Advance Agenda Material

Please Retain For February 4, 2020

Board Meeting

Inter Office Memo

Reviewed 1/13/20 GMD

DATE: January 6, 2020

TO: Board of Supervisors

FROM: Steven E. White, Director, Department of Public Works and Planning

SUBJECT: Advance Agenda Material for Initial Study No. 7449 and Amendment Application No. 3829 - Board Hearing of February 4, 2020 (File No. 19-1698)

BACKGROUND AND SUMMARY OF MATERIALS

The Department of Public Works and Planning intends to bring an Agenda Item to your Board on February 4, 2020, which will forward a unanimous recommendation of approval from the Planning Commission on December 12, 2019 for Amendment Application No. 3829 (Owner/Applicant: We Be Jammin / John B. Brelsford). The recommended action from the Planning Commission will be to adopt the Mitigated Negative Declaration (MND) prepared by staff and approve the rezone of 42.6 acres with split zoning [40.1 acres from the AL-20 (Limited Agricultural, 20-acre minimum parcel size) Zone District and 2.5 acres from the M-3(c) (Heavy Industrial, Conditional) Zone District, limited to a parking lot] to the M-3(c) (Heavy Industrial, Conditional) Zone District, finding the action is consistent with the County's General Plan and County-adopted Roosevelt Community Plan.

The project is located on the southeast corner of E. Central Avenue and S. Willow Avenue approximately 3,002 feet east of the nearest city limits of City of Fresno (4216 S. Willow Avenue, Fresno) (APN 331-090-96).

Staff received a lengthy letter of opposition from the law firm of Lozeau Drury LLP, representing Laborers International Union of North America Local Union 293, challenging the Initial Study (IS) analysis and providing repudiating information from their experts. A copy of this letter was provided to the Planning Commission prior to their consideration of the item on December 12, 2019. After reviewing the information and hearing testimony from the applicant, those in favor of the application and those opposed, the Planning Commission voted unanimously (9-0) to recommend approval of this action to your Board.

The Planning Commission staff report, Initial Study, Draft MND, and letter of opposition on Compact Disk (CD), is being distributed to your Board to provide additional time for review prior to consideration of AA No. 3829 at your regularly-scheduled February 4, 2020 Board Meeting.

SUMMARY OF CD CONTENTS

- Planning Commission Staff Report for AA No. 3829
- Initial Study No. 7449 for AA No. 3820
- Draft MND
- Letter of Opposition from Lozeau Drury LLP

For additional questions regarding the attached, please contact Marianne Mollring, Senior Planner at 600-4569.

Attachment: CD

cc: Bernice Seidel, Clerk to the Board
Jean M. Rousseau, County Administrative Officer
Dan Cederborg, County Counsel
Bernard Jimenez, Assistant Director, Public Works and Planning
William Kettler, Division Manager, Public Works and Planning

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ATTACHMENT C

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December 9, 2019

Via E-mail

Fresno County Department of Public Works and Planning
Development Services and Capital Projects Division
Attn: Ejaz Ahmad
2220 Tulare Street, Suite A
Fresno, CA 93721
Email: eahmad@fresnocountyca.gov

Re: Comments on Mitigated Negative Declaration for Initial Study Application No. 7449 and Amendment Application No. 3829 (John B. Brelsford on behalf of We Be Jammin, LP, a California Limited Partnership)

Dear Mr. Ahmad:

I am writing on behalf of Laborers International Union of North America Local Union 294 ("LIUNA") concerning the Initial Study and Mitigated Negative Declaration (collectively the "MND") for the proposed project to allow the rezone of a 42.6-acre parcel of land to the M-3(c) Zone District to allow limited heavy industrial, general industrial, and light manufacturing uses (the "Project"). After reviewing the Project and MND together with our expert consultants, it is evident that the MND is wholly inadequate and fails to analyze the potential environmental impacts of the project as a whole, as required by CEQA. Because the Project as a whole will have significant environmental impacts, the County of Fresno ("County") should have prepared an EIR.

20-acre parcel from AL-20 to M3, Amendment Application No. 3807 and Initial Study Application No. 6984 (the "Project"). After reviewing the Project and MND together with our expert consultants, it is evident that the MND is wholly inadequate and fails to analyze the potential environmental impacts of the project as a whole, as required by CEQA. Because the Project as a whole will have significant environmental impacts, the County of Fresno ("County") should have prepared an EIR

LIUNA submits herewith comments of the environmental consulting firm Soil/Water/Air Protection Enterprise ("SWAPE"), including Matthew Hagemann, P.G., C.Hg., QSD, QSP, former Senior Science Policy Advisor, U.S. EPA Region 9 and Hydrogeologist, Superfund, RCRA and Clean Water programs and environmental scientist Paul Rosenfeld, Ph.D. Hadley SWAPE's expert comments and the curriculum vitae of Mr. Hagemann and Dr. Rosenfeld are attached hereto as Exhibit A. LIUNA also submits comments from civil and traffic engineer Daniel Smith, Jr., whose expert comments and curriculum vitae are attached hereto as Exhibit B.

Finally, LIUNA submits herewith comments of wildlife biologist Shawn Smallwood, Ph.D. Dr. Smallwood's expert comments and curriculum vitae are attached hereto as Exhibit C.

Each of SWAPE's, Mr. Smith's, and Dr. Smallwood's comments requires separate responses from the County. These experts and our own independent review demonstrate that the IS/MND is woefully inadequate and that an EIR should be prepared prior to Project approval to analyze all impacts and require implementation of all feasible mitigation measures.

PROJECT DESCRIPTION

The Project proposes to rezone a 42.6-acre parcel of land that currently has split zoning. A 2.5-acre portion of the site is zoned M-3(c) (Heavy Industrial, Conditional) and the remaining 40.1-acres is zoned AL-20 (Limited Agriculture, 20-acre minimum parcel size). The Project proposes to rezone the entire parcel to M-3(c) to allow limited heavy industrial, general industrial, and light manufacturing uses as requested by the Applicant. The Project site is located on the southeast corner of E. Central Avenue and S. Willow Avenue, approximately 3,002 feet east of the nearest city limits of City of Fresno.

Industrial and agricultural parcels surrounding the Project site range from 4.5 acres to 45 acres in size, and contain field crops and an automobile wrecking yard. Parcels immediately to the north and west are zoned M-3 and are developed with warehousing/offices, storage buildings, and machinery and equipment manufacturing facilities. Parcels to the east are zones AE-20 and are in agricultural production with single-family residences. Parcels to the south are developed with an automobile wrecking yard and single-family residences.

LEGAL STANDARDS

As the California Supreme Court held, "[i]f no EIR has been prepared for a nonexempt project, but substantial evidence in the record supports a fair argument that the project may result in significant adverse impacts, the proper remedy is to order preparation of an EIR." (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 319-320 ["*CBE v. SCAQMD*"], citing, *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75, 88; *Brentwood Assn. for No Drilling, Inc. v. City of Los Angeles* (1982) 134 Cal.App.3d 491, 504–505.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (*Communities for a Better Environment v. Calif. Resources Agency* (2002) 103 Cal.App.4th 98, 109 ["*CBE v. CRA*"].)

The EIR is the very heart of CEQA. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1214; *Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 927.) The EIR is an "environmental 'alarm bell' whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return." (*Bakersfield Citizens,* 124 Cal.App.4th at 1220.) The EIR also functions as a "document of accountability," intended to "demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action." (*Laurel Heights Improvements Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 392.) The EIR process "protects not only the environment but also informed self-government." (*Pocket Protectors,* 124 Cal.App.4th at 927.)

An EIR is required if "there is substantial evidence, in light of the whole record before the lead agency, that the project may have a significant effect on the environment." (Pub. Resources Code, § 21080(d); see also *Pocket Protectors,* 124 Cal.App.4th at 927.) In limited circumstances, an agency may avoid preparing an EIR by issuing a negative declaration, a written statement briefly indicating that a project will have no significant impact thus requiring no EIR (14 Cal. Code Regs., § 15371 ["CEQA Guidelines"]), only if there is not even a "fair argument" that the project will have a significant environmental effect. (Pub. Resources Code, §§ 21100, 21064.) Since "[t]he adoption of a negative declaration . . . has a terminal effect on the environmental review process," by allowing the agency "to dispense with the duty [to prepare an EIR]," negative declarations are allowed only in cases where "the proposed project will not affect the environment at all." (*Citizens of Lake Murray v. San Diego* (1989) 129 Cal.App.3d 436, 440.)

Where an initial study shows that the project may have a significant effect on the environment, a mitigated negative declaration may be appropriate. However, a mitigated negative declaration is proper *only* if the project revisions would avoid or mitigate the potentially significant effects identified in the initial study "to a point where clearly no significant effect on the environment would occur, and…there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Public Resources Code §§ 21064.5 and 21080(c)(2); *Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 331.) In that context, "may" means a *reasonable possibility* of a significant effect on the environment. (Pub. Resources Code, §§ 21082.2(a), 21100, 21151(a); *Pocket Protectors,* 124 Cal.App.4th at 927; *League for Protection of Oakland's etc. Historic Resources v. City of Oakland* (1997) 52 Cal.App.4th 896, 904–905.)

Under the "fair argument" standard, an EIR is required if any substantial evidence in the record indicates that a project may have an adverse environmental effect—even if contrary evidence exists to support the agency's decision. (CEQA Guidelines, § 15064(f)(1); *Pocket Protectors*, 124 Cal.App.4th at 931; *Stanislaus Audubon Society v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150-15; *Quail Botanical Gardens Found., Inc. v. City of Encinitas* (1994) 29 Cal.App.4th 1597, 1602.) The "fair argument" standard creates a "low threshold" favoring environmental review through an EIR rather than through issuance of negative declarations or notices of exemption from CEQA. (*Pocket Protectors*, *supra*, 124 Cal.App.4th at 928.)

The "fair argument" standard is virtually the opposite of the typical deferential standard accorded to agencies. As a leading CEQA treatise explains:

> This 'fair argument' standard is very different from the standard normally followed by public agencies in making administrative determinations. Ordinarily, public agencies

> weigh the evidence in the record before them and reach a decision based on a preponderance of the evidence. [Citations]. The fair argument standard, by contrast, prevents the lead agency from weighing competing evidence to determine who has a better argument concerning the likelihood or extent of a potential environmental impact. The lead agency's decision is thus largely legal rather than factual; it does not resolve conflicts in the evidence but determines only whether substantial evidence exists in the record to support the prescribed fair argument.

(Kostka & Zishcke, *Practice Under CEQA*, §6.29, pp. 273-274.) The Courts have explained that "it is a question of law, not fact, whether a fair argument exists, and the courts owe no deference to the lead agency's determination. Review is de novo, with a ***preference for resolving doubts in favor of environmental review***." (*Pocket Protectors*, 124 Cal.App.4th at 928 [emphasis in original].)

CEQA requires that an environmental document include a description of the project's environmental setting or "baseline." (CEQA Guidelines, § 15063(d)(2).) The CEQA "baseline" is the set of environmental conditions against which to compare a project's anticipated impacts. (*CBE v. SCAQMD*, 48 Cal.4th at 321.) CEQA Guidelines section 15125(a) states, in pertinent part, that a lead agency's environmental review under CEQA:

> …must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time [environmental analysis] is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant.

(See, *Save Our Peninsula Committee v. County of Monterey* (2001) 87 Cal.App.4th 99, 124-125 ["*Save Our Peninsula*"].)

DISCUSSION

I. The IS/MND Violates CEQA By Not Analyzing the "Whole of the Action."

The overarching issue permeating nearly the entire IS/MND is the failure of the IS/MND to analyze the "whole of the action," improperly diminishing the Project's environmental impacts.

CEQA defines the term "project" broadly, as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."(14 CCR § 15378(a); Pub. Res. Code § 21065.) This means that an initial study must consider all phases of a project, including planning, implementation, operation, and phases planned for future implementation. (14 CCR § 15063(a)(1).) This broad definition is designed to provide the fullest possible protection to the environment within the reasonable scope of CEQA's statutory language. (*Tuolumne County*

Citizens for Responsible Growth, Inc. v. City of Sonora (2007) 155 Cal.App.4th 1214, 1222.)

A lead agency may not limit environmental disclosure by ignoring the development that will ultimately result from an initial approval. (*City of Antioch v. City Council* (1986) 187 Cal.App.3d 1325.) Under CEQA's definition of a project, although a project may go through several approval stages, the environmental review accompanying the first discretionary approval must evaluate the impacts of the ultimate development authorized by that approval." (Kostka & Zischke, *Practice Under the California Environmental Quality Act* (CEB 2017), § 6.31, p. 6-26. (citing 14 CCR § 15003(h); *Bozung v. LAFCO* (1975) 13 Cal.3d 263, 283.) CEQA does not permit piecemeal environmental review that ignores the environmental impact of the end result. (*See*, *City of Carmel-by-the-Sea v. Bd. of Supervisors* (1986) 183 Cal.App.3d 229, 251 (county violated CEQA by preparing negative declaration for rezoning and reserving preparation of EIR until later stage of approval).)

Said differently, the initial study must consider the indirect impacts of the Project. (14 CCR § 15064(d).) An indirect impact is a physical change in the environment that is not immediately related to the project but that is caused indirectly by the project. (14 CCR § 14 CCR § 15064(d)(2).) Indirect impacts are caused by a project, but are removed in time or distance, and reasonably foreseeable. (14 CCR § 15358(a)(2); *see City of Livermore v. LAFCO* (1986) 184 Cal.App.3d 531 (EIR required for revision of LAFCO sphere-of-influence guidelines because change in policies could affect location of development, resulting in significant environmental impacts).)

Here, the IS/MND does not analyze the "whole of the action," improperly focusing only on the direct effects of a zone change. For example, regarding aesthetic impacts, the IS/MND states that "[t]he subject application involves no development and therefore no lighting impacts would result from this proposal." (IS/MND, p. 3.) Similarly, in discussing the Project's potential emissions or handling of hazardous materials, the IS/MND states:

> The project involves no development. Fresno County Department of Public Health, Environmental Health Division expressed no concerns related to hazardous materials. Future development proposals on the property will be subject to Site Plan Review. It is through that process that transport, use, disposal, release, or handling of any hazardous materials will be analyzed for a use to be establish on the property.

(IS/MND, p. 15.)

Rezoning to accommodate a future development project, as is proposed here, is only an initial step in the approval process. The County's environmental review must extend to the development envisioned by the initial approvals, even though further discretionary approvals may be required before development can occur. By rezoning the Project site from agricultural uses to heavy industrial uses, it is reasonably foreseeable that an industrial project will be developed at the Project site. The environmental impact of this development must be fully analyzed in the initial study or in an EIR.

This case is very much like the case of *Bozung v. LAFCO*, where a city argued that annexation of a parcel alone had no significant impacts since it merely changed lines on the map. The Supreme Court roundly rejected that argument, stating,

> First and foremost, we point out that we are not dealing with an abstract problem. Again, this case does not involve—as the tone of some of defendants' arguments suggest—the question whether any LAFCO approval of any annexation to any city may have a significant effect on the environment. This is not the case of a rancher who feels that his cattle would chew their cud more contentedly in an incorporated pasture.

(*Bozung v. Local Agency Formation Com*., 13 Cal. 3d 263, 281 (1975).) As in *Bozung*, the agency is not rezoning the property merely for the sake of rezoning it. The clear purpose is to allow industrial development on the property, which will have significant environmental impacts. The whole Project must be analyzed in a revised IS/MND or EIR, including the potential impacts of the Project site's ultimate development.

II. The IS/MND Fails to Adequately Analyze the Project's Cumulative Impacts, in Violation of CEQA.

CEQA documents, such as the IS/MND, must discuss and mitigate significant cumulative impacts. (14 CCR § 15130(a).) This requirement flows from CEQA section 21083, which requires a finding that a project may have a significant effect on the environment if "the possible effects of a project are individually limited but cumulatively considerable." '

"Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (14 CCR § 15355(a).) "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." (*Id.*) "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (*Comm. for a Better Env't v. Cal. Resources Agency ("CBE v. CRA*") (2002) 103 Cal.App.4th 98, 117; 14 CCR § 15355(b).) A legally adequate cumulative impacts analysis views a particular project over time and in conjunction with other related past, present, and reasonably foreseeable probable future projects whose impacts might compound or interrelate with those of the project at hand.

The CEQA Guidelines allow two methods for satisfying the cumulative impacts analysis requirement: the list-of-projects approach, and the summary-of projects approach. Under either method, the IS/MND must summarize the expected environmental effects of the project and related projects, provide a reasonable analysis of the cumulative impacts, and examine reasonable mitigation options. (14 CCR § 15130(b).) The IS/MND's cumulative impacts analysis does not comply with either of these requirements.

The IS/MND finds that the Project's cumulative impacts will be less than significant. The entire analysis supporting this finding is:

> The project will adhere to the permitting requirements and rules and regulations set forth by the Fresno County Grading and Drainage Ordinance, San Joaquin Air Pollution Control District, and California Code of Regulations Fire Code at the time development occurs on the property. No cumulatively considerable impacts were identified in the analysis other than air quality, cultural resources and transportation. These impacts will be addressed with the Mitigation Measures discussed in Section III. A., Section V. A.B.C. and Section XVIII of this analysis.

(IS/MND, p. 28.)

