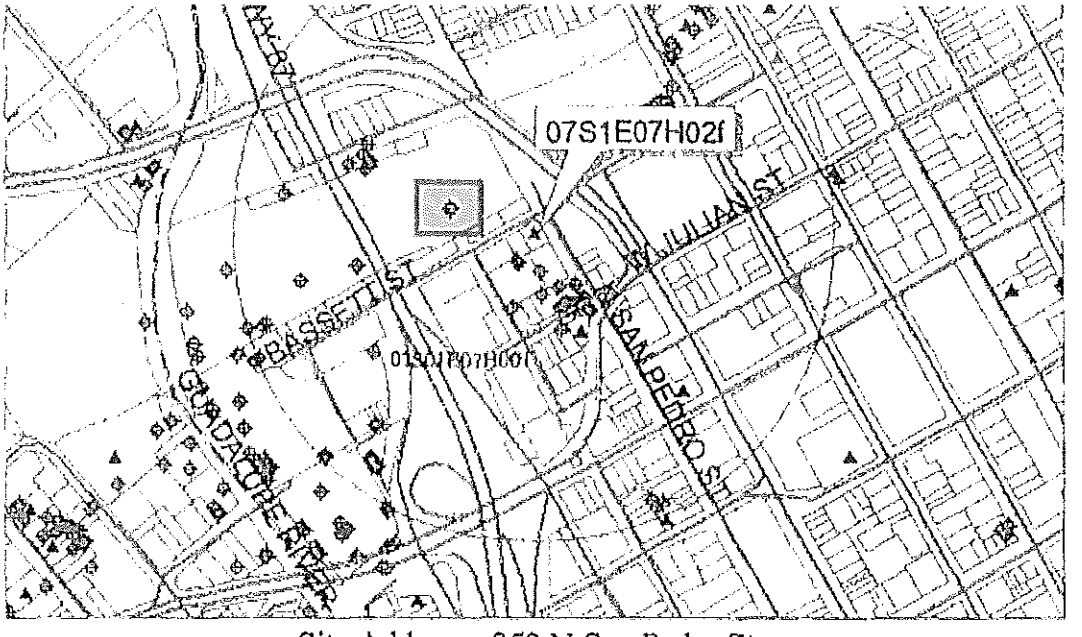
This conclusion is entirely unsupported and is contradicted by the data which we document showing benzene at 16 ppb in a sample collected within 25 feet of the Project boundary. In fact, the San Francisco Bay Regional Water Quality Control Board has limited discharge of benzene to stormwater drains from dewatering efforts to a maximum of 5 ppb, more than three times lower than the concentration detected in the Bassett Street well.[4] If instead, discharge to the sanitary sewer is contemplated, pretreatment may be necessary. Any discharge of contaminated groundwater generated during dewatering that would require treatment is potentially covered under the General Waste Discharge Permit issued by the San Francisco Bay Regional Water Quality Control Board Order No. R2-2012-0060.[5] A DEIR should be prepared to address the increase in excavation than previously analyzed

[1] Brandenburg Mixed Use Project/North San Pedro Housing Sites EIR (2003), pp. 41, 151.
[2] http://geotracker.waterboards.ca.gov/profile_report?global_id=T0608568823
[3] https://geotracker.waterboards.ca.gov/regulators/deliverable_documents/2860092639/SWI_R_2000-05-10.pdf, Table 5 and Figure 8
[4] https://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/1988/R2-1988-119.pdf
[5] http://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2012/R2-2012-0060.pdf

and analyze this potential groundwater contamination that may result in a significant environmental effect from Project dewatering on surface water bodies (via storm drains) or to public utilities (the sewer) during construction. The DEIR should also evaluate the potential health impacts that construction workers may face if they inhale petroleum compounds, including benzene which is a known human carcinogen[6], during the extensive dewatering activities.

A Well was not Evaluated in the IS/Addendum

A map from Geotracker for the Brandenburg Properties site shows a well to be located on the Project site.[7] This well, depicted below, was not identified in the Phase I to the IS/Addendum (Appendix C) and was not discussed in the IS/Addendum.



Site Address: 353 N San Pedro St
APN: 25932056

A DEIR should be prepared to include a description of this well along with disclosure of any data that may have been generated from the well, including soil and groundwater analytical data. Additionally, the DEIR should document measures to ensure the well has been located and properly abandoned prior to any earth-moving activities.

Air Quality

Diesel Particulate Matter Health Risk Emissions Require Analysis in Subsequent EIR

The IS/Addendum evaluates the health-risk posed to nearby residential receptors as a result of exposure to diesel particulate matter (DPM) emissions resulting from Project construction (*see* Appendix A);

[6] https://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=14
[7] https://geotracker.waterboards.ca.gov/regulators/deliverable_documents/4051131308/MAPS_METROSCAN.pdf

however, the IS/Addendum fails to evaluate, whatsoever, the health risk posed to nearby residential sensitive receptors as a result of exposure to emissions released during Project operation. As a result, the health impacts from exposure to toxic air contaminants (TACs), such as DPM, released during Project operation were not analyzed, thus leaving a gap within the IS/Addendum's analysis. Until a health risk assessment is prepared that evaluates the Project's potential operational health risk impact, the Project should not be approved.

According to the IS/Addendum, the closest sensitive receptors to the Project site are "residences located approximately 58 feet north of the project site" (p. 27). Once operational, the Project's commercial land uses will result in frequent truck deliveries, generating large amounts of diesel exhaust over the duration of Project operation. As such, the IS/Addendum should have conducted an operational health risk assessment, as long-term exposure to DPM, a known human carcinogen, and other TACs may result in a significant health risk impact and therefore, should be properly assessed.

Furthermore, by failing to prepare an individual, operational health risk assessment, the IS/Addendum is inconsistent with the Bay Area Air Quality Management District (BAAQMD) guidelines. According to BAAQMD CEQA Guidelines, "operational emissions typically represent the majority of a project's air quality impacts. After a project is built, operational emissions, including mobile and area sources, are anticipated to occur continuously throughout the project's lifetime."[8] The BAAQMD set forth the following significance thresholds for local community risk and hazard impacts:[9]

- Non-compliance with a qualified risk reduction plan; or,
- An excess cancer risk level of more than 10 in one million, or a non-cancer (i.e., chronic or acute) hazard index greater than 1.0 would be a cumulatively considerable contribution;
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average PM2.5 would be a cumulatively considerable contribution.

According to the BAAQMD, "if emissions of TACs or fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less (PM2.5) exceed any of the Thresholds of Significance listed [above], the proposed project would result in a significant impact."[10] The BAAQMD explicitly states that if a Project exceeds the thresholds listed above, including the individual health risk threshold of 10 in one million, that the Project would result in a significant health risk impact. Therefore, per BAAQMD guidance, the IS/Addendum should have prepared a Project-specific operational health risk assessment, and should have compared the results of this assessment to the 10 in one million threshold established

[8] "CEQA Air Quality Guidelines." BAAQMD, May 2010, *available at*: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx

[9] "CEQA Air Quality Guidelines." BAAQMD, May 2010, *available at*: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx, p. 2-4, 2-5

[10] "CEQA Air Quality Guidelines." BAAQMD, May 2010, *available at*: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx, p. 2-4

by the BAAQMD. By failing to do so, the Project's air quality analysis is incomplete, and should not be relied upon to determine Project significance.

Additionally, the omission of a quantified operational health risk is inconsistent with the most recent guidance published by the 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.[11] This guidance document describes the types of projects that warrant the preparation of a health risk assessment. Once construction is complete, Project operation will generate 1,720 daily vehicle trips, which will generate additional exhaust emissions, thus continuing to expose nearby sensitive receptors to DPM emissions (Appendix A, pp. 46). 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).[12] 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 OEHHA and BAAQMD guidance, health risk impacts from the Project operation should have been evaluated by the IS/Addendum. These recommendations reflect the most recent health risk assessment policy, and as such, an assessment of health risks to nearby sensitive receptors from operation should be included in a revised CEQA evaluation for the Project.

For the reasons mentioned above, we find the IS/Addendum's evaluation of the Project's health risk impact to be inadequate and unreliable. In an effort to demonstrate the potential health risk posed by Project construction and operation to nearby sensitive receptors, we prepared a simple-screening level health risk assessment. 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 the IS/Addendum.

Updated Health Risk Assessment Indicates Significant Health Impact

In an effort to demonstrate the potential health risk posed to nearby sensitive receptors during Project construction and operation, we prepared a simple screening-level health risk assessment. The results of our assessment, as described below, provides substantial evidence that DPM emissions from Project construction and operation, when evaluated correctly using the most up to date guidance, may result in a potentially significant health risk impact. As such, a DEIR should be prepared to adequately evaluate the proposed Project's health risk impacts during construction and operation, and additional mitigation measures should be identified and incorporated into the Project design, where necessary.

As of 2011, the Environmental Protection Agency (EPA) recommends AERSCREEN as the leading air dispersion model, due to improvements in simulating local meteorological conditions based on simple

[11] "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

[12] "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

input parameters.[13] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[14] and the California Air Pollution Control Officers Associated (CAPCOA)[15] 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 health risk screening assessment of the Project's construction and operational emissions. For the Project's construction health risk assessment, we did not prepare an AERSCREEN model, as the IS/Addendum already estimates the annual average concentrations at the MEI using AERMOD. Therefore, we relied upon the annual average concentrations provided in Appendix A of the IS/Addendum to assess the Project's construction-related health risk impacts (Appendix A, pp. 94). For the Project's operational health risk, we used the annual PM_{10} exhaust emissions from the IS/Addendum's CalEEMod model, which can be found in Appendix A of the IS/Addendum (Appendix A, pp. 29). The CalEEMod model's annual emissions indicate that operational activities will generate approximately 82 pounds of DPM over the 28-year operational period (Appendix A, pp. 79). The AERSCREEN model relies on a continuous average emission rate to simulate maximum downward concentration from point, area, and volume emission sources. To account for the variability in vehicle and truck trips over the Project operation we calculated an average DPM emission rate by the following equation.

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{82\ lbs}{365\ days} \times \frac{453.6\ grams}{lb} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = 0.001185\ g/s$$

Using this equation, we estimated a construction emission rate of 0.001185 grams per second (g/s). Operation activity was simulated as a 0.77-acre rectangular area source in AERSCREEN, with dimensions of 60 meters by 52 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 generated maximum reasonable estimates of single hour DPM concentrations from the Project site. EPA guidance suggests that in screening procedures, the annual average concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[16]

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[13] "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

[14] "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

[15] "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

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

The single-hour concentration estimated by AERSCREEN for Project operation is approximately 6.426 $\mu g/m^3$ DPM at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annual average concentration of 0.6426 $\mu g/m^3$ for operation at the MEIR.