The IS/MND's cumulative impact analysis violates CEQA for several reasons. First, this paragraph is inconsistent with the rest of the IS/MND. The air quality, cultural resources, and transportation section of the IS/MND **do not** conclude that the Project will have a cumulative impact on air quality, cultural resources, or traffic, respectively. The cultural resources and transportation sections include no analysis of and make no mention at all of the Project's potential for cumulative impacts, while the air quality section comes to the exact **opposite** conclusion, finding that: "operation of the proposed project ***would not result in a cumulatively considerable net increase of any criteria pollutant*** for which the project region is in non-attainment under applicable federal or State ambient air quality standards." (IS/MND p. 6.)

Adding to the confusion, the above finding states that cumulative impacts to air quality, cultural resources, and transportation "will be addressed with the Mitigation Measures discussed in Section III. A., Section V. A.B.C. and Section XVIII of this analysis." (IS/MND, p. 28.) But those sections reference air quality (III), cultural resources (V), and tribal cultural resources (XVIII). There is no reference to any transportation mitigation measures that would reduce a cumulatively significant impact. All of these inconsistencies must be corrected in a revised IS/MND or an EIR.

Second, even setting aside these inconsistencies, the IS/MND violates CEQA because the IS/MND never even mentions – let alone analyzes – the Project's potential cumulative impacts for any project-level impact other than air quality. Indeed, the MND does not mention a single past, present, or future project that it evaluated cumulatively with the instant Project. Without any information on what – if any – cumulative projects were considered, and what environmental impacts those cumulative projects have, the public and decision makers lack any information on which to assess the validity of the cumulative impacts conclusions under CEQA.

Finally, while the air quality section at least mentions the possibility of a cumulative impact, the analysis is inconsistent with CEQA and not supported by substantial evidence. The IS/MND concludes that the Project will not result in a cumulatively considerable net increase in any criteria pollution for which the project region is non-attainment, based on the following logic: "As the Project would generate less than significant project-related operational impacts to criteria air pollutants, the project's contribution to cumulative air quality impacts would not be cumulatively considerable." (IS/MND, p. 6.) This statement implies that a given project impact is cumulatively considerable only when the project impact is individually significant and has not been fully mitigated

In addition to being conclusory, the cumulative analysis is also based on flawed logic. The conclusion that the Project will have no cumulative impact because each individual impact will be less-than-significant relies on the exact argument CEQA's cumulative impact analysis is meant to protect against. The entire purpose of the cumulative impact analysis is to prevent the situation where mitigation occurs to address project-specific impacts, without looking at the bigger picture. This argument, applied over and over again, has resulted in major environmental damage, and is a major reason why CEQA was enacted. As the court stated in *CBE v. CRA,* 103 Cal. App. 4th at 114:

> Cumulative impact analysis is necessary because the full environmental impact of a proposed project cannot be gauged in a vacuum. One of the most important environmental lessons that has been learned is that environmental damage often occurs incrementally from a variety of small sources. These sources appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact.

(citations omitted).

A new cumulative impacts analysis is needed for the Project that complies with CEQA's requirement to look at the Project's environmental impact, combined with the impacts of other past, current, and probable future projects. An EIR must be prepared to fully analyze the Project's cumulative impacts.

III. The Project Description is Inadequate.

"An accurate, stable and finite project description is the *sine qua non* of an informative and legally adequate EIR." (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192; *Berkeley Jets*, 91 Cal. App. 4th 1344, 1354; *Sacramento Old City Assn. v. City Council* (1991) 229 Cal. App. 3d 1011, 1023 ; *Stanislaus Natural Heritage Project v. County of Stanislaus* (1996) 48 Cal. App. 4th 182, 201.) "[A] curtailed or distorted project description," on the other hand, "may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental costs, consider mitigation measures, assess the advantage of terminating the proposal (*i.e.*, the "no project" alternative) and weigh other alternatives in the balance." (*Id. See also*, CEQA section 15124; *City of Santee v. County of San Diego*, 263 Cal.Rptr 340 (1989).) The adequacy of a project description is closely linked to the adequacy of the EIR's analysis of the project's environmental effects. If the description is inadequate because it fails to discuss the complete project, the environmental analysis will reflect the same mistake.

Here, the Project description is inconsistent and incomplete. The Initial Study describes the Project as follows:

> Allow the rezone of a 42.6-acre parcel of land with split zoning; 40.1 acres from the AL-20 (Limited Agricultural, 20-acre minimum parcel size) Zone District and 2.5 acres from the M-3 (c) (Heavy Industrial, Conditional) Zone District limited to a parking lot to the M-3(c) Zone District to allow limited heavy industrial, general industrial, and light manufacturing uses as requested by the Applicant.

(Initial Study, p. 1.) Nowhere in the IS/MND does is the Project limited beyond the broad scope of uses permitted in the M-3(c) zone. In contrast, the Air Quality and Greenhouse Gas Analysis is based on "a conditional zoning that would limit the site to construction of 700,000-square feet of warehousing and other similar uses." (Air Quality and Greenhouse Gas Analysis, p. 5.) The Traffic Impact Study also analyzes "a conditional zoning that would limit the site to construction of 700,000 square feet of warehousing and other similar uses." (TIS, p. 1.)

Causing additional inconsistency, the Staff Report that the Project would rezone the land to "M-3(c) Zone District to allow limited industrial uses as listed in Zoning Ordinance Section 845.1, 844.1, 843.1 and Exhibit 6." (Staff Report, p. 2.) The same statement is made on page 7 and 11 of the Staff Report Zoning Ordinance Sections 845.1, 844.1, 843.1 list all uses permitted in an M-3 zone, while Exhibit 6 lists a subset of those uses. Page 3 of the Staff Report then states that "[f]uture site development will be limited to uses listed in Exhibit 6." Not only are these statements inconsistent within the Staff Report, but none of them are disclosed or discusses in the IS/MND. These inconsistencies must be resolved in order to properly analyze the Project's impacts. Without knowing which uses will or will not be permitted, the full extent of the Project's impacts cannot be determined.

IV. The Project May Have Significant Impacts on Agricultural Resources.

The IS/MND's discussion of the Project's impact on agricultural resources is flawed and not supported by substantial evidence. In contrast to the IS/MND's findings, the Project proposal itself is evidence that it may have a significant impact on agricultural resources.

First, in response to whether the project would conflict with existing agricultural zoning, the IS/MND finds that the impact would be less than significant. (IS/MND, p. 4.) The IS/MND explains its less-than-significant finding on the grounds that Fresno's zoning ordinance allows property owner to propose amendments to the zoning code and the proposal is consistent with the General Plan Designation. "Therefore," according to the IS/MND, "the project does not conflict with the existing agricultural zoning on the property." *Id*. Clearly, changing the Project site's zoning from agricultural to heavy industrial "conflicts with the existing agricultural zoning" of the Property. (*Id*.) The failure of the IS/MND to acknowledge this fact, and to analyze the potential impacts stemming from it, including the cumulative impacts from the ongoing reduction of farmland in the area, violates CEQA.

Second, in responding to the question of whether the Project will "involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses…" the IS/MND finds the Project will have a less than significant impact. (IS/MND, p. 4.) Again, the Project's only purpose is to allow for development permitted under heavy industrial zoning category M-3 rather than the current agricultural uses. For the IS/MND to claim that the Project could not result in the conversion of farmland to non-agricultural uses is disingenuous at best.

On the face of the Project proposal, it is evident that the Project may have a significant impact on agricultural resources since it will be removing 40-acres from available parcels of agricultural land. An EIR is required to fully analyze and mitigate this impact.

V. The IS/MND Underestimates the Project's Potential Traffic Impact Because It Analyzes Project Traffic Generation in a Land Use Category That Has a Lower Trip Generation Than Many Uses that Could Be Developed in an M-3 Zone.

The Project proposes to rezone the 46-acre property as entirely M3-(c), which allows for the development of limited heavy industrial, general industrial and light manufacturing uses. To determine the Project's impact on traffic, the IS/MND evaluates the Project as ITE Land Use Category 154, High-Cube Transload and Short Term Storage Warehouse. (Smith, p. 1.) Of the broad array of industrial uses allowed on property zoned M3-(c), "ITE Land Use Category 154, High-Cube Transload and Short Term Storage Warehouse" is by far the lightest trip generating use. (*Id.*) The traffic study attempts to justify this choice on the grounds that "the applicant proposes a conditional zoning that would limit the site to construction of 700,000 square feet of warehousing and other similar uses." (*Id.*) But the IS/MND does not actually limit the use of the Project site to "construction of 700,000 square feet of warehousing and other similar uses." Moreover, no explanation is given as to what "other similar uses" may entail in the IS/MND. In fact, the only reference to conditional zoning in that document is in reference to the portion of the site that is already M-3(c) and conditioned to be a parking lot. (*Id.*)

If one of the many other industrial uses permitted on M3-(c)-zoned land are constructed, such as a manufacturing or an industrial park, the Project's traffic impact would be much greater. As analyzed, the IS/MND concludes that the Project would generate 56 AM and 70 PM peak trips. (TIS, p. 5.) If the land is used for manufacturing instead, the Project would instead generate 434 AM and 469 PM. (Smith, p. 2.) If the land is used as an industrial park, the totals become 280 AM and 280 PM. (*Id.*)

TRIP GENERATION RATE COMPARISON

Land Use	Units	Daily Rate	AM Pk Rate	PM Pk Rate
154 Hi-Cube Transf Wrhs	1,000 Sq. Ft.	1.40	0.08	0.10
150 Warehousing	1,000 Sq. Ft.	1.74	0.17	0.19
110 Light Industrial	1,000 Sq. Ft	4.96	0.70	0.63
140 Manufacturing	1,000 Sq. Ft	3.93	0.62	0.67

155 E-Commerce Fulfill	1,000 Sq. Ft	8.18	0.59	1.37
156 Hi Cube Parcel Hub	1,000 Sq. Ft	7.75	0.7	0.64

Source: *Trip Generation, 10th Edition.*

The IS/MND must either adopt a mitigation measure limiting the Project to 700,000 square feet of High-Cube Transload and Short Term Storage Warehouse, or it must analyze and disclose the Project's full potential traffic impact if the property is developed with one of the more intense industrial uses permitted in the M3-(c) zone.

VI. The IS/MND Fails to Establish a Baseline for Potentially Hazardous Chemicals at the Project Site and Fails to Analyze Potential Impacts.

It is well-established that CEQA requires analysis of toxic soil contamination that may be disturbed by a Project, and that the effects of this disturbance on human health and the environment must be analyzed. CEQA requires a finding that a project has a "significant effect on the environment" if "the environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly." (PRC §21083(b)(3).) As the Court of Appeal has stated, "[a] new project located in an area that will expose its occupants to preexisting dangerous pollutants can be said to have substantial adverse effect on human beings." (*Cal. Building Industry Assn. v. Bay Area Air Quality Mgm't Dist*. ("*CBIA v. BAAQMD*") (2013) 218 Cal.App.4th 1171.) The existence of toxic soil contamination at a project site is a significant impact requiring review and mitigation in an EIR. (*McQueen v. Bd. of Dirs.* (1988) 202 Cal.App.3d 1136, 1149; *Assoc. For A Cleaner Env't v. Yosemite Comm. College Dist*. ("*ACE v. Yosemite*") (2004) 116 Cal.App.4th 629.) This mitigation may not be deferred until a future time after Project approval. (*Sundstrom v. County of Mendocino* (1988) 202 Cal. App. 3d 296, 306; *Citizens for Responsible Equitable Envt'l Dev. v. City of Chula Vista* ("*CREED*") (2011) 197 Cal.App.4th 327, 330-31.)

The IS/MND does not rely on any substantial evidence to support its conclusion that the Project will not harm human health by exposing workers and individuals to potentially hazardous materials. In preparing the IS/MND, neither the County nor the Applicant prepared a Phase I Environmental Site Assessment ("ESA") for the Project site. Environmental consulting firm SWAPE notes that Phase 1 assessments are "a routine due-diligence step taken in CEQA proceedings." (SWAPE, p. 1.) Standards for performing a Phase I ESA have been established by the US EPA and the American Society for Testing and Materials Standards ("ASTM"). (*Id*. p. 2.) Phase I ESAs include a review of all known sites in the vicinity of the subject property that are on regulatory agency databases undergoing assessment or cleanup activities; an inspection; interviews with people knowledgeable about the property; and recommendations for further actions to address potential hazards. (*Id*.)

The need for a Phase I ESA is particularly important here because for decades the Project site has been used for agricultural purposes and as an automobile wrecking yard. (*Id*. at 1.) As SWAPE explains, "Potential Project impacts should be assessed in a Phase I Environmental Site

Assessment (ESA) for inclusion in an EIR. Phase I ESAs are commonly included in CEQA documentation to identify hazardous waste issues that may pose a risk to the public, workers, or the environment, and which may require further investigation, including environmental sampling and cleanup." (*Id.* at 2.)

Residual pesticides from agriculture or leaked chemicals from the wrecking yard may exist at the Project site that would pose a risk to construction workers and nearby residents. Because of the lack of a Phase I ESA, the IS/MND does not correctly assess or mitigate a potential for these chemicals to remain on the Project site. Both construction workers and nearby residents can be exposed to pesticide-containing dust when the Project site is developed and earth-moving activities begin. Sensitive residential receptors are located less than 100-feet from the Project boundaries.

The IS/MND's baseline for this potential impact is flawed for failure to identify existing soil conditions at the site. Without knowing the presence and levels of these chemicals, the IS/MND cannot justify its conclusion that human exposure impacts are unlikely, and that the Project poses no significant risks from the release of hazardous materials into the environment. Moreover, without a full understanding of the existing environment, there is no understanding of the potential risks to construction workers, future on-site workers, nearby residents, and potential groundwater impacts. The IS/MND should be revised and recirculated to include the results of a Phase I and soil sampling in the Project area to ensure protection of human health and the environment. Since the Project may have a significant hazards impact from residual agricultural pesticides and an auto wrecking facility, an EIR is required to analyze and mitigate the potential impact.

VII. The IS/MND Relied on Unsubstantiated Input Parameters to Estimate Project Emissions and Thus Failed to Adequately Analyze the Project's Air Quality Impacts.

The IS/MND for the Project relies on emissions calculated from the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod"). This model relies on recommended default values, or on site-specific information related to a number of factors. The model is used to generate a project's construction and operational emissions. SWAPE reviewed the Project's CalEEMod output files and found that the values input into the model were inconsistent with information provided in the IS/MND. This results in an underestimation of the Project's emissions. As a result, the Project may have a significant air quality impacts and an EIR is required to properly analyze these potential impacts.

1. <u>The IS/MND relies on unsubstantiated reduction in carbon intensity factor.</u>

Review of the CalEEMod output files demonstrates that the default value for the CO_2 intensity factor was reduced nearly in half from 641.35 to 328.8 lbs/MWhr. (IS/MND App. A, pp. 57, 84, and 107; SWAPE comment, p. 2.) According to the "User Entered Comments," the justification for this dramatic change is that "PG&E CO2 intensity factor based on a 5-year average." (IS/MND App. A, pp. 56, 83, 106.) This justification is insufficient. There is no citation to where this information was obtained from, and there is no explanation for how this 5-year average was calculated. (SWAPE, p. 3.) Moreover, the IS/MND itself makes no mention of this reduction in carbon intensity factor. Without any evidence supporting it, reliance on this reduction violates CEQA.

2. <u>The IS/MND relies on an unsubstantiated change to operational off-road equipment fuel type.</u>

The CalEEMod output files also reveal that the fuel type for the Project's operational off-road equipment was changed from diesel to electric without proper justification. (SWAPE, p. 3.) According to the output files, the fuel type for 8 pieces of operational off-road equipment was manually changed from diesel to electric. (IS/MND App. A, pp. 57, 84, 107.) The CalEEMod User Guide requires that any changes to default values be justified in the comment section. (SWAPE, p. 3.) But here, neither the CalEEMod files nor the IS/MND provide any explanation for this change, nor do they commit to using a certain number of electric vehicles during construction of future development. As a result, this change is inconsistent with the Project and not supported by substantial evidence.

3. <u>The IS/MND relies on an unsubstantiated change to solid waste generation rate.</u>

Similarly, without proper justification, the solid waste generation rate, used to estimate the proposed Project's operational greenhouse gas (GHG) emissions associated with the disposal of solid waste into landfills, was manually reduced by 25%, from 868 to 651. (IS/MND App. A, pp. 57, 84, 107; SWAPE, p. 3.) The User Entered Comments states: "Assume 2022 Title 24 standards will mandate 25% better waste recycling." (IS/MND App. A, pp. 56, 83, 106.) This justification is insufficient. The 2022 Title 24 Standards that are referenced are still in the pre-rulemaking stage, and there is no guarantee that such standards will be adopted. (SWAPE, p. 4.) As a result, the IS/MND cannot presume that, based on standards that have not been adopted, the Project will be 10% more efficient than the 2016 standards. (*Id.*)

The IS/MND also states that: "CalRecycle Waste Diversion and Recycling Mandate will reduce solid waste production by 25 percent." (Air Quality and GHG Analysis, p. 49.) But as SWAPE explains, this statement is not accurate. (SWAPE, p. 4.) "Compliance with AB 341 does not guarantee a waste diversion rate of 25%, as the IS/MND indicates, because AB 341 requires that businesses implement a commercial recycling program, but does not mandate a diversion percentage." (*Id.*) Accordingly, reliance on a 25% reduction is not supported by substantial evidence.

4. <u>The IS/MND relies on unsubstantiated change tos water-related electricity intensity factors, water use rate, and energy intensity values.</u>

Again, the IS/MND reduced the Project's water-related electricity intensity factors and water use rate by 10% without proper justification. (SWAPE, p. 4.) The explanation provided in the CalEEMod output files states that "Landscaping and water use will comply with 2022 Building Energy Efficiency Standards, assume that those would be 10% more efficient than the 2016 standards in CalEEMod." (IS/MND, App. A, pp. 56, 83, 106). Similarly, several energy use values were also changed in the CalEEMod model. (IS/MND App. A, pp. 57, 84, 107; SWAPE, p. 6-7.) Specifically, the model reduced the energy use of six energy use values. The explanation provided is that "Buildings will comply with 2022 Building Energy Efficiency Standards, assume that those would be 10% more efficient than the 2016." (IS/MND App. A, pp. 56, 83, 106.) As explained above, however, the 2022 Title 24 standards are still in the pre-rulemaking stage, and have not been finalized. It cannot be assumed that the Project will be 10% more efficient based on standards that have yet to be adopted.

5. <u>The IS/MND relies on unsubstantiated changes to fleet mix.</u>

The CalEEMod output files demonstrate that several of the default fleet mix percentage values were changed without adequate explanation. (SWAPE, p. 6.) The explanation provided in the files is: "Fleet mix from TIS." (IS/MND, App. A, pp. 56, 83, 106). But nowhere in the Traffic Impact Study or the IS/MND are these changes discussed or justified.

VIII. The IS/MND Failed to Adequately Evaluate Health Risks from Diesel Particulate Matter Emissions.

CEQA requires the IS/MND to determine whether the Project will "cause substantial adverse effect on human beings, either directly or indirectly." (IS/MND, p. 28.) The IS/MND finds that the Project will have "no impact." (*Id.*) The explanation provided is that "[n]o substantial impacts on human beings, either directly or indirectly, were identified in the analysis." (*Id.*) This statement does not constitute substantial evidence, nor is there substantial evidence elsewhere to support this conclusion.

The IS/MND does contain an analysis of health risk impacts from diesel particulate matter, but the analysis is inaccurate and incomplete in a number of ways. First, the IS/MND concludes that the Project's health risk impacts on sensitive receptors near the Project site will be less-than significant without conducting a quantified health risk assessment ("HRA") for the Project's construction emissions, thereby underestimating the health risk posed by the Project.. (SWAPE, p. 8.) The omission of a quantified HRA for both construction and operational emissions is inconsistent with the most recent guidance published by the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California. (SWAPE, pp. 8-9.) As SWAPE explains, "by claiming a less than significant impact without conducting a quantified HRA to nearby, existing sensitive receptors as a result of Project construction, the IS/MND fails to compare the excess health risk to the SJVAPCD's specific numeric threshold of 20 in one million." (*Id.* at 9.) Without quantifying the Project's construction-related health risk impact, the IS/MND has not basis on which to rest a conclusion that the Project's impact will be less than significant.

Second, while the IS/MND does conduct a quantified HRA for Project operation, it fails to consider all operational emissions. (*Id.*) The HRA states that it was conducted only for "[t]he acute health risks from the project's on-site equipment activity, composting, and roadway traffic." (IS/MND, Air Quality and Greenhouse Gas Impact Analysis, p. 45.) In limiting the analysis to only on-site equipment, composting, and roadway traffic, the HRA fails to evaluate emissions from product use, architectural coatings, space heating, water heating, refrigeration, office uses, ventilation, lighting, water-use, and waste. (SWAPE, p. 8.)

Third, while the operational HRA analyzes the Project's health risk to nearby existing infant, child, and adult sensitive receptors, it fails to evaluate the cumulative lifetime cancer risk to nearby existing receptors as a result of construction and operation of the Project. (*Id.* at 9.)

Finally, as discussed above, the IS/MND and the operational HRA rely on emissions estimates from a flawed CalEEMod model to estimate the excess cancer risk posed to nearby residents as a result of the Project's operational DPM emissions. As discussed above, SWAPE found that the emissions model in the IS/MND relied upon incorrect and unsubstantiated input parameters in order to estimate the Project's emissions. The HRA underestimates the Project's health risk because it relied on emission estimates that were similarly underestimated. The County must prepare an EIR in order to correct the flaws in its CalEEMod inputs and conduct an HRA based on the proper emissions estimates.

IX. There is Substantial Evidence that the Project May have a Significant Health Risk Impact.

Correcting the above errors, SWAPE prepared a screening-level HRA to evaluate potential impacts from the construction and operation of the Project. SWAPE used AERSCREEN, the leading screening-level air quality dispersion model. (SWAPE, pp. 9-12.) SWAPE used a sensitive receptor distance of 25 meters (the distance to the closest residential receptor according to the IS/MND) and analyzed impacts to individuals at different stages of life based on OEHHA guidance. (*Id.* at pp. 10-11.)

SWAPE found that the excess cancer risk for children at a sensitive receptor located approximately 25 meters away over the course of Project operation is approximately 21 in one million, which exceeds the SJAPCD threshold of significance of 20 in one million. (*Id.* at 13.) Moreover, the excess lifetime cancer risk over the course of a Project operation is approximately 33 in one million, which again exceeds the SJAPCD threshold of significance of 20 in one million. (*Id.*) SWAPE's screening-level HRA "demonstrates that construction and operation of the Project could result in a potentially significant health risk impact, when correct exposure assumptions and up-to-date, applicable guidance are used." (*Id.*) This is a potentially significant impact not addressed in the IS/MND.

Because the IS/MND did not conduct a construction-related HRA, and the operational HRA underestimated health risks, the IS/MND lacks substantial evidence that the health risks are less than significant. The rezoning of the Project site to fully industrial zone M-3 from its previous majority-agricultural uses could cause a significant health risk impact that has not been analyzed in the IS/MND. An EIR is required to analyze and mitigate this potentially significant impact.

X. There is Substantial Evidence that the Project May have a Significant Greenhouse Gas Impact.

The IS/MND's GHG analysis is also flawed because it relies on an incorrect CalEEMod model (discussed above), and fails to compare the Project's annual emissions to a business-as-usual ("BAU") scenario. Under the SJVAPCD's threshold of significance for greenhouse gas ("GHG") emissions, in order to find a GHG impact less-than-significant, an agency must demonstrate that a Project's GHG emissions will be reduced by at least 29% from BAU emissions. (SWAPE, p. 15.) SWAPE ran an updated GHG analysis using the updated CalEEMod model with corrected inputs to determine if the Project meets this threshold of significance.

When accurately modeled, SWAPE determined that the Project's mitigated operational GHG emissions would be approximately 8,102.74 MT CO_2e/year. (SWAPE, p. 15.) SWAPE then compared those emissions to the business-as-usual GHG emissions of 9,756 MT CO_2e/year, as indicated in the IS/MND. (*Id*., citing Air Quality and Greenhouse Gas Impact Analysis, p. 53, Table 14.) When the Project's GHG emissions are compared to BAU, SWAPE found that the Project would only result in a 16.95% reduction in emissions, which is far lower than what is required for a less-than-significant finding. (*Id*. at 16.) Since the Project's GHG emissions, compared to BAU, fail to meet the threshold od at least a 29% reduction from BAU, SWAPE's analysis is substantial evidence that the Project may have a significant GHG impact. This impact must be analyzed and mitigated in an EIR.

XI. The IS/MND Fails to Establish an Accurate Baseline for Sensitive Biological Resources and Fails to Disclose and Mitigate Impacts of the Project On Numerous Sensitive Species.

Expert ecologist Shawn Smallwood, Ph.D. visited the site on November 30, 2019. (Smallwood, p. 1.) He also reviewed the IS/MND and its supporting documents. Drawing on his familiarity with the project area and decades of studying and surveying many of the species encountered at the site, Dr. Smallwood has prepared a critique of the MND, pointing out numerous shortcomings in the baseline assessment of the presence of species at the site, failures to evaluate impacts that will result from the Project, and numerous instances where the MND's assertions are insufficient or not supported by substantial evidence.
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1. <u>The MND fails to identify the likely presence of sensitive and other wildlife species at the Project site.</u>

The MND "dismisses the occurrence likelihoods of any and all special-status species, and concludes impacts on wildlife would be less than significant." (Smallwood, p. 5.) This conclusion is based on a single visit to the site by an unidentified biologist, for an undisclosed amount of time, and a review of the California Natural Diversity Data Base (CNDDB). (*Id*. at 4-5.)

On his visit, which only lasted one hour, Dr. Smallwood observed 22 species of vertebrate wildlife, two of which are special-status species – the redtailed hawk and Cooper's hawk. (Smallwood, p. 2.) In addition, Dr. Smallwood's review of eBird revealed the occurrence potential for 39 special status species of birds, which is far more than the merely 2 birds the IS/MND considered. (*Id*. at 5.) The potential occurrence of these species at or near the Project site warrants discussion in the MND or an EIR.

Every CEQA document must start from a "baseline" assumption. The CEQA "baseline" is the set of environmental conditions against which to compare a project's anticipated impacts. *Communities for a Better Envt. v. So. Coast Air Qual. Mgmt. Dist*. (2010) 48 Cal. 4th 310, 321. Section 15125(a) of the CEQA Guidelines (14 C.C.R., § 15125(a)) states in pertinent part that a lead agency's environmental review under CEQA:

> "…must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time [environmental analysis] is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant."

(See, *Save Our Peninsula Committee v. County of Monterey* (2001) 87 Cal.App.4th 99, 124-125 ("*Save Our Peninsula*.") By failing to assess the presence of wildlife at or flying through the site, the IS/MND fails to provide any baseline from which to analyze the Project's impacts on birds. The County must prepare an EIR for the Project which starts with an appropriate baseline from which to determine the impacts of the Project on wildlife.

2. <u>The IS/MND Fails to Address the Impacts on Wildlife from Additional Traffic Generated by the Project.</u>

According to the IS/MND, the Project will generate an average of 980 new daily vehicle trips, including 318 daily truck trips for 4- and 5-axle trucks. Yet the EIR provides no analysis of the impacts on wildlife that will be caused by an increase in traffic on the roadways servicing the Project. "These truck trips, and the more numerous car trips, will kill wildlife for as long as the project continues." (Smallwood, p. 9.)

Vehicle collisions with special-status species is not a minor issue, but rather results in the death of millions of species each year. Dr. Smallwood explains:

> Across North America traffic impacts have taken devastating tolls on wildlife (Forman et al. 2003). In Canada, 3,562 birds were estimated killed per 100 km of road per year (Bishop and Brogan 2013), and the US estimate of avian mortality on roads is 2,200 to 8,405 deaths per 100 km per year, or 89 million to 340 million total per year (Loss et al. 2014). Local impacts can be more intense than nationally.

(Smallwood, p. 10.)

An EIR is needed to analyze and mitigate this potentially significant impact on wildlife.

3. The Project will have a significant impact on wildlife movement.

The IS/MND improperly dismisses the Project's potential to impact wildlife movement based on the sole ground that no migratory corridor exists in south Fresno. This is problematic for two reasons. First, as Dr. Smallwood explains, Fresno is located in the middle of the Pacific Flyway, which is a world-famous wildlife corridor traveled by millions of birds annually. (Smallwood, p. 9.)

But even if the Project site was not located in a wildlife corridor, the IS/MND analysis of the Project's impact on wildlife movement is inconsistent with CEQA. "[T]he County's conclusion sets up a false CEQA standard by implying that a migratory movement corridor must exist for interference of wildlife movement to qualify as significant." (*Id.*) A project will have a significant biological impact if it would "[i]nterfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites." CEQA Guidelines, App. G.

Dr. Smallwood explains that the Project site will have a significant impact on wildlife movement:

> A site such as the proposed project site is critically important for wildlife movement because it composes an increasingly diminishing patch of open space within a growing expanse of residential and industrial uses, forcing more volant wildlife to use the site as stopover and staging habitat during migration, dispersal, and home range patrol (Warnock 2010, Taylor et al. 2011, Runge et al. 2014). The project would cut wildlife off from stopover and staging habitat, and would therefore interfere with wildlife movement in the region.

(Smallwood, p. 9.)

Because the Project will have a significant impact on wildlife movement, an EIR must be prepared.

XII. CONCLUSION

For the foregoing reasons, an EIR is required to analyze and mitigation the Project's potentially significant environmental impacts. The IS/MND is wholly inadequate. Thank you for your attention to these comments.

Very truly yours,

Rebecca L. Davis

EXHIBIT A

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

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December 9, 2019

Michael Lozeau
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1939 Harrison Street, Suite 150
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Subject: Comments on the We Be Jammin Project (SCH No. 2019119035)

Dear Mr. Lozeau,

We have reviewed the November 2019 Initial Study/Mitigated Negative Declaration ("IS/MND") for the We Be Jammin Project ("Project") located in the County of Fresno ("County"). The Project proposes to construct 700,000 square feet of industrial land use and parking on the 42.6-acre site.

Our review concludes that the IS/MND fails to adequately evaluate the Project's Hazards and Hazardous Waste, Air Quality, Health Risk, and Greenhouse Gas impacts. As a result, hazardous waste, and emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An EIR should be prepared to adequately assess and mitigate the potential Project impacts.

Hazards and Hazardous Materials

Inadequate Due Diligence to Determine Impacts

The IS/MND found no impact from hazards and hazardous materials (p. 16). This determination was made without the benefit of a Phase I Environmental Site Assessment (ESA), a routine due-diligence step in CEQA proceedings. The conduct of a Phase I ESA is especially important here because the Project is situated atop former agricultural lands and a current auto wrecking yard. The IS/MND states: "Present Land Use/Zoning/General Plan Designation: Auto Wrecking Yard / AL-20 (Ltd Agricultural & M-3 (c) (Heavy Industrial, Conditional}/Gen. Indust. (Reserve) and Gen. Indust."

Potential Project impacts should be assessed in a Phase I Environmental Site Assessment (ESA) for inclusion in an EIR. Phase I ESAs are commonly included in CEQA documentation to identify hazardous waste issues that may pose a risk to the public, workers, or the environment, and which may require further investigation, including environmental sampling and cleanup.

Standards for performing a Phase I ESA have been established by the US EPA and the American Society for Testing and Materials Standards (ASTM).[1] Phase I ESAs are conducted to identify conditions indicative of releases of hazardous substances and include:

- a review of all known sites in the vicinity of the subject property that are on regulatory agency databases undergoing assessment or cleanup activities;
- an inspection;
- interviews with people knowledgeable about the property; and
- recommendations for further actions to address potential hazards.

Phase I ESAs conclude with the identification of any "recognized environmental conditions" (RECs) and recommendations to address such conditions. A REC is the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. If RECs are identified, then a Phase II ESA is generally conducted, which includes the collection of soil, soil vapor and groundwater samples, as necessary, to identify the extent of contamination and the need for cleanup to reduce exposure potential to the public.

Consistent with common professional due diligence, a Phase I ESA, completed by a licensed environmental professional is necessary for inclusion in an EIR to identify recognized environmental conditions, if any, at the proposed Project site. A Phase II ESA should be conducted if the Phase I indicates a recognized environmental condition. Any contamination that is identified above regulatory screening levels, including California Office of Environmental Health Hazard Assessment's Soil Screening Numbers[2], should be further evaluated and cleaned up, if necessary, in coordination with the Department of Toxics Substances Control.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The IS/MND's air quality analysis relies on emissions calculated with CalEEMod.2016.3.2.[3] CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act (CEQA) requires that such changes be

[1] http://www.astm.org/Standards/E1527.htm
[2] http://oehha.ca.gov/risk/chhsltable.html
[3] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4.

justified by substantial evidence.[4] Once all of the values are inputted into the model, the Project's construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters were utilized in calculating the Project's air pollutant emissions and make known which default values were changed as well as provide justification for the values selected.[5]

Review of the Project's air modeling demonstrates that the IS/MND underestimates emissions associated with Project activities. As previously stated, the IS/MND's air quality analysis relies on air pollutant emissions calculated using CalEEMod. When reviewing the Project's CalEEMod output files, provided in the Air Quality and Greenhouse Gas Impact Analysis, we found that several of the values inputted into the model were not consistent with information disclosed in the IS/MND. As a result, the Project's construction and operational emissions are underestimated. A DEIR should be prepared to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Unsubstantiated Reduction in Carbon Intensity Factor

Review of the Project's CalEEMod output files demonstrates that the default value for the CO_2 intensity factor was manually changed without justification. As a result, the Project's operational emissions may be underestimated.

Review of the Project's CalEEMod output files demonstrates that the model's CO_2 intensity factor was artificially reduced from 641.35 to 328.8 lb/MWhr (see excerpt below) (Appendix A, pp. 57, 84, 107).

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[6] According to the "User Entered Comments & Non-Default Data" table, the justification provided for this change is: "PG&E CO2 intensity factor based on a 5-year average" (Appendix A, pp. 56, 83, 106). However, this justification is insufficient as it does not provide a source or demonstrate how the 5-year average was calculated. In addition, the IS/MND fails to mention the reduction or CO_2 intensity factor whatsoever. As a result, we cannot verify the model's use of the reduced CO_2 intensity factor and emissions may be underestimated.