We calculated the excess cancer risk to the residential receptors located closest to the Project site using applicable health risk assessment methodologies prescribed by OEHHA and the BAAQMD. OEHHA recommends the use of Age Sensitivity Factors (ASFs) to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution.[17] According to the updated guidance, quantified cancer risk should be multiplied by a factor of ten during 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 95[th] percentile breathing rates for infants.[18] We used a cancer potency factor of 1.1 (mg/kg-day) [-1] and an averaging time of 25,550 days. The results of our calculations are shown below.

The 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	1.94	0.23	1090	10	7.3E-05
Operation	0.06	0.64	1090	10	6.3E-06
Infant Exposure Duration	*2.00*			*Infant Exposure*	*7.9E-05*
Operation	14.00	0.64	572	3	2.3E-04
Child Exposure Duration	*14.00*			*Child Exposure*	*2.3E-04*
Operation	14.00	0.64	261	1	3.5E-05
Adult Exposure Duration	*14.00*			*Adult Exposure*	*3.5E-05*
Lifetime Exposure Duration	30.00			Lifetime Exposure	3.46E-04

The excess cancer risk to adults, children, and infants at a sensitive receptor located approximately 25 meters away, over the course of Project construction and operation are approximately 35, 230, and 79 in one million, respectively. Furthermore, the excess cancer risk over the course of a residential lifetime (30 years) is approximately 346 in one million. Consistent with OEHHA guidance, exposure was assumed to begin in the infantile stage of life to provide the most conservative estimates of air quality hazards. The infantile, child, adult, and lifetime cancer risk all exceed the BAAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not addressed in the IS/Addendum.

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

[18] "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:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf

It should be noted that our analysis represents a screening-level health risk assessment, which is known to be more conservative, and tends to err on the side of health protection.[19] The purpose of a screening-level health risk assessment, however, is to determine if a more refined health risk assessment needs to be conducted. If the results of a screening-level health risk are above applicable thresholds, then the Project needs to conduct a more refined health risk assessment that is more representative of site specific concentrations. Our screening-level health risk assessment demonstrates that construction and operation of the Project could result in a potentially significant health risk impact. As a result, a refined health risk assessment must be prepared to examine the air quality impacts generated by Project construction and operation. A DEIR must be prepared to adequately evaluate the Project's health risk impact, and should include additional mitigation measures to reduce these impacts to a less-than-significant level. Without a refined health risk assessment and mitigation addressing the findings of such an assessment, substantial evidence supports a fair argument that the Project may lead to significant public health impacts due to DPM emissions.

Failure to Demonstrate Feasibility of Obtaining Tier 4 Construction Equipment

The IS/Addendum evaluates the health risk posed to nearby sensitive receptors as a result of emissions generated by construction of the proposed Project and determines that "the maximum excess residential cancer risk would be 87.2 in one million for an infant exposure and 1.6 in one million for an adult exposure" (Appendix A, pp. 19). Because the maximum excess residential cancer risk for an infant receptor exceeds the BAAQMD's ten in one million threshold, the IS/Addendum proposes to "develop a plan demonstrating that the off-road equipment used on-site to construct the project would achieve a fleet-wide average of at least 89 percent reduction in PM10 emissions" (Appendix A, pp. 20). In order to achieve this substantial decrease in PM10 emissions, the IS/Addendum proposes to implement Tier 4 off-road construction equipment into the Project's construction fleet. The IS/Addendum states,

> "All mobile diesel-powered off-road equipment larger than 25 hp and operating on the site for more than two days shall meet, at a minimum, U.S. EPA particulate matter emissions standards for Tier 4 engines or equivalent. Note that the construction contractor could use other measures to minimize construction period DPM emission to reduce the estimated cancer risk below the thresholds. The use of equipment that meets U.S. EPA Tier 2 standards and includes CARB-certified Level 3 Diesel Particulate Filters or alternatively-fueled equipment (i.e., non-diesel) would meet this requirement. Other measures may be the use of added exhaust devices, or a combination of measures, provided that these measures are approved by the City and demonstrated to reduce community risk impacts to less than significant" (Appendix A, pp. 20).

The IS/Addendum determines that through the use of Tier 4 off-road construction equipment and implementation of Mitigation Measure AIR-1.1, the Project's construction-related health risk impact would be reduced to less than 9.5 in one million, which would be below the BAAQMD's established threshold of ten in one million (p.36; Appendix A, pp. 20). There is no substantial evidence, however, to support the feasibility of obtaining almost an entire construction fleet equipped with Tier 4 mitigation.

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

Although off-road Tier 4 equipment is available for purchase, it is not required that off-road construction fleets be comprised solely of Tier 4 engines. Furthermore, based on availability and cost, it is unrealistic to presume that all of the construction equipment utilized for the Project will have Tier 4 engines. As a result, this mitigation measure should not be relied upon to reduce the Project's construction-related health risk impact to below levels of significance. Rather, the Project should pursue additional mitigation measures that are more technically feasible to implement.