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[4] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 1, 9.

[5] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, fn 1, p. 11, 12 – 13. A key feature of the CalEEMod program is the "remarks" feature, where the user explains why a default setting was replaced by a "user defined" value. These remarks are included in the report.

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

Unsubstantiated Change to Operational Off-Road Equipment Fuel Type

Review of the Project's CalEEMod output files demonstrates that the fuel type for the Project's operational off-road equipment was changed from diesel to electrical without proper justification. As a result, construction emissions may be underestimated.

According to the Project's CalEEMod output files, the fuel type for 8 pieces of operational off-road equipment was manually changed from diesel to electrical (see excerpt below) (Appendix A, pp. 57, 84, 107).

Table Name	Column Name	Default Value	New Value
tblOperationalOffRoadEquipment	OperFuelType	Diesel	Electrical
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	8.00

As you can see in the excerpt above, the model assumes that 8 pieces of operational off-road equipment would use electrical engines rather than the default diesel engines. As previously stated, the CalEEMod User's Guide requires that any non-default values inputted must be justified.[7] However, the IS/MND fails to mention or justify that the operational off-road forklifts will be electric, instead of diesel. As a result, the application of this change in fuel type cannot be verified, and the air model should not be relied upon to determine Project significance.

Unsubstantiated Change to Solid Waste Generation Rate

The solid waste generation rate, used to estimate the proposed Project's operational greenhouse gas (GHG) emissions associated with the disposal of solid waste into landfills, was artificially changed from the CalEEMod default values without sufficient justification. [8] As a result, the Project's operational emissions are incorrect and unsubstantiated.

Review of the Project's CalEEMod output files demonstrates that the proposed Project's solid waste generation rate was manually reduced by 25%, from 868 to 651 (see excerpt below) (Appendix A, pp. 57, 84, 107).

Table Name	Column Name	Default Value	New Value
tblSolidWaste	SolidWasteGenerationRate	868.00	651.00

As you can see in the excerpt above, the solid waste generation rate was reduced by 25%. As previously stated, the CalEEMod User's Guide requires that any non-default values inputted must be justified.[9] According to the "User Entered Comments & NonDefault Data" table, the justification provided for these changes is: "Assume 2022 Title 24 standards will mandate 25% better waste recycling." (Appendix

[7] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 7, 13.
[8] CalEEMod User's Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 46
[9] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 7, 13.

A, pp. 56, 83, 106). However, this justification is incorrect and unsubstantiated. The 2022 Title 24 Standards are still in the Pre-Rulemaking stage.[10] Thus, these standards have not yet been finalized and the IS/MND cannot verify what changes will actually occur. As such, it cannot be assumed that the Project is guaranteed to be 10% more efficient than the 2016 standards. Furthermore, the IS/MND states:

> "CalRecycle Waste Diversion and Recycling Mandate will reduce solid waste production by 25 percent" (Air Quality and Greenhouse Gas Impact Analysis, p. 49).

This is incorrect. Compliance with AB 341 does not guarantee a waste diversion rate of 25%, as the IS/MND indicates, because AB 341 requires that businesses implement a commercial recycling program, but does not mandate a diversion percentage.[11] As a result, this reduction cannot be verified and we find the Project's air quality model to be unreliable for determining Project significance.

Unsubstantiated Changes to Water-Related Electricity Intensity Factors

The water-related electricity intensity factors, used to estimate the proposed Project's operational water-related emissions associated with the supply and distribution of water used, was artificially changed from the CalEEMod default values without sufficient justification.[12] As a result, the Project's operational emissions are incorrect and unsubstantiated.

Review of the Project's CalEEMod output files demonstrates that the proposed Project's water-related electricity intensity factors were reduced by 10% (see excerpt below) (Appendix A, pp. 57-58, 84-85, 107-108).

Table Name	Column Name	Default Value	New Value
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	1,720.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	1,720.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	1,145.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	1,145.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	1,905.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	1,905.00
tblWater	ElectricityIntensityFactorToTreat	111.00	100.00
tblWater	ElectricityIntensityFactorToTreat	111.00	100.00

As you can see in the excerpt above, the water-related electricity intensity factors were reduced by 10%. As previously stated, the CalEEMod User's Guide requires that any non-default values inputted must be justified.[13] According to the "User Entered Comments & Non-Default Data" table, the justification

[10] "Pre-Rulemaking for the 2022 Energy Code." California Energy Commission, *available at:* https://ww2.energy.ca.gov/title24/2022standards/prerulemaking/

[11] https://www.calrecycle.ca.gov/Recycle/Commercial/FAQ/

[12] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 44-45.

[13] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 7, 13.

provided for these changes is: "Landscaping and water use will comply with 2022 Building Energy Efficiency Standards, assume that those would be 10% more efficient than the 2016 standards in CalEEMod" (Appendix A, pp. 56, 83, 106).). However, this justification is incorrect. The 2022 Title 24 Standards are still in the Pre-Rulemaking stage.[14] Thus, these standards have not yet been finalized and the IS/MND cannot verify what changes will actually occur. As such, it cannot be assumed that the Project is guaranteed to be 10% more efficient than the 2016 standards. Furthermore, without a proper citation and justification for this reduction, we are unable to verify that it is correct. As a result, the model may underestimate emissions and should not be relied upon to determine Project significance.

Unsubstantiated Change to Indoor Water Use Rate

The indoor water use rate, used to estimate the proposed Project's GHG emissions associated with the supply and treatment of water, was artificially changed from the CalEEMod default value without sufficient justification.[15] As a result, the Project's operational emissions are incorrect and unsubstantiated.

Review of the Project's CalEEMod output files demonstrates that the proposed Project's indoor water use rate was reduced by 10% (see excerpt below) (Appendix A, pp. 58, 85, 108).

Table Name	Column Name	Default Value	New Value
tblWater	IndoorWaterUseRate	161,875,000.00	145,687,500.00

As you can see in the excerpt above, the water-related electricity intensity factors were reduced by 10%. As previously stated, the CalEEMod User's Guide requires that any non-default values inputted must be justified.[16] According to the "User Entered Comments & NonDefault Data" table, the justification provided for these changes is: "Landscaping and water use will comply with 2022 Building Energy Efficiency Standards, assume that those would be 10% more efficient than the 2016 standards in CalEEMod" (Appendix A, pp. 56, 83, 106). However, this justification is incorrect. The 2022 Title 24 Standards are still in the Pre-Rulemaking stage.[17] Thus, these standards have not yet been finalized and the IS/MND cannot verify what changes will actually occur. As such, it cannot be assumed that the Project is guaranteed to be 10% more efficient than the 2016 standards. Furthermore, without a proper citation, we are unable to verify that is correct. As a result, the model may underestimate emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Fleet Mix

[14] "Pre-Rulemaking for the 2022 Energy Code." California Energy Commission, *available at:* https://ww2.energy.ca.gov/title24/2022standards/prerulemaking/

[15] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 44-45.

[16] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 7, 13.

[17] "Pre-Rulemaking for the 2022 Energy Code." California Energy Commission, *available at:* https://ww2.energy.ca.gov/title24/2022standards/prerulemaking/

The fleet mix values used to estimate the proposed Project's mobile-source operational emissions were changed from the CalEEMod default values without proper justification. As a result, the Project's operational emissions may be underestimated.

Review of the Project's CalEEMod output files demonstrate that several fleet mix percentage values were changed without sufficient justification (see excerpt below) (Appendix A, pp. 57, 84, 107).

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.13	0.11
tblFleetMix	LDA	0.51	0.55
tblFleetMix	LDT1	0.03	0.13
tblFleetMix	LDT2	0.17	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD2	3.9290e-003	0.10
tblFleetMix	MCY	4.8100e-003	0.00
tblFleetMix	MDV	0.10	0.02
tblFleetMix	MH	5.1200e-004	0.00
tblFleetMix	MHD	0.03	0.06
tblFleetMix	OBUS	2.3280e-003	0.00
tblFleetMix	SBUS	1.0480e-003	0.00
tblFleetMix	UBUS	1.3540e-003	0.00

As you can see in the above excerpt, the fleet mix percentage values were manually changed. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[18] According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is: "Fleet mix from TIS" (pp. 56, 83, 106). However, this justification is insufficient, as both the TIS and the IS/MND fail to mention or justify these changes. Thus, we cannot verify the altered fleet mix percentage values, and the model may underestimate the Project's mobile-source operational emissions.

Unsubstantiated Changes to Energy Intensity Values

The Project's CalEEMod model includes several unsubstantiated changes to the Project's energy intensity values, and as a result the model may underestimate the Project's emissions.

Review of the Project's CalEEMod output files demonstrates that several energy use values, including Lighting Energy Intensity (LightingElect), Nontitle-24 Electricity Energy Intensity (NT24E), Nontitle-24 Natural Gas Energy Intensity (NT24NG), Title-24 Electricity Energy Intensity (T24E), and Title-24 Natural Gas Energy Intensity (T24NG) were artificially changed (see excerpt below) (Appendix A, pp. 57, 84, 107).

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

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	2.70	2.43
tblEnergyUse	LightingElect	0.35	0.32
tblEnergyUse	NT24E	4.16	3.74
tblEnergyUse	NT24NG	3.84	3.46
tblEnergyUse	T24E	1.96	1.78
tblEnergyUse	T24NG	17.03	15.33

As you can see in the above excerpt, 6 energy use values were manually reduced. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[19] According to the "User Entered Comments & NonDefault Data" table, the justification provided for these changes is: "Buildings will comply with 2022 Building Energy Efficiency Standards, assume that those would be 10% more efficient than the 2016" (Appendix A, pp. 56, 83, 106). However, regarding compliance with Title 24 standards, the IS/MND's Air Quality and Greenhouse Gas Impact Analysis states,

> "CalEEMod has energy, water, and waste rates based on 2016 Title 24 compliance. By the time the project is constructed, it will have to comply with the 2022 Title 24 Standards. For this analysis it is assumed that the energy and water use efficiencies will be 10 percent better and the waste generation 24 percent better under the 2022 Standards" (p. 48).

However, this justification is incorrect. The 2022 Title 24 Standards are still in the Pre-Rulemaking stage.[20] Thus, these standards have not yet been finalized and the IS/MND cannot verify what changes will actually occur. As a result, we cannot verify that the Project would comply with the 2022 Building Energy Efficiency Standards or that the Project would be 10% more efficient that the 2016 standards. According to the CalEEMod User's Guide, the energy use values are utilized by the model to estimate the Project's emissions associated with electricity and natural gas usage.[21] As we cannot verify the altered energy use values, they may be underestimated. As a result, the Project's energy-related operational emissions may be underestimated, and the model should not be relied upon to determine the Project's significance.

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The IS/MND concludes that the Project's health risk impacts would have a less than significant impact on the health of nearby sensitive receptors to the Project site without conducting a quantified health risk assessment (HRA) for Project construction. Furthermore, while the IS/MND conducts a quantified HRA for Project operation, it fails to consider all operational emissions.

Specifically, the IS/MND states that the operational HRA was only conducted for "[t]he acute health risks from the project's on-site equipment activity, composting, and roadway traffic" (Air Quality and

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

[20] "Pre-Rulemaking for the 2022 Energy Code." California Energy Commission, *available at:* https://ww2.energy.ca.gov/title24/2022standards/prerulemaking/

[21] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 43

Greenhouse Gas Impact Analysis, p. 45). This is incorrect, as the HRA fails to include all of the Project's operational emissions, including emissions resulting from operational activities including product use, architectural coatings, space heating, water heating, refrigeration, office uses, ventilation, lighting, water-use, and waste. As such, this partial operational HRA cannot be used to determine impacts from the entire Project's operations.

Second, the omission of a quantified HRA is inconsistent with the most recent guidance published by the Office of Environmental Health Hazard Assessment (OEHHA), the organization responsible for providing guidance on conducting HRAs in California. 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.[22] This guidance document describes the types of projects that warrant the preparation of an HRA. Construction of the Project will produce emissions of DPM, a human carcinogen, through the exhaust stacks of construction equipment over a construction period of approximately two years (Air Quality and Greenhouse Gas Impact Analysis, p. 37). The OEHHA document recommends that all short-term projects lasting at least two months be evaluated for cancer risks to nearby sensitive receptors.[23] Therefore, per OEHHA guidelines, health risk impacts from Project construction should have been evaluated by the IS/MND. Even though we were not provided with the expected lifetime of the Project, we know that the Project will last longer than 2-months, as specified by OEHHA. Therefore, health risks from Project construction should have been evaluated by the IS/MND, as a two-year construction schedule exceeds the 2-month requirement set forth by OEHHA. These recommendations reflect the most recent health risk policy, and as such, an updated assessment of health risks to nearby sensitive receptors from Project construction should be included in a revised CEQA evaluation for the Project.

Third, by claiming a less than significant impact without conducting a quantified HRA to nearby, existing sensitive receptors as a result of Project construction, the IS/MND fails to compare the excess health risk to the SJVAPCD's specific numeric threshold of 20 in one million.[24] Thus, the IS/MND cannot conclude less than significant health risk impacts resulting from Project construction without quantifying emissions to compare to the proper threshold.

Finally, while the operational HRA evaluates the health risk to nearby, existing infant, child, and adult receptors, the HRA completely fails to evaluate the *cumulative* lifetime cancer risk to nearby, existing receptors as a result of Project construction and operation together. This is incorrect and, as a result, the IS/MND's evaluation cannot be relied upon to determine Project significance. According to OEHHA guidance, "the excess cancer risk is calculated separately for each age grouping and then summed to

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[22] "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

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

[24] "Final Staff Report; Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document." SJVAPCD, May 2015, *available at:* https://www.valleyair.org/busind/pto/staff-report-5-28-15.pdf, p. 23.

yield cancer risk at the receptor location."[25] However, review of the IS/MND demonstrates that, while the IS/MND calculated the health risk to nearby, existing infant, child, and adult receptors, the HRA fails to evaluate the cumulative lifetime cancer risk to nearby, existing receptors as a result of Project construction *and* operation. Therefore, the IS/MND should have quantified the Project's *entire* construction and operational health risks, as well as compared the combined construction and operational health risks to the SJVAPCD threshold of 20 in one million.

Screening-Level Assessment Indicates Significant Impact

In an effort to demonstrate the potential risk posed by Project construction and all Project operation to nearby sensitive receptors, we prepared a simple screening-level HRA. 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 not previously identified by the IS/MND.

In order to conduct our screening level risk assessment, we relied upon AERSCREEN, which is a screening level air quality dispersion model. [26] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[27] and the California Air Pollution Control Officers Associated (CAPCOA)[28] guidance as the appropriate air dispersion model for Level 2 health risk screening assessments ("HRSAs"). A Level 2 HRSA utilizes a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed. If an unacceptable air quality hazard is determined to be possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project.

We prepared a preliminary HRA of the Project's construction and operational health-related impact to residential sensitive receptors using the annual PM_{10} exhaust estimates from the SWAPE annual CalEEMod output files. Google Earth shows that the closest sensitive receptor to the Project is approximately 10 meters west of the Project site. Consistent with recommendations set forth by OEHHA, we assumed exposure begins during the third trimester stage of life. The Project's construction CalEEMod output files indicate that construction activities will generate approximately 202 pounds of diesel particulate matter (DPM) over the 822-day construction period. The AERSCREEN model relies on a continuous average emission rate to simulate maximum downward concentrations from point, area, and volume emission sources. To account for the variability in equipment usage and truck trips over Project construction, we calculated an average DPM emission rate by the following equation:

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[25] "Guidance Manual for preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 8-4
[26] "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
[27] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
[28] "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

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{202.2\ lbs}{822\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.001291}\ \boldsymbol{g/s}$$

Using this equation, we estimated a construction emission rate of 0.001291 grams per second (g/s). Subtracting the 822-day construction duration from the total residential duration of 30 years, we assumed that after Project construction, the sensitive receptor would be exposed to the Project's operational DPM for an additional 27.75 years, approximately. The Project's operational CalEEMod emissions, calculated by subtracting the existing emissions from the proposed Project, indicate that operational activities will generate approximately 253 pounds of DPM per year throughout operation. Applying the same equation used to estimate the construction DPM rate, we estimated the following emission rate for Project operation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{252.6\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.003633}\ \boldsymbol{g/s}$$

Using this equation, we estimated an operational emission rate of 0.003633 g/s. Construction and operational activity was simulated as a 42.6-acre rectangular area source in AERSCREEN with dimensions of 415.4 meters by 415 meters. A release height of three meters was selected to represent the height of exhaust stacks on operational equipment and other heavy-duty vehicles, and an initial vertical dimension of one and a half meters was used to simulate instantaneous plume dispersion upon release. An urban meteorological setting was selected with model-default inputs for wind speed and direction distribution.

The AERSCREEN model generates maximum reasonable estimates of single-hour DPM concentrations from the Project site. EPA guidance suggests that in screening procedures, the annualized average concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[29] As previously stated, there are residential sensitive receptors located less than 25 meters away from the Project site. The single-hour concentration estimated by AERSCREEN for Project construction is approximately 0.2907 µg/m^3 DPM at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration 0.02907 µg/m^3 for Project construction at the nearest sensitive receptor. For Project operation, the single-hour concentration is estimated by AERSCREEN is approximately 0.8181 µg/m^3 at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.08181 µg/m^3 for Project operation at the nearest sensitive receptor.