The United States Environmental Protection Agency's (USEPA) 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 – 2015.[20] These tiered emission standards, however, are only applicable to newly manufactured nonroad equipment. According to the United States Environmental Protection Agency (USEPA) "if products were built before EPA emission standards started to apply, they are generally not affected by the standards or other regulatory requirements."[21] 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 2008 are not required to adhere to Tier 4 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.[22] It is estimated that of the two million diesel engines currently used in construction, 31 percent were manufactured before the introduction of emissions regulations.[23]

Furthermore, in a 2010 white paper, the California Industry Air Quality Coalition estimated that approximately 7% and less than 1% of all off-road heavy-duty diesel equipment in California was equipped with Tier 2 and Tier 3 engines, respectively.[24] It goes on to explain that "cleaner burning Tier 4 engines...are not expected to come online in significant numbers until 2014." Given that significant production activities have only just begun within the last couple of years, it can be presumed that there is limited availability of Tier 4 equipment. Furthermore, due to the complexity of Tier 4 engines, it is very difficult if not nearly impossible, to retrofit older model machinery with this technology.[25] Therefore, available off-road machinery equipped with Tier 4 engines are most likely new. According to

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

[21] "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

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

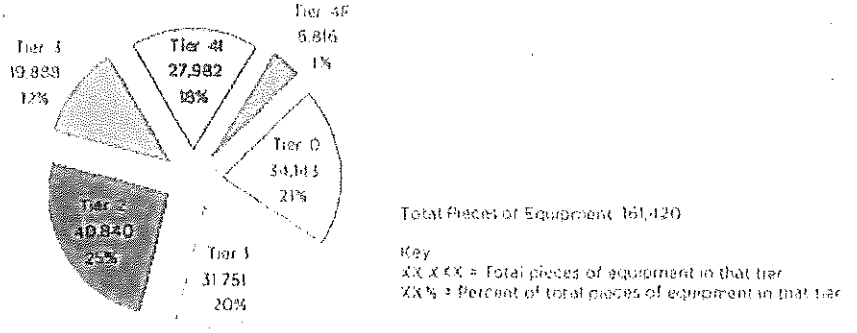
[23] Northeast Diesel Collaborative Clean Construction Workgroup, *available at:* http://northeastdiesel.org/construction.html

[24] "White Paper: An Industry Perspective on the California Air Resources Board Proposed Off-Road Diesel Regulations. "Construction Industry Air Quality Coalition, *available at:* http://www.agc-ca.org/uploadedFiles/Member_Services/Regulatory-Advocacy-Page-PDFs/White_Paper_CARB_OffRoad.pdf

[25] "Tier 4 - How it will affect your equipment, your business and your environment. "Milton CAT, *available at:* http://www.miltoncat.com/News/Documents/Articles/For%20the%20Trenches%20-%20Tier%204.pdf

a September 20, 2013 EPA Federal Register document, a new Tier 4 scraper or bulldozer would cost over $1,000,000 to purchase.[26] It is also relatively expensive to retrofit a piece of old machinery with a Tier 3 engine. For example, replacing a Tier 0 engine with a Tier 3 engine would cost roughly $150,000 or more.[27] Therefore, before applying mitigation measures of this caliber to a Project, the applicant should consider both the cost of the proposed equipment as well as determine the probability of obtaining an entirely Tier 4 construction fleet.

Similarly, 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 equipment is extremely limited. In 2014, 25% of all off-road equipment in the state of California were equipped with Tier 2 engines, approximately 12% were equipped with Tier 3 engines, approximately 18% were equipped with Tier 4 Interim engines, and only 4% were equipped with Tier 4 Final engines (see excerpt below).[28]



As demonstrated in the figure above, Tier 4 equipment only accounts for 22% of all off-road equipment currently available in the state of California. Thus, by stating that the Project proposes to use Tier 4 equipment during construction, the IS/Addendum is relying on a fleet of construction equipment that only accounts for 22% of all off-road equipment currently available in the state of California. Therefore, by failing to evaluate the feasibility of implementing Tier 4 mitigation into the Project's construction phases, it is likely that the IS/Addendum's estimation of the reductions in construction emissions associated with the use of Tier 4 mitigation may not reduce the Project's health risk impact to less than significant levels. Thus, we find the IS/Addendum's reliance on Tier 4 mitigation to reduce the Project's significant health-related impact to a less than significant level to be unsubstantiated and should not be relied upon to determine Project significance.

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[26] "Federal Register." Environmental Protection Agency, September 20, 2013, *available at:* http://www.gpo.gov/fdsys/pkg/FR-2013-09-20/pdf/2013-22930.pdf

[27] "Federal Register." Environmental Protection Agency, September 20, 2013, *available at:* http://www.gpo.gov/fdsys/pkg/FR-2013-09-20/pdf/2013-22930.pdf

[28] "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

Additional Mitigation Measures Available to Reduce Construction Emissions

Our health risk assessment demonstrates that Project construction-related DPM emissions would result in a significant health risk impact. Furthermore, our analysis demonstrates that the mitigation proposed in the IS/Addendum to mitigate this significant impact may not reduce emissions to less than significant levels. Therefore, additional mitigation measures must be identified and incorporated in a Project-specific DEIR to reduce these emissions to a less than significant level.