We calculated the excess cancer risk to the residential receptors both maximally exposed and located closest to the Project site using applicable HRA methodologies prescribed by OEHHA and the SJVAPCD. Consistent with the construction schedule proposed by the IS/MND and associated appendices, the annualized average concentration for construction was used for the entire third trimester of pregnancy

[29] "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." EPA, 1992, *available at*: http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf; *see also* "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 4-36

(0.25 years) and infantile stage of life (0 – 2 years). The annualized average concentration for operation was used for the remainder of the 30-year exposure period, which makes up the child stage of life (2 – 16 years) and adult stage of life (16 – 30 years). Consistent with the guidance utilized in the IS/MND, the 2015 OEHHA Air Toxic Hot Spots Program Risk Assessment Guidelines, we used Age Sensitivity Factors (ASFs) to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution (Air Quality and Greenhouse Gas Impact Analysis, p. 42). According to the most updated guidance, quantified cancer risk should be multiplied by a factor of ten during the third trimester of pregnancy and during the first two years of life (infant) 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 the 95th percentile breathing rates for infants.[30] Finally, according to SJVAPCD and OEHHA guidance, we used a Fraction of Time At Home (FAH) Value of 0.85 for the 3rd trimester and infant receptors, 0.72 for child receptors, and 0.73 for adult receptors. [31] We used a cancer potency factor of 1.1 $(mg/kg\text{-}day)^{-1}$ and an averaging time of 25,550 days. The results of our calculations are shown below.

The Closest Exposed Individual at an Existing Residential Receptor					
Activity	**Duration (years)**	**Concentration (ug/m3)**	**Breathing Rate (L/kg-day)**	**ASF**	**Cancer Risk with ASFs***
Construction	0.25	0.02907	361	10	3.4E-07
3rd Trimester Duration	***0.25***			***3rd Trimester Exposure***	***3.4E-07***
Construction	2.00	0.02907	1090	10	8.1E-06
Infant Exposure Duration	***2.00***			***Infant Exposure***	***8.1E-06***
Operation	14.00	0.08181	572	3	2.1E-05
Child Exposure Duration	***14.00***			***Child Exposure***	***2.1E-05***
Operation	14.00	0.08181	261	1	3.3E-06
Adult Exposure Duration	***14.00***			***Adult Exposure***	***3.3E-06***
Lifetime Exposure Duration	**30.00**			**Lifetime Exposure**	**3.3E-05**

[30] "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act," June 5, 2015, *available at:* http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588-risk-assessment-guidelines.pdf?sfvrsn=6, p. 19.
"Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
[31] "Final Staff Report: Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document." SJVAPCD, May 2015, *available at:* https://www.valleyair.org/busind/pto/staff-report-5-28-15.pdf, p. 11.

As indicated in the table above, the excess cancer risk posed to adults, children, infants, and during the third trimester of pregnancy at the closest receptor, located approximately 25 meters away, over the course of Project construction and operation, are approximately 3.3, 21, 8.1, and 0.34 in one million, respectively. The excess cancer risk over the course of a residential lifetime (30 years) at the closest receptor is approximately 33 in one million, thus resulting in a potentially significant health risk impact not previously addressed or identified by the IS/MND.

An agency must include an analysis of health risks that connects the Project's air emissions with the health risk posed by those emissions. Our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection. [32] The purpose of the screening-level construction HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. Our screening-level HRA demonstrates that construction and operation of the Project could result in a potentially significant health risk impact, when correct exposure assumptions and up-to-date, applicable guidance are used. Therefore, since our screening-level construction HRA indicates a potentially significant impact, the County should prepare an EIR with a revised HRA which makes a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors. Thus, the County should prepare an updated, quantified air pollution model as well as an updated, quantified refined health risk assessment which adequately and accurately evaluates health risk impacts associated with both Project construction and operation.

Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

The IS/MND concludes that the proposed Project would have a less than significant GHG impact based on the SJVAPCD's threshold and the Project's consistency with the SJVAPCD's CAP and the CARB Scoping Plan. Specifically, the IS/MND states,

> "GHG emissions released during construction and operation of the project are estimated to be lower than significance thresholds, and would not be cumulatively considerable. Additionally, the project would not conflict with the goals and objectives of the SJVAPCD's CAP or any other State or regional plan, policy or regulation of an agency adopted for the purpose of reducing GHG emissions" (Air Quality and Greenhouse Gas Impact Analysis, pp. 54).

However, the IS/MND's GHG analysis and less than significant impact conclusion is incorrect for several reasons:

(1) The CARB Scoping Plan is not a CAP;
(2) The IS/MND conducts an incorrect and unsubstantiated analysis to determine the Project's GHG impact; and
(3) Our updated analysis indicates a potentially significant impact.

[32] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 1-5

(1) The CARB Scoping Plan Cannot Be Relied Upon to Determine Project Significance

The IS/MND determines that the Project demonstrates consistency with the CARB Scoping Plan. However, this does not qualify as Climate Action Plan (CAP). CEQA Guidelines § 15064.4(b)(3) allows a lead agency to consider "[t]he extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (*see, e.g., section 15183.5(b)*)" (Emph. added). When adopting this language, the California Natural Resources Agency ("Resources Agency") explained in its 2018 Final Statement of Reasons for Regulatory Action ("2018 Statement of Reason")[33] that it explicitly added referenced to section 15183.5(b) because it was "needed to clarify that lead agencies may rely on plans *prepared pursuant to section 15183.5* in evaluating a project's [GHG] emissions … [and] consistent with the Agency's Final Statement of Reasons for the addition of section 15064.4, which states that 'proposed section 15064.4 is intended to be *read in conjunction with . . . proposed section 15183.5*. Those sections each indicate that local and regional plans may be developed to reduce GHG emissions.'" 2018 Final Statement of Reason, p. 19 (emph. added); *see also* 2009 Final Statement of Reasons for Regulatory Action, p. 27.[34] When read in conjunction, CEQA Guidelines §§ 15064.4(b)(3) and 15183.5(b)(1) make clear qualified GHG reduction plans (also commonly referred to as a Climate Action Plan ["CAP"]) should include the following features:

(1) **Inventory**: Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities (e.g., projects) within a defined geographic area (e.g., lead agency jurisdiction);
(2) **Establish GHG Reduction Goal**: Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;
(3) **Analyze Project Types**: Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;
(4) **Craft Performance Based Mitigation Measures**: Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
(5) **Monitoring**: Establish a mechanism to monitor the CAP progress toward achieving said level and to require amendment if the plan is not achieving specified levels;

The above-listed CAP features provide the necessary *substantial evidence demonstrating a project's incremental contribution is not cumulative considerable*, as required under CEQA Guidelines § 15064.4(b)(3).[35] Here, however, the IS/MND fails to demonstrate that the CARB Scoping Plan includes

[33] Resources Agency (Nov. 2018) Final Statement of Reasons For Regulatory Action: Amendments To The State CEQA Guidelines, http://resources.ca.gov/ceqa/docs/2018_CEQA_Final_Statement_of%20Reasons_111218.pdf.
[34] Resources Agency (Dec. 2009) Final Statement of Reasons for Regulatory Action, p. 27 ("Those sections each indicate that local and regional plans may be developed to reduce GHG emissions. If such plans reduce community-wide emissions to a level that is less than significant, a later project that complies with the requirements in such a plan may be found to have a less than significant impact."), http://resources.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf.
[35] *See Mission Bay Alliance v. Office of Community Investment & Infrastructure* (2016) 6 Cal.App.5th 160, 200-201 (Upheld qualitative GHG analysis when based on city's adopted its greenhouse gas strategy that contained

the above-listed requirements to be considered a qualified CAP for the County. As such, the IS/MND leaves an analytical gap showing that compliance with said plan can be used for a project-level significance determination. Thus, the IS/MND's GHG analysis regarding the CARB Scoping Plan should not be relied upon to determine Project significance.

(2) The IS/MND Conducts an Incorrect and Unsubstantiated Analysis

In addition to the IS/MND's inability to rely on various plans and policies to demonstrate less than significant GHG impacts, the IS/MND utilizes an incorrect CalEEMod model and fails to correctly compare the Project's annual GHG emissions to business-as-usual (BAU).

First, the IS/MND's CalEEMod model relies upon incorrect input parameters to estimate the Project's criteria air pollutant and GHG emissions, resulting in an underestimation of Project emissions. Therefore, we find the IS/MND's quantitative GHG analysis to be incorrect and unreliable.

Second, the IS/MND utilizes an incorrect value for the Project's operational GHG emissions to compare the Project's emissions to BAU emissions. The IS/MND states that "the project would generate **6,934** metric tons of CO2e per year under 2025 opening year conditions" (emphasis added) (Air Quality and Greenhouse Gas Impact Analysis, p. 48). However, review of Table 14 in the Air Quality and Greenhouse Gas Impact Analysis reveals that a value of **6,853** MT CO_2e was compared to the BAU GHG emissions of 9,756 MT CO_2e/year (Air Quality and Greenhouse Gas Impact Analysis, p. 49, Table 14). Thus, the IS/MND compared a different value for the Project's operational GHG emission than previously indicated, and we cannot verify which value should have been used. As a result, the IS/MND's GHG impact analysis should not be relied upon to determine Project significance.

(3) Updated Analysis Indicates a Potentially Significant Impact

The updated CalEEMod output files, modeled by SWAPE with Project-specific information, disclose the Project's mitigated operational GHG emissions, which include approximately 8,102.74 MT CO_2e/year. We compared these emissions to the business-as-usual (BAU) GHG emissions of 9,756 MT CO_2e/year, as indicated by the IS/MND (Air Quality and Greenhouse Gas Impact Analysis, p. 53, Table 14). When these emissions are compared to the SJVAPCD significance threshold, which requires the demonstration of at least a 29% reduction in project-specific GHG emissions from BAU GHG emissions, we find that the Project's GHG emissions exceed the thresholds (see table below).[36]

"multiple elements" of CEQA Guidelines § 15183.5(b), "quantification of [city's] baseline levels of [GHG] emissions and planned reductions[,]" approved by the regional air district, and "[a]t the heart" of the city's greenhouse gas strategy was "specific regulations" and measures to be implemented on a "project-by-project basis … designed to achieve the specified citywide emission level.").

[36] "Addressing Greenhouse Gas Emissions Impact under the California Environmental Quality Act (CEQA): Land Use Development Projects" San Joaquin Valley Air Pollution Control District, *available at:* http://www.valleyair.org/Programs/CCAP/bps/Fact_Sheet_Development_Sources.pdf.

SWAPE Annual Greenhouse Gas Emissions	
Project Phase	**Proposed Project (MT CO_2e/year)**
Area	0.01
Energy	2,631.88
Mobile	4,416.68
Offroad	141.50
Waste	436.52
Water	476.15
Total	**8,102.74**
BAU GHG Emissions	9,756.00
Percent Decrease	**16.95%**
Threshold	29.00%
Consistent?	***No***

As you can see in the table above, when we compare the Project's mitigated operational GHG emissions to the BAU level of 9,756 MT CO_2e/year, we find that there would be a 17% decrease in emissions. This fails to reach the threshold of *at least* a 29% *reduction* from BAU GHG emissions. As discussed above, according to CEQA Guidelines § 15064.4(b), if there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, a full CEQA analysis must be prepared for the project. The results of the above analysis provide substantial evidence that the proposed Project's GHG emissions are cumulatively considerable. Therefore, an updated DEIR must be prepared for the Project, and additional mitigation should be implemented where necessary, per CEQA guidelines.

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

Sincerely,

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

Paul Rosenfeld

Paul E. Rosenfeld, Ph.D.

```
Start date and time  12/06/19 11:03:14

                             AERSCREEN 16216


We Be Jammin Construction


            We Be Jammin Construction



         -----------------  DATA ENTRY VALIDATION  -----------------
                        METRIC              ENGLISH
 ** AREADATA **  ---------------     ----------------


 Emission Rate:    0.129E-02 g/s         0.102E-01 lb/hr
 Area Height:           3.00 meters           9.84 feet
 Area Source Length:  415.40 meters        1362.86 feet
 Area Source Width:   415.00 meters        1361.55 feet
 Vertical Dimension:    1.50 meters           4.92 feet
 Model Mode:           URBAN
 Population:          527438
 Dist to Ambient Air:           1.0 meters             3. feet



 ** BUILDING DATA **
```

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters   0.0 feet

Probe distance: 5000. meters   16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K   -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u*): not adjusted

DEBUG OPTION ON

AERSCREEN output file:

2019.12.06_WeBeJammin_Construction.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

****

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

```
Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season            Albedo     Bo       zo

Winter             0.35     1.50     1.000

Spring             0.14     1.00     1.000

Summer             0.16     2.00     1.000

Autumn             0.18     2.00     1.000


Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl


Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl


Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl


Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl


Buildings and/or terrain present or rectangular area source, skipping probe


FLOWSECTOR   started 12/06/19 11:05:39
 ********************************************


  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 12/06/19 11:06:08

REFINE       started 12/06/19 11:06:08

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

REFINE       ended 12/06/19 11:06:11
```

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 12/06/19 11:06:12

```
 Concentration     Distance Elevation  Diag  Season/Month   Zo sector       Date
 H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS     HT
REF TA     HT
   0.28064E+00         1.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29070E+00        25.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30062E+00        50.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31002E+00        75.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31894E+00       100.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32707E+00       125.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33493E+00       150.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34289E+00       174.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35056E+00       200.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35800E+00       225.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36518E+00       250.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37215E+00       274.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
*  0.37623E+00       290.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33227E+00       300.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26070E+00       325.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23085E+00       350.01      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
```

```
310.0    2.0
   0.21481E+00       375.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19507E+00       400.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17907E+00       425.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16579E+00       450.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15459E+00       475.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14499E+00       500.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13656E+00       525.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12918E+00       550.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12259E+00       575.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11671E+00       599.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11134E+00       625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10647E+00       650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10204E+00       675.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.97937E-01       699.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.94138E-01       725.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.90640E-01       750.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.87368E-01       775.00      0.00  45.0        Winter       0-360   10011001
```

```
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.84305E-01       800.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.81446E-01       825.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.78739E-01       850.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.76214E-01       875.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.73831E-01       900.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.71587E-01       924.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.69462E-01       950.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.67427E-01       975.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.65509E-01      1000.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.63694E-01      1024.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.61953E-01      1050.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60291E-01      1075.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.58718E-01      1100.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57226E-01      1125.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.55793E-01      1150.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54405E-01      1175.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.53085E-01      1200.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.51826E-01      1225.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50622E-01      1250.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49460E-01      1275.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48329E-01      1300.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47244E-01      1325.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46206E-01      1349.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.45211E-01      1375.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44257E-01      1400.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43331E-01      1425.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.42439E-01      1449.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41573E-01      1475.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40737E-01      1500.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39932E-01      1525.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39157E-01      1550.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38412E-01      1575.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37685E-01      1600.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.36980E-01      1625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36299E-01      1650.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35643E-01      1674.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35002E-01      1700.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34380E-01      1725.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33779E-01      1750.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33195E-01      1775.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32631E-01      1800.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32078E-01      1825.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31542E-01      1850.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31021E-01      1875.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30515E-01      1900.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30025E-01      1925.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29550E-01      1950.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29087E-01      1975.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28633E-01      1999.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28193E-01      2025.00      0.00  40.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27764E-01      2050.00      0.00  40.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27348E-01      2075.00      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26941E-01      2099.99      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26541E-01      2124.99      0.00  40.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26152E-01      2150.00      0.00  40.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25774E-01      2175.00      0.00  40.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25406E-01      2199.99      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25047E-01      2225.00      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24697E-01      2250.00      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24356E-01      2275.00      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24024E-01      2300.01      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23701E-01      2325.00      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23383E-01      2350.00      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23071E-01      2375.00      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22767E-01      2400.01      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22470E-01      2424.99      0.00  45.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.22180E-01      2450.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21894E-01      2475.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21613E-01      2500.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21339E-01      2524.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21071E-01      2550.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20809E-01      2575.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20553E-01      2600.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20303E-01      2625.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20058E-01      2650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19819E-01      2675.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19584E-01      2700.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19355E-01      2725.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19131E-01      2749.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18911E-01      2775.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18696E-01      2800.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18485E-01      2825.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18278E-01      2849.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.18073E-01      2875.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17873E-01      2900.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17676E-01      2925.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17483E-01      2950.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17293E-01      2975.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17106E-01      3000.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16922E-01      3025.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16741E-01      3050.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16565E-01      3075.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16391E-01      3100.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16221E-01      3125.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16054E-01      3150.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15891E-01      3175.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15730E-01      3200.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15571E-01      3225.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15415E-01      3249.99      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15262E-01      3275.00      0.00  35.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15111E-01      3300.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14964E-01      3325.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14820E-01      3350.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14678E-01      3375.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14538E-01      3400.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14400E-01      3425.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14265E-01      3450.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14132E-01      3475.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14001E-01      3499.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13873E-01      3525.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13747E-01      3550.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13621E-01      3575.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13498E-01      3599.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13376E-01      3625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13256E-01      3650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13139E-01      3675.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

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   0.13022E-01      3699.99      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12908E-01      3725.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12795E-01      3750.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12683E-01      3775.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12575E-01      3800.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12466E-01      3825.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12360E-01      3850.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12255E-01      3875.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12152E-01      3900.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12050E-01      3925.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11949E-01      3950.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11850E-01      3975.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11752E-01      4000.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11656E-01      4025.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11561E-01      4050.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11468E-01      4075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11376E-01      4100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
```

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310.0    2.0
   0.11286E-01      4125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11196E-01      4150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11107E-01      4175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11019E-01      4200.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10934E-01      4225.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10849E-01      4250.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10766E-01      4275.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10683E-01      4300.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10602E-01      4325.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10522E-01      4350.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10443E-01      4375.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10365E-01      4400.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10288E-01      4425.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10212E-01      4449.99      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10137E-01      4475.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10063E-01      4500.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.99896E-02      4525.00      0.00  10.0        Winter       0-360   10011001
```

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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.99172E-02      4550.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.98456E-02      4575.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.97749E-02      4600.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.97049E-02      4625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.96360E-02      4650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.95679E-02      4674.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.95006E-02      4700.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.94341E-02      4725.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.93684E-02      4750.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.93032E-02      4775.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.92390E-02      4800.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.91760E-02      4825.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.91137E-02      4850.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.90521E-02      4875.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.89910E-02      4900.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.89306E-02      4925.01      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

```
   0.88705E-02      4950.00      0.00  25.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.88110E-02      4975.00      0.00  25.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.87522E-02      5000.00      0.00  25.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

Start date and time 12/06/19 11:07:46

AERSCREEN 16216

We Be Jammin Operational

We Be Jammin Operational

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

	METRIC	ENGLISH
** AREADATA **	---------------	----------------
Emission Rate:	0.363E-02 g/s	0.288E-01 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	415.40 meters	1362.86 feet
Area Source Width:	415.00 meters	1361.55 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	527438	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters   0.0 feet

Probe distance: 5000. meters   16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K   -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u*): not adjusted

DEBUG OPTION ON

AERSCREEN output file:

2019.12.06_WeBeJammin_Operational.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

****

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

```
Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season             Albedo     Bo       zo

Winter              0.35     1.50     1.000

Spring              0.14     1.00     1.000

Summer              0.16     2.00     1.000

Autumn              0.18     2.00     1.000


Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl


Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl


Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl


Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl


Buildings and/or terrain present or rectangular area source, skipping probe


FLOWSECTOR   started 12/06/19 11:10:38
 ********************************************


  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 12/06/19 11:11:07

REFINE       started 12/06/19 11:11:07

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

REFINE       ended 12/06/19 11:11:10
```

```
**********************************************

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

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


Ending date and time  12/06/19 11:11:11
```

```
 Concentration     Distance Elevation  Diag  Season/Month   Zo sector       Date
 H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS     HT
REF TA     HT
   0.78974E+00         1.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.81805E+00        25.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.84595E+00        50.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.87240E+00        75.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.89751E+00       100.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.92039E+00       125.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.94251E+00       150.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.96491E+00       174.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.98651E+00       200.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10074E+01       225.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10276E+01       250.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10473E+01       274.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
*  0.10587E+01       290.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.93502E+00       300.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.73362E+00       325.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.64963E+00       350.01      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
```

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310.0    2.0
   0.60448E+00       375.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54894E+00       400.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50390E+00       425.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46654E+00       450.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43502E+00       475.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40800E+00       500.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38429E+00       525.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36352E+00       550.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34497E+00       575.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32843E+00       599.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31332E+00       625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29962E+00       650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28715E+00       675.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27560E+00       699.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26491E+00       725.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25506E+00       750.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24586E+00       775.00      0.00  45.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.23724E+00       800.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22919E+00       825.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.22158E+00       850.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.21447E+00       875.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20776E+00       900.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.20145E+00       924.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.19547E+00       950.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18974E+00       975.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.18435E+00      1000.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17924E+00      1024.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.17434E+00      1050.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16966E+00      1075.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16523E+00      1100.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.16104E+00      1125.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15700E+00      1150.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.15310E+00      1175.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.14938E+00      1200.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14584E+00      1225.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.14245E+00      1250.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13918E+00      1275.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13600E+00      1300.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13295E+00      1325.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.13002E+00      1349.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12723E+00      1375.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12454E+00      1400.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.12194E+00      1425.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11942E+00      1449.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11699E+00      1475.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11463E+00      1500.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11237E+00      1525.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.11019E+00      1550.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10809E+00      1575.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10605E+00      1600.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.10406E+00      1625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10215E+00      1650.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.10030E+00      1674.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.98497E-01      1700.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.96745E-01      1725.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.95057E-01      1750.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.93411E-01      1775.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.91824E-01      1800.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.90269E-01      1825.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.88760E-01      1850.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.87293E-01      1875.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.85870E-01      1900.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.84493E-01      1925.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.83156E-01      1950.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.81852E-01      1975.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.80576E-01      1999.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.79336E-01      2025.00      0.00  40.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.78131E-01      2050.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.76959E-01      2075.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.75813E-01      2099.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.74688E-01      2124.99      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.73594E-01      2150.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.72528E-01      2175.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.71492E-01      2199.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.70482E-01      2225.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.69499E-01      2250.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.68540E-01      2275.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.67606E-01      2300.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.66696E-01      2325.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.65802E-01      2350.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.64924E-01      2375.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.64067E-01      2400.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.63232E-01      2424.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

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   0.62415E-01      2450.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.61611E-01      2475.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60821E-01      2500.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.60049E-01      2524.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.59295E-01      2550.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.58558E-01      2575.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57838E-01      2600.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.57133E-01      2625.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.56444E-01      2650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.55771E-01      2675.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.55111E-01      2700.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.54466E-01      2725.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.53835E-01      2749.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.53216E-01      2775.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52611E-01      2800.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.52018E-01      2825.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.51435E-01      2849.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.50860E-01      2875.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.50295E-01      2900.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49741E-01      2925.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.49199E-01      2950.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48664E-01      2975.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.48136E-01      3000.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47618E-01      3025.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.47111E-01      3050.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46614E-01      3075.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.46126E-01      3100.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.45647E-01      3125.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.45178E-01      3150.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44717E-01      3175.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.44264E-01      3200.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43818E-01      3225.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.43379E-01      3249.99      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.42948E-01      3275.00      0.00  35.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.42524E-01      3300.00      0.00  35.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.42109E-01      3325.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41703E-01      3350.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.41303E-01      3375.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40910E-01      3400.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40522E-01      3425.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.40141E-01      3450.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39767E-01      3475.01      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39400E-01      3499.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.39039E-01      3525.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38683E-01      3550.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.38331E-01      3575.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37983E-01      3599.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37641E-01      3625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.37304E-01      3650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36973E-01      3675.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
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   0.36645E-01      3699.99      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36322E-01      3725.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.36005E-01      3750.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35691E-01      3775.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35386E-01      3800.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.35081E-01      3825.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34782E-01      3850.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34486E-01      3875.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.34196E-01      3900.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33908E-01      3925.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33625E-01      3950.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33347E-01      3975.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.33072E-01      4000.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32801E-01      4025.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32533E-01      4050.00      0.00  30.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32271E-01      4075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.32013E-01      4100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
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310.0    2.0
   0.31758E-01      4125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31506E-01      4150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31255E-01      4175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.31009E-01      4200.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30768E-01      4225.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30530E-01      4250.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30295E-01      4275.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.30064E-01      4300.00      0.00  15.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29834E-01      4325.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29609E-01      4350.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29387E-01      4375.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.29167E-01      4400.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28952E-01      4425.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28738E-01      4449.99      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28527E-01      4475.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28318E-01      4500.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.28111E-01      4525.00      0.00  10.0        Winter       0-360   10011001
```

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-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27907E-01      4550.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27706E-01      4575.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27507E-01      4600.00      0.00  10.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27310E-01      4625.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.27116E-01      4650.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26925E-01      4674.99      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26735E-01      4700.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26548E-01      4725.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26363E-01      4750.00      0.00  45.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.26180E-01      4775.00      0.00  40.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25999E-01      4800.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25822E-01      4825.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25646E-01      4850.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25473E-01      4875.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25301E-01      4900.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.25131E-01      4925.01      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