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 particulate matter.[29] Diesel particulate matter ("DPM") is a byproduct of diesel fuel combustion, and is 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: [30]

- All diesel onroad vehicles on site for more than 10 total days must have either (1) engines that meet EPA 2007 onroad emissions standards or (2) emission control technology verified by EPA[31] or the California Air Resources Board (CARB)[32] to reduce PM emissions by a minimum of 85 percent.
- 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.
- All diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend[33] approved by the original engine manufacturer with sulfur content of 15 parts per million (ppm) or less.

Repower or Replace Older Construction Equipment Engines

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

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

[31] For EPA's list of verified technology: http://www3.epa.gov/otaq/diesel/verification/verif-list.htm

[32] For CARB's list of verified technology: http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

[33] 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

The NEDC recognizes that availability of equipment that meets the EPA's newer standards is limited.[34] 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.[35] 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.[36] 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.[37]

- 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.[38] 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.[39]

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

[34] http://northeastdiesel.org/pdf/BestPractices4CleanDieselConstructionAug2012.pdf
[35] http://northeastdiesel.org/pdf/BestPractices4CleanDieselConstructionAug2012.pdf
[36] http://www3.epa.gov/otaq/diesel/technologies/engines.htm
[37] Diesel Emissions Reduction Program (DERA): Technologies, Fleets and Projects Information, *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi/P100CVIS.PDF?Dockey=P100CVIS.PDF
[38] 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
[39] 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

emissions and should not impact engine or vehicle operation.[40] 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*[41] 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[42] and Komptech USA[43], 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.[44] 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.[45] 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*[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 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.[47] The list should include the following:[48]

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

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

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

[43] Komptech Green Efficiency Brochure, *available at:* https://www.komptech.com/index.php?eID=tx_nawsecuredl&u=0&g=0&t=1499460496&hash=629664449e3954477f6857f98ad1d73f8f2ec20d&file=fileadmin/komptech/brochures/Green_Efficiency_eng_2015.pdf

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

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

[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-specification.pdf

[48] 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

- 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*[49] 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: [50]

- 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[51] 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: [52]

- 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

[49] http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
[50] Diesel Emission Controls in Construction Projects, *available at:* http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf
[51] 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.
[52] Diesel Emission Controls in Construction Projects, *available at:* http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf

- 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,"[53] 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.
    - 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

[53] http://www.airquality.org/LandUseTransportation/Documents/Ch3EnhancedExhaustControlFINAL10-2013.pdf

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.

When combined together, these measures offer a cost-effective way to incorporate lower-emitting equipment into the Project's construction fleet, which subsequently, reduces particulate matter emissions released during Project construction. A DEIR must be prepared to include additional mitigation measures, as well as include an updated air quality assessment 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.

Mitigation Measures Available to Reduce Operational Emissions

Our health risk analysis demonstrates that the Project's operational DPM emissions may present a potentially significant impact. In an effort to reduce these emissions, we identified several additional mitigation measures that are applicable to the Project. Therefore, in an effort to reduce the Project's operational DPM emissions, we recommend the following mitigation measures that will result in a reduction in the total vehicle miles traveled (VMT) during operation, and will therefore result in a reduction in criteria air pollutant emissions. As stated in the section above, additional mitigation measures can be found in CAPCOA's Quantifying Greenhouse Gas Mitigation Measures, which attempt to reduce criteria air pollutant emissions such as PM_{10}.[54] These emissions are byproduct of fuel combustion during vehicle travel. Mitigation for criteria pollutant emissions should include consideration of the following mobile mitigation measures in an effort to reduce operational PM_{10} emissions to below thresholds.

- Neighborhood/Site Enhancements
    - Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project should provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. The project should minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation should be eliminated.
- 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

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

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
- Unbundle Parking Costs from Property Cost
  - Unbundling separates parking from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost from the property cost. This removes the burden from those who do not wish to utilize a parking space. Parking should be priced separately from home rents/purchase prices or office leases.
- Implement Commute Trip Reduction Program- Voluntary or Required
  - Implementation of a Commute Trip Reduction (CTR) program with employers will discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The main difference between a voluntary and a required program is:
    - Monitoring and reporting is not required
    - No established performance standards (i.e. no trip reduction requirements)
  - The CTR program should provide employees with assistance in using alternative modes of travel, and provide both "carrots" and "sticks" to encourage employees. The CTR program should include all of the following to apply the effectiveness reported by the literature:
    - Carpooling encouragement
    - Ride-matching assistance
    - Preferential carpool parking
    - Flexible work schedules for carpools
    - Half time transportation coordinator
    - Vanpool assistance
    - Bicycle end-trip facilities (parking, showers and lockers)
- Provide Ride-Sharing Programs
  - Increasing the vehicle occupancy by ride sharing will result in fewer cars driving the same trip, and thus a decrease in VMT. The project should include a ride-sharing program as well as a permanent transportation management association membership and funding requirement. The project can promote ride-sharing programs through a multi-faceted approach such as:

        - Designating a certain percentage of parking spaces for ride sharing vehicles
        - Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles
        - Providing a web site or message board for coordinating rides
- 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.
- Provide End of Trip Facilities
    - Non-residential projects can provide "end-of-trip" facilities for bicycle riders including showers, secure bicycle lockers, and changing spaces. End-of-trip facilities encourage the use of bicycling as a viable form of travel to destinations, especially to work. End-of-trip facilities provide the added convenience and security needed to encourage bicycle commuting.
- Implement Commute Trip Reduction Marketing
    - The project can implement marketing strategies to reduce commute trips. Information sharing and marketing are important components to successful commute trip reduction strategies. Implementing commute trip reduction strategies without a complementary marketing strategy will result in lower VMT reductions. Marketing strategies may include:
        - New employee orientation of trip reduction and alternative mode options
        - Event promotions
        - Publications
- Implement Preferential Parking Permit Program
    - The project can provide preferential parking in convenient locations (such as near public transportation or building front doors) in terms of free or reduced parking fees, priority parking, or reserved parking for commuters who carpool, vanpool, ride-share or use alternatively fueled vehicles. The project should provide wide parking spaces to accommodate vanpool vehicles.
- Implement Car-Sharing Program
    - This project should implement a car-sharing project to allow people to have on-demand access to a shared fleet of vehicles on an as-needed basis. User costs are typically determined through mileage or hourly rates, with deposits and/or annual membership fees. The car-sharing program could be created through a local partnership or through one of many existing car-share companies. Car-sharing programs may be grouped into three general categories: residential- or citywide-based, employer-based, and transit station-based. Transit station-based programs focus on providing the "last-mile" solution and link transit with commuters' final destinations. Residential-based programs work to substitute entire household based trips. Employer-based programs provide a

means for business/day trips for alternative mode commuters and provide a guaranteed ride home option.

- Provide Employer-Sponsored Vanpool/Shuttle
  - This project can implement an employer-sponsored vanpool or shuttle. A vanpool will usually service employees' commute to work while a shuttle will service nearby transit stations and surrounding commercial centers. Employer-sponsored vanpool programs entail an employer purchasing or leasing vans for employee use, and often subsidizing the cost of at least program administration, if not more. The driver usually receives personal use of the van, often for a mileage fee. Scheduling is within the employer's purview, and rider charges are normally set on the basis of vehicle and operating cost.
- Implement Bike-Sharing Program
  - This project can establish a bike-sharing program to reduce VMTs. Stations should be at regular intervals throughout the project site.
    - For example, Paris' bike-share program places a station every few blocks throughout the city (approximately 28 bike stations/square mile).
- Price Workplace Parking
  - The project should implement workplace parking pricing at its employment centers. This may include: explicitly charging for parking for its employees, implementing above market rate pricing, validating parking only for invited guests, not providing employee parking and transportation allowances, and educating employees about available alternatives.
  - Though similar to the Employee Parking "Cash-Out" strategy, this strategy focuses on implementing market rate and above market rate pricing to provide a price signal for employees to consider alternative modes for their work commute.
- Implement Employee Parking "Cash-Out"
  - The project can require employers to offer employee parking "cash-out." The term "cash-out" is used to describe the employer providing employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to the cost of the parking space to the employer.

When combined together, these measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduces emissions released during Project operation. A Project-specific DEIR must be prepared to include additional mitigation measures, as well as include an updated air quality analysis to ensure that the necessary mitigation measures are implemented to reduce operational emissions to below thresholds. Furthermore, 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 emissions are reduced to the

maximum extent possible.

Sincerely,

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Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

Geologic and Hydrogeologic Characterization
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
Industrial Stormwater Compliance
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, Matt has developed extensive client relationships and has managed complex projects that include consultation as an expert witness and a regulatory specialist, and a manager of projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2104, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 - 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 100 industrial facilities.
- Expert witness on numerous cases including, for example, 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.

<u>Policy:</u>

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.

HADLEY KATHRYN NOLAN

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EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES B.S. ENVIRONMENTAL SCIENCES & ENVIRONMENTAL SYSTEMS AND SOCIETY *JUNE 2016*

PROJECT EXPERIENCE

SOIL WATER AIR PROTECTION ENTERPRISE *SANTA MONICA, CA*

AIR QUALITY SPECIALIST

SENIOR PROJECT ANALYST: CEQA ANALYSIS & MODELING

- Modeled construction and operational activities for proposed land use projects using CalEEMod to quantify criteria air pollutant and greenhouse gas (GHG) emissions.
- Organized presentations containing figures and tables that compare results of criteria air pollutant analyses to thresholds.
- Quantified ambient air concentrations at sensitive receptor locations using AERSCREEN, a U.S. EPA recommended screening level dispersion model.
- Conducted construction and operational health risk assessments for residential, worker, and school children sensitive receptors.
- Prepared reports that discuss adequacy of air quality and health risk analyses conducted for proposed land use developments subject to CEQA review by verifying compliance with local, state, and regional regulations.

SENIOR PROJECT ANALYST: GREENHOUSE GAS MODELING AND DETERMINATION OF SIGNIFICANCE

- Evaluated environmental impact reports for proposed projects to identify discrepancies with the methods used to quantify and assess GHG impacts.
- Quantified GHG emissions for proposed projects using CalEEMod to produce reports, tables, and figures that compare emissions to applicable CEQA thresholds and reduction targets.
- Determined compliance of proposed land use developments with AB 32 GHG reduction targets, with GHG significance thresholds recommended by Air Quality Management Districts in California, and with guidelines set forth by CEQA.