```
   0.24962E-01      4950.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24795E-01      4975.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
   0.24629E-01      5000.00      0.00  25.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
310.0    2.0
```

Fresno County Industrial Project

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	700.00	1000sqft	16.07	700,000.00	0
Parking Lot	10.00	Acre	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips - Consistent with IS/MND's model.

Energy Use - See SWAPE comment about energy use values.

Water And Wastewater - See SWAPE comment about indoor water use rate.

Solid Waste - See SWAPE comment about solid waste generation rate.

Operational Off-Road Equipment - See SWAPE comment about operational off-road equipment fuel type.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	6/24/2025	5/13/2025
tblConstructionPhase	PhaseEndDate	3/18/2025	2/4/2025
tblConstructionPhase	PhaseEndDate	7/11/2023	5/30/2023
tblConstructionPhase	PhaseEndDate	5/6/2025	3/25/2025
tblConstructionPhase	PhaseEndDate	5/9/2023	3/28/2023
tblConstructionPhase	PhaseStartDate	5/7/2025	3/26/2025
tblConstructionPhase	PhaseStartDate	7/12/2023	5/31/2023
tblConstructionPhase	PhaseStartDate	5/10/2023	3/29/2023
tblConstructionPhase	PhaseStartDate	3/19/2025	2/5/2025
tblConstructionPhase	PhaseStartDate	4/12/2023	3/1/2023
tblOperationalOffRoadEquipment	OperLoadFactor	0.20	0.20
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	8.00
tblVehicleTrips	CW_TL	9.50	40.00
tblVehicleTrips	ST_TR	1.32	1.40
tblVehicleTrips	SU_TR	0.68	1.40
tblVehicleTrips	WD_TR	6.97	1.40

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.3771	3.4104	3.0188	0.0103	0.7669	0.1011	0.8680	0.2864	0.0942	0.3806	0.0000	930.9527	930.9527	0.1277	0.0000	934.1444
2024	0.4401	3.8856	3.6227	0.0142	0.6611	0.0851	0.7462	0.1794	0.0801	0.2595	0.0000	1,300.221 5	1,300.221 5	0.1312	0.0000	1,303.500 9
2025	5.0350	0.5293	0.6555	1.9100e-003	0.0785	0.0154	0.0938	0.0212	0.0143	0.0356	0.0000	172.7533	172.7533	0.0242	0.0000	173.3585
Maximum	**5.0350**	**3.8856**	**3.6227**	**0.0142**	**0.7669**	**0.1011**	**0.8680**	**0.2864**	**0.0942**	**0.3806**	**0.0000**	**1,300.221 5**	**1,300.221 5**	**0.1312**	**0.0000**	**1,303.500 9**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.3771	3.4104	3.0188	0.0103	0.7669	0.1011	0.8680	0.2864	0.0942	0.3806	0.0000	930.9524	930.9524	0.1277	0.0000	934.1440
2024	0.4401	3.8856	3.6227	0.0142	0.6611	0.0851	0.7462	0.1794	0.0801	0.2595	0.0000	1,300.221 2	1,300.221 2	0.1312	0.0000	1,303.500 5
2025	5.0350	0.5293	0.6555	1.9100e-003	0.0785	0.0154	0.0938	0.0212	0.0143	0.0356	0.0000	172.7533	172.7533	0.0242	0.0000	173.3584
Maximum	**5.0350**	**3.8856**	**3.6227**	**0.0142**	**0.7669**	**0.1011**	**0.8680**	**0.2864**	**0.0942**	**0.3806**	**0.0000**	**1,300.221 2**	**1,300.221 2**	**0.1312**	**0.0000**	**1,303.500 5**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2023	5-31-2023	1.1691	1.1691
2	6-1-2023	8-31-2023	1.1310	1.1310
3	9-1-2023	11-30-2023	1.1210	1.1210
4	12-1-2023	2-29-2024	1.0925	1.0925
5	3-1-2024	5-31-2024	1.0868	1.0868
6	6-1-2024	8-31-2024	1.0857	1.0857
7	9-1-2024	11-30-2024	1.0761	1.0761
8	12-1-2024	2-28-2025	0.8523	0.8523
9	3-1-2025	5-31-2025	5.0809	5.0809
		Highest	5.0809	5.0809

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.2584	6.0000e-005	6.5100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0127	0.0127	3.0000e-005	0.0000	0.0135
Energy	0.0788	0.7161	0.6016	4.3000e-003		0.0544	0.0544		0.0544	0.0544	0.0000	2,620.0316	2,620.0316	0.0982	0.0315	2,631.8758
Mobile	0.4832	5.4550	6.9552	0.0474	3.3901	0.0260	3.4161	0.9135	0.0244	0.9380	0.0000	4,412.3775	4,412.3775	0.1723	0.0000	4,416.6841
Offroad	0.0908	0.8555	1.1850	1.6000e-003		0.0458	0.0458		0.0421	0.0421	0.0000	140.3613	140.3613	0.0454	0.0000	141.4962
Waste						0.0000	0.0000		0.0000	0.0000	176.1962	0.0000	176.1962	10.4129	0.0000	436.5185
Water						0.0000	0.0000		0.0000	0.0000	51.3555	254.8110	306.1665	5.2862	0.1269	476.1474
Total	**3.9112**	**7.0267**	**8.7483**	**0.0533**	**3.3901**	**0.1263**	**3.5164**	**0.9135**	**0.1210**	**1.0346**	**227.5516**	**7,427.5941**	**7,655.1458**	**16.0150**	**0.1584**	**8,102.7354**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.2584	6.0000e-005	6.5100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0127	0.0127	3.0000e-005	0.0000	0.0135
Energy	0.0788	0.7161	0.6016	4.3000e-003		0.0544	0.0544		0.0544	0.0544	0.0000	2,620.0316	2,620.0316	0.0982	0.0315	2,631.8758
Mobile	0.4832	5.4550	6.9552	0.0474	3.3901	0.0260	3.4161	0.9135	0.0244	0.9380	0.0000	4,412.3775	4,412.3775	0.1723	0.0000	4,416.6841
Offroad	0.0908	0.8555	1.1850	1.6000e-003		0.0458	0.0458		0.0421	0.0421	0.0000	140.3613	140.3613	0.0454	0.0000	141.4962
Waste						0.0000	0.0000		0.0000	0.0000	176.1962	0.0000	176.1962	10.4129	0.0000	436.5185
Water						0.0000	0.0000		0.0000	0.0000	51.3555	254.8110	306.1665	5.2862	0.1269	476.1474
Total	**3.9112**	**7.0267**	**8.7483**	**0.0533**	**3.3901**	**0.1263**	**3.5164**	**0.9135**	**0.1210**	**1.0346**	**227.5516**	**7,427.5941**	**7,655.1458**	**16.0150**	**0.1584**	**8,102.7354**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2023	3/28/2023	5	20	
2	Grading	Grading	3/29/2023	5/30/2023	5	45	
3	Building Construction	Building Construction	5/31/2023	2/4/2025	5	440	
4	Paving	Paving	2/5/2025	3/25/2025	5	35	
5	Architectural Coating	Architectural Coating	3/26/2025	5/13/2025	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 10

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,050,000; Non-Residential Outdoor: 350,000; Striped Parking Area: 26,136 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	477.00	186.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	95.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2752	0.1824	3.8000e-004		0.0127	0.0127		0.0117	0.0117	0.0000	33.4507	33.4507	0.0108	0.0000	33.7212
Total	**0.0266**	**0.2752**	**0.1824**	**3.8000e-004**	**0.1807**	**0.0127**	**0.1933**	**0.0993**	**0.0117**	**0.1110**	**0.0000**	**33.4507**	**33.4507**	**0.0108**	**0.0000**	**33.7212**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	3.5000e-004	3.7800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1161	1.1161	2.0000e-005	0.0000	1.1167
Total	**6.2000e-004**	**3.5000e-004**	**3.7800e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1161**	**1.1161**	**2.0000e-005**	**0.0000**	**1.1167**

3.2 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2752	0.1824	3.8000e-004		0.0127	0.0127		0.0117	0.0117	0.0000	33.4507	33.4507	0.0108	0.0000	33.7211
Total	**0.0266**	**0.2752**	**0.1824**	**3.8000e-004**	**0.1807**	**0.0127**	**0.1933**	**0.0993**	**0.0117**	**0.1110**	**0.0000**	**33.4507**	**33.4507**	**0.0108**	**0.0000**	**33.7211**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	3.5000e-004	3.7800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1161	1.1161	2.0000e-005	0.0000	1.1167
Total	**6.2000e-004**	**3.5000e-004**	**3.7800e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1161**	**1.1161**	**2.0000e-005**	**0.0000**	**1.1167**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1952	0.0000	0.1952	0.0809	0.0000	0.0809	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0747	0.7766	0.6312	1.4000e-003		0.0321	0.0321		0.0295	0.0295	0.0000	122.7042	122.7042	0.0397	0.0000	123.6964
Total	**0.0747**	**0.7766**	**0.6312**	**1.4000e-003**	**0.1952**	**0.0321**	**0.2272**	**0.0809**	**0.0295**	**0.1104**	**0.0000**	**122.7042**	**122.7042**	**0.0397**	**0.0000**	**123.6964**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	8.8000e-004	9.4500e-003	3.0000e-005	3.6000e-003	2.0000e-005	3.6200e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	2.7903	2.7903	6.0000e-005	0.0000	2.7918
Total	**1.5500e-003**	**8.8000e-004**	**9.4500e-003**	**3.0000e-005**	**3.6000e-003**	**2.0000e-005**	**3.6200e-003**	**9.6000e-004**	**2.0000e-005**	**9.8000e-004**	**0.0000**	**2.7903**	**2.7903**	**6.0000e-005**	**0.0000**	**2.7918**

3.3 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1952	0.0000	0.1952	0.0809	0.0000	0.0809	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0747	0.7766	0.6312	1.4000e-003		0.0321	0.0321		0.0295	0.0295	0.0000	122.7041	122.7041	0.0397	0.0000	123.6962
Total	**0.0747**	**0.7766**	**0.6312**	**1.4000e-003**	**0.1952**	**0.0321**	**0.2272**	**0.0809**	**0.0295**	**0.1104**	**0.0000**	**122.7041**	**122.7041**	**0.0397**	**0.0000**	**123.6962**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	8.8000e-004	9.4500e-003	3.0000e-005	3.6000e-003	2.0000e-005	3.6200e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	2.7903	2.7903	6.0000e-005	0.0000	2.7918
Total	**1.5500e-003**	**8.8000e-004**	**9.4500e-003**	**3.0000e-005**	**3.6000e-003**	**2.0000e-005**	**3.6200e-003**	**9.6000e-004**	**2.0000e-005**	**9.8000e-004**	**0.0000**	**2.7903**	**2.7903**	**6.0000e-005**	**0.0000**	**2.7918**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1203	1.1004	1.2427	2.0600e-003		0.0535	0.0535		0.0504	0.0504	0.0000	177.3306	177.3306	0.0422	0.0000	178.3852
Total	**0.1203**	**1.1004**	**1.2427**	**2.0600e-003**		**0.0535**	**0.0535**		**0.0504**	**0.0504**	**0.0000**	**177.3306**	**177.3306**	**0.0422**	**0.0000**	**178.3852**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0274	1.1858	0.1834	3.8600e-003	0.0943	1.1400e-003	0.0954	0.0272	1.0900e-003	0.0283	0.0000	367.2952	367.2952	0.0301	0.0000	368.0478
Worker	0.1259	0.0710	0.7659	2.5000e-003	0.2917	1.7200e-003	0.2935	0.0775	1.5800e-003	0.0791	0.0000	226.2656	226.2656	4.7900e-003	0.0000	226.3854
Total	**0.1533**	**1.2569**	**0.9493**	**6.3600e-003**	**0.3860**	**2.8600e-003**	**0.3889**	**0.1048**	**2.6700e-003**	**0.1075**	**0.0000**	**593.5608**	**593.5608**	**0.0349**	**0.0000**	**594.4332**

3.4 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1203	1.1004	1.2427	2.0600e-003		0.0535	0.0535		0.0504	0.0504	0.0000	177.3304	177.3304	0.0422	0.0000	178.3850
Total	**0.1203**	**1.1004**	**1.2427**	**2.0600e-003**		**0.0535**	**0.0535**		**0.0504**	**0.0504**	**0.0000**	**177.3304**	**177.3304**	**0.0422**	**0.0000**	**178.3850**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0274	1.1858	0.1834	3.8600e-003	0.0943	1.1400e-003	0.0954	0.0272	1.0900e-003	0.0283	0.0000	367.2952	367.2952	0.0301	0.0000	368.0478
Worker	0.1259	0.0710	0.7659	2.5000e-003	0.2917	1.7200e-003	0.2935	0.0775	1.5800e-003	0.0791	0.0000	226.2656	226.2656	4.7900e-003	0.0000	226.3854
Total	**0.1533**	**1.2569**	**0.9493**	**6.3600e-003**	**0.3860**	**2.8600e-003**	**0.3889**	**0.1048**	**2.6700e-003**	**0.1075**	**0.0000**	**593.5608**	**593.5608**	**0.0349**	**0.0000**	**594.4332**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0457	2.0152	0.2987	6.5600e-003	0.1615	1.9300e-003	0.1634	0.0467	1.8400e-003	0.0485	0.0000	624.1749	624.1749	0.0520	0.0000	625.4751
Worker	0.2016	0.1093	1.2062	4.1200e-003	0.4996	2.8700e-003	0.5024	0.1328	2.6400e-003	0.1354	0.0000	372.3243	372.3243	7.3400e-003	0.0000	372.5079
Total	**0.2473**	**2.1245**	**1.5049**	**0.0107**	**0.6611**	**4.8000e-003**	**0.6659**	**0.1794**	**4.4800e-003**	**0.1839**	**0.0000**	**996.4992**	**996.4992**	**0.0594**	**0.0000**	**997.9830**

3.4 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0457	2.0152	0.2987	6.5600e-003	0.1615	1.9300e-003	0.1634	0.0467	1.8400e-003	0.0485	0.0000	624.1749	624.1749	0.0520	0.0000	625.4751
Worker	0.2016	0.1093	1.2062	4.1200e-003	0.4996	2.8700e-003	0.5024	0.1328	2.6400e-003	0.1354	0.0000	372.3243	372.3243	7.3400e-003	0.0000	372.5079
Total	**0.2473**	**2.1245**	**1.5049**	**0.0107**	**0.6611**	**4.8000e-003**	**0.6659**	**0.1794**	**4.4800e-003**	**0.1839**	**0.0000**	**996.4992**	**996.4992**	**0.0594**	**0.0000**	**997.9830**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0171	0.1559	0.2011	3.4000e-004		6.5900e-003	6.5900e-003		6.2000e-003	6.2000e-003	0.0000	28.9899	28.9899	6.8100e-003	0.0000	29.1603
Total	**0.0171**	**0.1559**	**0.2011**	**3.4000e-004**		**6.5900e-003**	**6.5900e-003**		**6.2000e-003**	**6.2000e-003**	**0.0000**	**28.9899**	**28.9899**	**6.8100e-003**	**0.0000**	**29.1603**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2600e-003	0.1908	0.0274	6.2000e-004	0.0154	1.8000e-004	0.0156	4.4500e-003	1.7000e-004	4.6300e-003	0.0000	59.1348	59.1348	4.9800e-003	0.0000	59.2594
Worker	0.0181	9.4200e-003	0.1060	3.8000e-004	0.0477	2.7000e-004	0.0479	0.0127	2.5000e-004	0.0129	0.0000	34.1132	34.1132	6.3000e-004	0.0000	34.1290
Total	**0.0224**	**0.2002**	**0.1334**	**1.0000e-003**	**0.0631**	**4.5000e-004**	**0.0635**	**0.0171**	**4.2000e-004**	**0.0176**	**0.0000**	**93.2480**	**93.2480**	**5.6100e-003**	**0.0000**	**93.3884**

3.4 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0171	0.1559	0.2011	3.4000e-004		6.5900e-003	6.5900e-003		6.2000e-003	6.2000e-003	0.0000	28.9899	28.9899	6.8100e-003	0.0000	29.1603
Total	**0.0171**	**0.1559**	**0.2011**	**3.4000e-004**		**6.5900e-003**	**6.5900e-003**		**6.2000e-003**	**6.2000e-003**	**0.0000**	**28.9899**	**28.9899**	**6.8100e-003**	**0.0000**	**29.1603**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2600e-003	0.1908	0.0274	6.2000e-004	0.0154	1.8000e-004	0.0156	4.4500e-003	1.7000e-004	4.6300e-003	0.0000	59.1348	59.1348	4.9800e-003	0.0000	59.2594
Worker	0.0181	9.4200e-003	0.1060	3.8000e-004	0.0477	2.7000e-004	0.0479	0.0127	2.5000e-004	0.0129	0.0000	34.1132	34.1132	6.3000e-004	0.0000	34.1290
Total	**0.0224**	**0.2002**	**0.1334**	**1.0000e-003**	**0.0631**	**4.5000e-004**	**0.0635**	**0.0171**	**4.2000e-004**	**0.0176**	**0.0000**	**93.2480**	**93.2480**	**5.6100e-003**	**0.0000**	**93.3884**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0160	0.1502	0.2551	4.0000e-004		7.3200e-003	7.3200e-003		6.7400e-003	6.7400e-003	0.0000	35.0337	35.0337	0.0113	0.0000	35.3170
Paving	0.0131					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0291**	**0.1502**	**0.2551**	**4.0000e-004**		**7.3200e-003**	**7.3200e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**35.0337**	**35.0337**	**0.0113**	**0.0000**	**35.3170**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	4.1000e-004	4.6700e-003	2.0000e-005	2.1000e-003	1.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.5018	1.5018	3.0000e-005	0.0000	1.5025
Total	**8.0000e-004**	**4.1000e-004**	**4.6700e-003**	**2.0000e-005**	**2.1000e-003**	**1.0000e-005**	**2.1100e-003**	**5.6000e-004**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**1.5018**	**1.5018**	**3.0000e-005**	**0.0000**	**1.5025**

3.5 Paving - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0160	0.1502	0.2551	4.0000e-004		7.3200e-003	7.3200e-003		6.7400e-003	6.7400e-003	0.0000	35.0337	35.0337	0.0113	0.0000	35.3169
Paving	0.0131					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0291**	**0.1502**	**0.2551**	**4.0000e-004**		**7.3200e-003**	**7.3200e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**35.0337**	**35.0337**	**0.0113**	**0.0000**	**35.3169**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	4.1000e-004	4.6700e-003	2.0000e-005	2.1000e-003	1.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.5018	1.5018	3.0000e-005	0.0000	1.5025
Total	**8.0000e-004**	**4.1000e-004**	**4.6700e-003**	**2.0000e-005**	**2.1000e-003**	**1.0000e-005**	**2.1100e-003**	**5.6000e-004**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**1.5018**	**1.5018**	**3.0000e-005**	**0.0000**	**1.5025**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.9576					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0317	5.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004	0.0000	4.4682	4.4682	2.4000e-004	0.0000	4.4743
Total	**4.9606**	**0.0201**	**0.0317**	**5.0000e-005**		**9.0000e-004**	**9.0000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**4.4682**	**4.4682**	**2.4000e-004**	**0.0000**	**4.4743**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	2.6300e-003	0.0296	1.1000e-004	0.0133	7.0000e-005	0.0134	3.5300e-003	7.0000e-005	3.6000e-003	0.0000	9.5117	9.5117	1.8000e-004	0.0000	9.5161
Total	**5.0400e-003**	**2.6300e-003**	**0.0296**	**1.1000e-004**	**0.0133**	**7.0000e-005**	**0.0134**	**3.5300e-003**	**7.0000e-005**	**3.6000e-003**	**0.0000**	**9.5117**	**9.5117**	**1.8000e-004**	**0.0000**	**9.5161**

3.6 Architectural Coating - 2025

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Archit. Coating	4.9576					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0317	5.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004	0.0000	4.4682	4.4682	2.4000e-004	0.0000	4.4743
Total	**4.9606**	**0.0201**	**0.0317**	**5.0000e-005**		**9.0000e-004**	**9.0000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**4.4682**	**4.4682**	**2.4000e-004**	**0.0000**	**4.4743**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	2.6300e-003	0.0296	1.1000e-004	0.0133	7.0000e-005	0.0134	3.5300e-003	7.0000e-005	3.6000e-003	0.0000	9.5117	9.5117	1.8000e-004	0.0000	9.5161
Total	**5.0400e-003**	**2.6300e-003**	**0.0296**	**1.1000e-004**	**0.0133**	**7.0000e-005**	**0.0134**	**3.5300e-003**	**7.0000e-005**	**3.6000e-003**	**0.0000**	**9.5117**	**9.5117**	**1.8000e-004**	**0.0000**	**9.5161**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4832	5.4550	6.9552	0.0474	3.3901	0.0260	3.4161	0.9135	0.0244	0.9380	0.0000	4,412.3775	4,412.3775	0.1723	0.0000	4,416.6841
Unmitigated	0.4832	5.4550	6.9552	0.0474	3.3901	0.0260	3.4161	0.9135	0.0244	0.9380	0.0000	4,412.3775	4,412.3775	0.1723	0.0000	4,416.6841

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	980.00	980.00	980.00	8,847,003	8,847,003
Parking Lot	0.00	0.00	0.00		
Total	980.00	980.00	980.00	8,847,003	8,847,003

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	40.00	7.30	7.30	59.00	28.00	13.00	92	5	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.505528	0.029619	0.172275	0.104063	0.012782	0.003929	0.033727	0.128026	0.002328	0.001354	0.004810	0.001048	0.000512
Parking Lot	0.505528	0.029619	0.172275	0.104063	0.012782	0.003929	0.033727	0.128026	0.002328	0.001354	0.004810	0.001048	0.000512

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,840.4398	1,840.4398	0.0832	0.0172	1,847.6512
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,840.4398	1,840.4398	0.0832	0.0172	1,847.6512
NaturalGas Mitigated	0.0788	0.7161	0.6016	4.3000e-003		0.0544	0.0544		0.0544	0.0544	0.0000	779.5919	779.5919	0.0149	0.0143	784.2246
NaturalGas Unmitigated	0.0788	0.7161	0.6016	4.3000e-003		0.0544	0.0544		0.0544	0.0544	0.0000	779.5919	779.5919	0.0149	0.0143	784.2246

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.4609e +007	0.0788	0.7161	0.6016	4.3000e-003		0.0544	0.0544		0.0544	0.0544	0.0000	779.5919	779.5919	0.0149	0.0143	784.2246
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0788**	**0.7161**	**0.6016**	**4.3000e-003**		**0.0544**	**0.0544**		**0.0544**	**0.0544**	**0.0000**	**779.5919**	**779.5919**	**0.0149**	**0.0143**	**784.2246**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.4609e +007	0.0788	0.7161	0.6016	4.3000e-003		0.0544	0.0544		0.0544	0.0544	0.0000	779.5919	779.5919	0.0149	0.0143	784.2246
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0788**	**0.7161**	**0.6016**	**4.3000e-003**		**0.0544**	**0.0544**		**0.0544**	**0.0544**	**0.0000**	**779.5919**	**779.5919**	**0.0149**	**0.0143**	**784.2246**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	6.174e +006	1,796.087 4	0.0812	0.0168	1,803.125 0
Parking Lot	152460	44.3524	2.0100e-003	4.1000e-004	44.5262