PROJECT ANALYST: ASSESSMENT OF AIR QUALITY IMPACTS FROM PROPOSED DIRECT TRANSFER FACILITY

- Assessed air quality impacts resulting from implementation of a proposed Collection Service Agreement for Exclusive Residential and Commercial Garbage, Recyclable Materials, and Organic Waste Collection Services for a community.
- Organized tables and maps to demonstrate potential air quality impacts resulting from proposed hauling trip routes.
- Conducted air quality analyses that compared quantified criteria air pollutant emissions released during construction of direct transfer facility to the Bay Area Air Quality Management District's (BAAQMD) significance thresholds.
- Prepared final analytical report to demonstrate local and regional air quality impacts, as well as GHG impacts.

PROJECT ANALYST: EXPOSURE ASSESSMENT OF LEAD PRODUCTS FOR PROPOSITION 65 COMPLIANCE DETERMINATION

- Calculated human exposure and lifetime health risk for over 300 lead products undergoing Proposition 65 compliance review.
- 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) to determine level of compliance.
- Prepared final analytical lead exposure Certificate of Merit (COM) reports and organized supporting data for use in environmental enforcement statute Proposition 65 cases.

ACCOMPLISHMENTS

- **Academic Honoree**, Dean's List, University of California, Los Angeles *MAR 2013, MAR 2014, JAN 2015, JAN 2016*

EXHIBIT B

Bassett St. Operational HRA

Start date and time 10/11/17 14:38:54
AERSCREEN 14147

BASSETT ST. HRA

---------- DATA ENTRY VALIDATION ----------

** AREADATA **	METRIC	ENGLISH
Emission Rate:	0.118E-02 g/s	0.940E-02 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	60.00 meters	196.85 feet
Area Source Width:	52.00 meters	170.60 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	1025000	
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

** 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

AERSCREEN output file:
Bassett St. Operational HRA.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 10/11/17 14:39:22
****

Running AERMOD
Processing Winter

Processing surface roughness sector 1

****
Processing wind flow sector 1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 0

******** WARNING MESSAGES ********

```
             ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

    ********   WARNING MESSAGES   ********

             ***  NONE  ***

**************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10

    ********   WARNING MESSAGES   ********

             ***  NONE  ***

**************************************************
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15

    ********   WARNING MESSAGES   ********

             ***  NONE  ***

**************************************************
Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20

    ********   WARNING MESSAGES   ********

             ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  25
```

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 30

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 8

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 35

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 9

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 40

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 10

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 45

******** WARNING MESSAGES ********

*** NONE ***

****

Running AERMOD
Processing Spring

```
Processing surface roughness sector  1

**************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20
```

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 25

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 30

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 8

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 35

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 9

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 40

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 10

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  45

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

 *********************************************

  Running AERMOD
 Processing Summer

Processing surface roughness sector  1

*****************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

*****************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

*****************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

*****************************************************
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  15
```

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 20

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 25

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 30

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 8

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 35

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 9

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  40

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

**************************************************
Processing wind flow sector  10

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  45

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

 ******************************************

  Running AERMOD
 Processing Autumn

Processing surface roughness sector  1

**************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5

    ********   WARNING MESSAGES    ********

               ***  NONE  ***

**************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10
```

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 15

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 20

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 25

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 30

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 8

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  35

    ********   WARNING MESSAGES    ********

                ***  NONE  ***


**************************************************
Processing wind flow sector   9

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  40

    ********   WARNING MESSAGES    ********

                ***  NONE  ***


**************************************************
Processing wind flow sector  10

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  45

    ********   WARNING MESSAGES    ********

                ***  NONE  ***


FLOWSECTOR    ended 10/11/17 14:39:40

REFINE        started 10/11/17 14:39:40

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES    ********

                ***  NONE  ***


REFINE        ended 10/11/17 14:39:41

 ********************************************
 AERSCREEN Finished Successfully
 With no errors or warnings
 Check log file for details
 ********************************************

 Ending date and time  10/11/17 14:39:42
```

Bassett St. Operational HRA_max_conc_distance

Concentration	Distance	Elevation	Season/Month	Zo sector	Date	H0
U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS HT REF TA HT						
0.47053E+01	1.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.64264E+01	25.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
* 0.67191E+01	31.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.46730E+01	50.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.24283E+01	75.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.16189E+01	100.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.11930E+01	125.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.93036E+00	150.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.75394E+00	175.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.62799E+00	200.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.53464E+00	225.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.46295E+00	250.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.40638E+00	275.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.36064E+00	300.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						
0.32318E+00	325.00	0.00	Winter	0-360	10011001	-1.30
0.043 -9.000 0.020 -999. 21. 6.0 1.000 1.50 0.35 0.50 10.0 310.0 2.0						

```
   0.29194E+00       350.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.26569E+00       375.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.24325E+00       400.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.22385E+00       425.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.20696E+00       450.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.19223E+00       475.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.17921E+00       500.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.16761E+00       525.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.15725E+00       550.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14797E+00       575.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13959E+00       600.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13202E+00       625.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12514E+00       650.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11887E+00       675.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11312E+00       700.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10782E+00       725.00      0.00        Winter       0-360   10011001   -1.30
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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   0.10291E+00       750.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.98375E-01       775.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.94174E-01       800.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.90278E-01       825.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.86652E-01       850.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.83275E-01       875.01      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.80498E-01       900.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.77522E-01       925.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.74732E-01       950.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.72112E-01       975.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.69647E-01      1000.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.67324E-01      1025.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.65132E-01      1050.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.63061E-01      1075.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.61101E-01      1100.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.59244E-01      1125.00      0.00        Winter       0-360   10011001   -1.30
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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   0.57483E-01      1149.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.55811E-01      1175.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.54221E-01      1200.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.52708E-01      1225.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.51267E-01      1249.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.49892E-01      1275.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.48581E-01      1300.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.47328E-01      1325.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.46130E-01      1349.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.44983E-01      1375.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.43885E-01      1400.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.42833E-01      1425.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.41824E-01      1450.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.40855E-01      1475.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.39925E-01      1500.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.39031E-01      1525.00      0.00        Winter       0-360   10011001   -1.30
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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   0.38172E-01      1550.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.37345E-01      1575.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.36548E-01      1600.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.35781E-01      1625.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.35042E-01      1650.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.34329E-01      1675.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.33641E-01      1700.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.32978E-01      1725.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.32337E-01      1750.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.31717E-01      1774.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.31119E-01      1800.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.30540E-01      1824.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.29980E-01      1850.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.29438E-01      1875.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.28914E-01      1900.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.28407E-01      1924.99      0.00        Winter       0-360   10011001   -1.30
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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   0.27915E-01      1950.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.27438E-01      1975.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.26976E-01      2000.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.26528E-01      2025.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.26094E-01      2050.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.25673E-01      2075.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.25264E-01      2100.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.24867E-01      2125.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.24482E-01      2150.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.24108E-01      2175.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.23744E-01      2200.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.23391E-01      2224.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.23048E-01      2250.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.22715E-01      2275.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.22390E-01      2300.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.22075E-01      2325.00      0.00        Winter       0-360   10011001   -1.30
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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   0.21769E-01      2350.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.21470E-01      2375.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.21180E-01      2400.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.20898E-01      2425.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.20623E-01      2449.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.20355E-01      2475.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.20095E-01      2500.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.19841E-01      2525.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.19594E-01      2550.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.19353E-01      2575.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.19119E-01      2600.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.18890E-01      2625.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.18667E-01      2650.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.18450E-01      2675.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.18238E-01      2700.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.18032E-01      2725.00      0.00        Winter       0-360   10011001   -1.30
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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   0.17830E-01      2750.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.17634E-01      2775.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.17442E-01      2800.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.17255E-01      2824.99      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.17073E-01      2850.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.16895E-01      2875.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.16721E-01      2900.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.16551E-01      2925.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.16385E-01      2950.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.16224E-01      2975.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.16066E-01      3000.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.15911E-01      3025.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.15760E-01      3050.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.15613E-01      3075.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.15469E-01      3100.00      0.00        Winter      0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.15328E-01      3125.00      0.00        Winter      0-360   10011001   -1.30
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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   0.15190E-01      3150.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.15056E-01      3174.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14924E-01      3200.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14795E-01      3225.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14669E-01      3250.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14546E-01      3275.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14425E-01      3300.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14307E-01      3325.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14192E-01      3350.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.14079E-01      3375.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13968E-01      3400.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13860E-01      3425.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13754E-01      3450.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13650E-01      3475.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13548E-01      3500.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13448E-01      3525.00      0.00        Winter       0-360   10011001   -1.30
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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   0.13350E-01      3550.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13254E-01      3575.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13160E-01      3600.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.13068E-01      3625.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12978E-01      3650.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12889E-01      3675.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12803E-01      3700.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12717E-01      3724.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12634E-01      3750.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12552E-01      3775.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12471E-01      3800.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12392E-01      3825.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12314E-01      3850.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12238E-01      3875.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12163E-01      3900.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.12090E-01      3925.00      0.00        Winter       0-360   10011001   -1.30
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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   0.12017E-01      3950.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11947E-01      3975.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11877E-01      4000.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11808E-01      4025.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11741E-01      4050.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11675E-01      4075.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11610E-01      4100.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11545E-01      4125.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11482E-01      4150.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11421E-01      4175.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11359E-01      4200.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11300E-01      4225.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11241E-01      4250.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11182E-01      4275.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11125E-01      4300.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.11069E-01      4325.00      0.00        Winter       0-360   10011001   -1.30
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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   0.11013E-01      4350.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10959E-01      4375.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10905E-01      4400.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10852E-01      4425.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10800E-01      4450.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10748E-01      4475.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10698E-01      4500.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10648E-01      4525.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10598E-01      4550.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10550E-01      4575.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10502E-01      4600.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10455E-01      4625.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10408E-01      4650.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10362E-01      4675.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10317E-01      4700.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10272E-01      4725.00      0.00        Winter       0-360   10011001   -1.30
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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   0.10228E-01      4750.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10184E-01      4775.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10141E-01      4800.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10099E-01      4825.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10057E-01      4850.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.10015E-01      4875.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.99746E-02      4900.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.99342E-02      4924.99      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.98943E-02      4950.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.98549E-02      4975.00      0.00        Winter       0-360   10011001   -1.30
0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0   310.0
   2.0
   0.98159E-02      4999.99      0.00        Winter       0-360   10011001   -1.30
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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