Total		**1,840.439 8**	**0.0832**	**0.0172**	**1,847.651 2**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	6.174e +006	1,796.087 4	0.0812	0.0168	1,803.125 0
Parking Lot	152460	44.3524	2.0100e-003	4.1000e-004	44.5262
Total		**1,840.439 8**	**0.0832**	**0.0172**	**1,847.651 2**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.2584	6.0000e-005	6.5100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0127	0.0127	3.0000e-005	0.0000	0.0135
Unmitigated	3.2584	6.0000e-005	6.5100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0127	0.0127	3.0000e-005	0.0000	0.0135

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4958					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.7620					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-004	6.0000e-005	6.5100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0127	0.0127	3.0000e-005	0.0000	0.0135
Total	**3.2584**	**6.0000e-005**	**6.5100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0127**	**0.0127**	**3.0000e-005**	**0.0000**	**0.0135**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4958					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.7620					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-004	6.0000e-005	6.5100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0127	0.0127	3.0000e-005	0.0000	0.0135
Total	**3.2584**	**6.0000e-005**	**6.5100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0127**	**0.0127**	**3.0000e-005**	**0.0000**	**0.0135**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	306.1665	5.2862	0.1269	476.1474
Unmitigated	306.1665	5.2862	0.1269	476.1474

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	161.875 / 0	306.1665	5.2862	0.1269	476.1474
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**306.1665**	**5.2862**	**0.1269**	**476.1474**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	161.875 / 0	306.1665	5.2862	0.1269	476.1474
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**306.1665**	**5.2862**	**0.1269**	**476.1474**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	176.1962	10.4129	0.0000	436.5185
Unmitigated	176.1962	10.4129	0.0000	436.5185

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	868	176.1962	10.4129	0.0000	436.5185
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**176.1962**	**10.4129**	**0.0000**	**436.5185**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	868	176.1962	10.4129	0.0000	436.5185
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**176.1962**	**10.4129**	**0.0000**	**436.5185**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	8	8.00	260	89	0.20	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Forklifts	0.0908	0.8555	1.1850	1.6000e-003		0.0458	0.0458		0.0421	0.0421	0.0000	140.3613	140.3613	0.0454	0.0000	141.4962
Total	**0.0908**	**0.8555**	**1.1850**	**1.6000e-003**		**0.0458**	**0.0458**		**0.0421**	**0.0421**	**0.0000**	**140.3613**	**140.3613**	**0.0454**	**0.0000**	**141.4962**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Fresno County Industrial Project

Fresno County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	700.00	1000sqft	16.07	700,000.00	0
Parking Lot	10.00	Acre	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips - Consistent with IS/MND's model.

Energy Use - See SWAPE comment about energy use values.

Water And Wastewater - See SWAPE comment about indoor water use rate.

Solid Waste - See SWAPE comment about solid waste generation rate.

Operational Off-Road Equipment - See SWAPE comment about operational off-road equipment fuel type.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	6/24/2025	5/13/2025
tblConstructionPhase	PhaseEndDate	3/18/2025	2/4/2025
tblConstructionPhase	PhaseEndDate	7/11/2023	5/30/2023
tblConstructionPhase	PhaseEndDate	5/6/2025	3/25/2025
tblConstructionPhase	PhaseEndDate	5/9/2023	3/28/2023
tblConstructionPhase	PhaseStartDate	5/7/2025	3/26/2025
tblConstructionPhase	PhaseStartDate	7/12/2023	5/31/2023
tblConstructionPhase	PhaseStartDate	5/10/2023	3/29/2023
tblConstructionPhase	PhaseStartDate	3/19/2025	2/5/2025
tblConstructionPhase	PhaseStartDate	4/12/2023	3/1/2023
tblOperationalOffRoadEquipment	OperLoadFactor	0.20	0.20
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	8.00
tblVehicleTrips	CW_TL	9.50	40.00
tblVehicleTrips	ST_TR	1.32	1.40
tblVehicleTrips	SU_TR	0.68	1.40
tblVehicleTrips	WD_TR	6.97	1.40

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.7907	34.5519	30.1354	0.1140	18.2141	1.4254	19.4810	9.9699	1.3114	11.1354	0.0000	11,493.6029	11,493.6029	1.9474	0.0000	11,520.9626
2024	3.5563	29.4874	29.0310	0.1122	5.1788	0.6498	5.8286	1.4023	0.6110	2.0133	0.0000	11,312.6678	11,312.6678	1.0865	0.0000	11,339.8289
2025	283.7883	28.3187	28.0354	0.1104	5.1789	0.5635	5.7423	1.4023	0.5298	1.9321	0.0000	11,137.9984	11,137.9984	1.0779	0.0000	11,164.9463
Maximum	**283.7883**	**34.5519**	**30.1354**	**0.1140**	**18.2141**	**1.4254**	**19.4810**	**9.9699**	**1.3114**	**11.1354**	**0.0000**	**11,493.6029**	**11,493.6029**	**1.9474**	**0.0000**	**11,520.9626**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.7907	34.5519	30.1354	0.1140	18.2141	1.4254	19.4810	9.9699	1.3114	11.1354	0.0000	11,493.6029	11,493.6029	1.9474	0.0000	11,520.9626
2024	3.5563	29.4874	29.0310	0.1122	5.1788	0.6498	5.8286	1.4023	0.6110	2.0133	0.0000	11,312.6678	11,312.6678	1.0865	0.0000	11,339.8289
2025	283.7883	28.3187	28.0354	0.1104	5.1789	0.5635	5.7423	1.4023	0.5298	1.9321	0.0000	11,137.9984	11,137.9984	1.0779	0.0000	11,164.9463
Maximum	**283.7883**	**34.5519**	**30.1354**	**0.1140**	**18.2141**	**1.4254**	**19.4810**	**9.9699**	**1.3114**	**11.1354**	**0.0000**	**11,493.6029**	**11,493.6029**	**1.9474**	**0.0000**	**11,520.9626**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Energy	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Mobile	2.9741	29.1625	43.8205	0.2730	19.1219	0.1431	19.2650	5.1409	0.1343	5.2752		27,998.0399	27,998.0399	1.0348		28,023.9086
Offroad	0.6986	6.5811	9.1154	0.0123		0.3523	0.3523		0.3241	0.3241		1,190.1679	1,190.1679	0.3849		1,199.7910
Total	**21.9618**	**39.6682**	**56.3043**	**0.3089**	**19.1219**	**0.7939**	**19.9158**	**5.1409**	**0.7569**	**5.8978**		**33,897.1464**	**33,897.1464**	**1.5103**	**0.0863**	**33,960.6303**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Energy	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Mobile	2.9741	29.1625	43.8205	0.2730	19.1219	0.1431	19.2650	5.1409	0.1343	5.2752		27,998.0399	27,998.0399	1.0348		28,023.9086
Offroad	0.6986	6.5811	9.1154	0.0123		0.3523	0.3523		0.3241	0.3241		1,190.1679	1,190.1679	0.3849		1,199.7910
Total	**21.9618**	**39.6682**	**56.3043**	**0.3089**	**19.1219**	**0.7939**	**19.9158**	**5.1409**	**0.7569**	**5.8978**		**33,897.1464**	**33,897.1464**	**1.5103**	**0.0863**	**33,960.6303**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2023	3/28/2023	5	20	
2	Grading	Grading	3/29/2023	5/30/2023	5	45	
3	Building Construction	Building Construction	5/31/2023	2/4/2025	5	440	
4	Paving	Paving	2/5/2025	3/25/2025	5	35	
5	Architectural Coating	Architectural Coating	3/26/2025	5/13/2025	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 10

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,050,000; Non-Residential Outdoor: 350,000; Striped Parking Area: 26,136 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	477.00	186.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	95.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**18.0663**	**1.2660**	**19.3323**	**9.9307**	**1.1647**	**11.0954**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0704	0.0327	0.4399	1.3500e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		134.9133	134.9133	2.8900e-003		134.9855
Total	**0.0704**	**0.0327**	**0.4399**	**1.3500e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**134.9133**	**134.9133**	**2.8900e-003**		**134.9855**

3.2 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**18.0663**	**1.2660**	**19.3323**	**9.9307**	**1.1647**	**11.0954**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0704	0.0327	0.4399	1.3500e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		134.9133	134.9133	2.8900e-003		134.9855
Total	**0.0704**	**0.0327**	**0.4399**	**1.3500e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**134.9133**	**134.9133**	**2.8900e-003**		**134.9855**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**8.6733**	**1.4245**	**10.0978**	**3.5965**	**1.3105**	**4.9070**		**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0782	0.0363	0.4888	1.5000e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		149.9037	149.9037	3.2100e-003		149.9839
Total	**0.0782**	**0.0363**	**0.4888**	**1.5000e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**149.9037**	**149.9037**	**3.2100e-003**		**149.9839**

3.3 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**8.6733**	**1.4245**	**10.0978**	**3.5965**	**1.3105**	**4.9070**	**0.0000**	**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0782	0.0363	0.4888	1.5000e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		149.9037	149.9037	3.2100e-003		149.9839
Total	**0.0782**	**0.0363**	**0.4888**	**1.5000e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**149.9037**	**149.9037**	**3.2100e-003**		**149.9839**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3520	15.3800	2.2333	0.0512	1.2604	0.0147	1.2751	0.3629	0.0141	0.3770		5,363.1907	5,363.1907	0.4100		5,373.4414
Worker	1.8659	0.8661	11.6582	0.0359	3.9184	0.0225	3.9409	1.0394	0.0207	1.0600		3,575.2022	3,575.2022	0.0765		3,577.1152
Total	**2.2179**	**16.2461**	**13.8914**	**0.0870**	**5.1788**	**0.0372**	**5.2160**	**1.4022**	**0.0347**	**1.4370**		**8,938.3929**	**8,938.3929**	**0.4866**		**8,950.5566**

3.4 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3520	15.3800	2.2333	0.0512	1.2604	0.0147	1.2751	0.3629	0.0141	0.3770		5,363.1907	5,363.1907	0.4100		5,373.4414
Worker	1.8659	0.8661	11.6582	0.0359	3.9184	0.0225	3.9409	1.0394	0.0207	1.0600		3,575.2022	3,575.2022	0.0765		3,577.1152
Total	**2.2179**	**16.2461**	**13.8914**	**0.0870**	**5.1788**	**0.0372**	**5.2160**	**1.4022**	**0.0347**	**1.4370**		**8,938.3929**	**8,938.3929**	**0.4866**		**8,950.5566**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3426	15.2650	2.1237	0.0508	1.2604	0.0146	1.2750	0.3629	0.0139	0.3768		5,321.6124	5,321.6124	0.4136		5,331.9526
Worker	1.7421	0.7786	10.7405	0.0345	3.9184	0.0219	3.9404	1.0394	0.0202	1.0595		3,435.3565	3,435.3565	0.0685		3,437.0686
Total	**2.0847**	**16.0436**	**12.8642**	**0.0852**	**5.1788**	**0.0365**	**5.2153**	**1.4023**	**0.0341**	**1.4364**		**8,756.9689**	**8,756.9689**	**0.4821**		**8,769.0212**

3.4 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3426	15.2650	2.1237	0.0508	1.2604	0.0146	1.2750	0.3629	0.0139	0.3768		5,321.612 4	5,321.612 4	0.4136		5,331.952 6
Worker	1.7421	0.7786	10.7405	0.0345	3.9184	0.0219	3.9404	1.0394	0.0202	1.0595		3,435.356 5	3,435.356 5	0.0685		3,437.068 6
Total	**2.0847**	**16.0436**	**12.8642**	**0.0852**	**5.1788**	**0.0365**	**5.2153**	**1.4023**	**0.0341**	**1.4364**		**8,756.968 9**	**8,756.968 9**	**0.4821**		**8,769.021 2**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3347	15.1454	2.0400	0.0504	1.2604	0.0144	1.2748	0.3629	0.0138	0.3767		5,283.0690	5,283.0690	0.4153		5,293.4510
Worker	1.6355	0.7037	9.9107	0.0331	3.9184	0.0215	3.9399	1.0394	0.0198	1.0591		3,298.4550	3,298.4550	0.0617		3,299.9972
Total	**1.9702**	**15.8490**	**11.9507**	**0.0835**	**5.1789**	**0.0359**	**5.2148**	**1.4023**	**0.0336**	**1.4358**		**8,581.5240**	**8,581.5240**	**0.4770**		**8,593.4483**

3.4 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3347	15.1454	2.0400	0.0504	1.2604	0.0144	1.2748	0.3629	0.0138	0.3767		5,283.069 0	5,283.069 0	0.4153		5,293.451 0
Worker	1.6355	0.7037	9.9107	0.0331	3.9184	0.0215	3.9399	1.0394	0.0198	1.0591		3,298.455 0	3,298.455 0	0.0617		3,299.997 2
Total	**1.9702**	**15.8490**	**11.9507**	**0.0835**	**5.1789**	**0.0359**	**5.2148**	**1.4023**	**0.0336**	**1.4358**		**8,581.524 0**	**8,581.524 0**	**0.4770**		**8,593.448 3**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.7486					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6637**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0514	0.0221	0.3117	1.0400e-003	0.1232	6.8000e-004	0.1239	0.0327	6.2000e-004	0.0333		103.7250	103.7250	1.9400e-003		103.7735
Total	**0.0514**	**0.0221**	**0.3117**	**1.0400e-003**	**0.1232**	**6.8000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**103.7250**	**103.7250**	**1.9400e-003**		**103.7735**

3.5 Paving - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.7486					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6637**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0514	0.0221	0.3117	1.0400e-003	0.1232	6.8000e-004	0.1239	0.0327	6.2000e-004	0.0333		103.7250	103.7250	1.9400e-003		103.7735
Total	**0.0514**	**0.0221**	**0.3117**	**1.0400e-003**	**0.1232**	**6.8000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**103.7250**	**103.7250**	**1.9400e-003**		**103.7735**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	283.2917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**283.4626**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3257	0.1402	1.9738	6.5900e-003	0.7804	4.2800e-003	0.7847	0.2070	3.9400e-003	0.2109		656.9250	656.9250	0.0123		657.2322
Total	**0.3257**	**0.1402**	**1.9738**	**6.5900e-003**	**0.7804**	**4.2800e-003**	**0.7847**	**0.2070**	**3.9400e-003**	**0.2109**		**656.9250**	**656.9250**	**0.0123**		**657.2322**

3.6 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	283.2917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**283.4626**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3257	0.1402	1.9738	6.5900e-003	0.7804	4.2800e-003	0.7847	0.2070	3.9400e-003	0.2109		656.9250	656.9250	0.0123		657.2322
Total	**0.3257**	**0.1402**	**1.9738**	**6.5900e-003**	**0.7804**	**4.2800e-003**	**0.7847**	**0.2070**	**3.9400e-003**	**0.2109**		**656.9250**	**656.9250**	**0.0123**		**657.2322**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	2.9741	29.1625	43.8205	0.2730	19.1219	0.1431	19.2650	5.1409	0.1343	5.2752		27,998.0399	27,998.0399	1.0348		28,023.9086
Unmitigated	2.9741	29.1625	43.8205	0.2730	19.1219	0.1431	19.2650	5.1409	0.1343	5.2752		27,998.0399	27,998.0399	1.0348		28,023.9086

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	980.00	980.00	980.00	8,847,003	8,847,003
Parking Lot	0.00	0.00	0.00		
Total	980.00	980.00	980.00	8,847,003	8,847,003

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	40.00	7.30	7.30	59.00	28.00	13.00	92	5	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.505528	0.029619	0.172275	0.104063	0.012782	0.003929	0.033727	0.128026	0.002328	0.001354	0.004810	0.001048	0.000512
Parking Lot	0.505528	0.029619	0.172275	0.104063	0.012782	0.003929	0.033727	0.128026	0.002328	0.001354	0.004810	0.001048	0.000512

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.783 2	4,708.783 2	0.0903	0.0863	4,736.765 2
NaturalGas Unmitigated	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.783 2	4,708.783 2	0.0903	0.0863	4,736.765 2

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	40024.7	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4316**	**3.9240**	**3.2962**	**0.0235**		**0.2982**	**0.2982**		**0.2982**	**0.2982**		**4,708.7832**	**4,708.7832**	**0.0903**	**0.0863**	**4,736.7652**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	40.0247	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4316**	**3.9240**	**3.2962**	**0.0235**		**0.2982**	**0.2982**		**0.2982**	**0.2982**		**4,708.7832**	**4,708.7832**	**0.0903**	**0.0863**	**4,736.7652**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Unmitigated	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.7165					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	15.1343					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.6600e-003	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Total	**17.8575**	**6.6000e-004**	**0.0723**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**		**0.1554**	**0.1554**	**4.0000e-004**		**0.1655**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.7165					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	15.1343					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.6600e-003	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Total	**17.8575**	**6.6000e-004**	**0.0723**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**		**0.1554**	**0.1554**	**4.0000e-004**		**0.1655**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	8	8.00	260	89	0.20	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Forklifts	0.6986	6.5811	9.1154	0.0123		0.3523	0.3523		0.3241	0.3241		1,190.167 9	1,190.167 9	0.3849		1,199.791 0
Total	**0.6986**	**6.5811**	**9.1154**	**0.0123**		**0.3523**	**0.3523**		**0.3241**	**0.3241**		**1,190.167 9**	**1,190.167 9**	**0.3849**		**1,199.791 0**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Fresno County Industrial Project

Fresno County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	700.00	1000sqft	16.07	700,000.00	0
Parking Lot	10.00	Acre	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips - Consistent with IS/MND's model.

Energy Use - See SWAPE comment about energy use values.

Water And Wastewater - See SWAPE comment about indoor water use rate.

Solid Waste - See SWAPE comment about solid waste generation rate.

Operational Off-Road Equipment - See SWAPE comment about operational off-road equipment fuel type.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	6/24/2025	5/13/2025
tblConstructionPhase	PhaseEndDate	3/18/2025	2/4/2025
tblConstructionPhase	PhaseEndDate	7/11/2023	5/30/2023
tblConstructionPhase	PhaseEndDate	5/6/2025	3/25/2025
tblConstructionPhase	PhaseEndDate	5/9/2023	3/28/2023
tblConstructionPhase	PhaseStartDate	5/7/2025	3/26/2025
tblConstructionPhase	PhaseStartDate	7/12/2023	5/31/2023
tblConstructionPhase	PhaseStartDate	5/10/2023	3/29/2023
tblConstructionPhase	PhaseStartDate	3/19/2025	2/5/2025
tblConstructionPhase	PhaseStartDate	4/12/2023	3/1/2023
tblOperationalOffRoadEquipment	OperLoadFactor	0.20	0.20
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	8.00
tblVehicleTrips	CW_TL	9.50	40.00
tblVehicleTrips	ST_TR	1.32	1.40
tblVehicleTrips	SU_TR	0.68	1.40
tblVehicleTrips	WD_TR	6.97	1.40

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.6837	34.5582	28.6626	0.1079	18.2141	1.4254	19.4810	9.9699	1.3114	11.1354	0.0000	10,883.8991	10,883.8991	1.9470	0.0000	10,912.4269
2024	3.4625	29.6815	27.6535	0.1063	5.1788	0.6501	5.8289	1.4023	0.6113	2.0136	0.0000	10,723.5125	10,723.5125	1.1348	0.0000	10,751.8813
2025	283.7684	28.4963	26.7544	0.1048	5.1789	0.5637	5.7426	1.4023	0.5301	1.9324	0.0000	10,568.7338	10,568.7338	1.1274	0.0000	10,596.9181
Maximum	**283.7684**	**34.5582**	**28.6626**	**0.1079**	**18.2141**	**1.4254**	**19.4810**	**9.9699**	**1.3114**	**11.1354**	**0.0000**	**10,883.8991**	**10,883.8991**	**1.9470**	**0.0000**	**10,912.4269**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.6837	34.5582	28.6626	0.1079	18.2141	1.4254	19.4810	9.9699	1.3114	11.1354	0.0000	10,883.8991	10,883.8991	1.9470	0.0000	10,912.4269
2024	3.4625	29.6815	27.6535	0.1063	5.1788	0.6501	5.8289	1.4023	0.6113	2.0136	0.0000	10,723.5125	10,723.5125	1.1348	0.0000	10,751.8813
2025	283.7684	28.4963	26.7544	0.1048	5.1789	0.5637	5.7426	1.4023	0.5301	1.9324	0.0000	10,568.7338	10,568.7338	1.1274	0.0000	10,596.9181
Maximum	**283.7684**	**34.5582**	**28.6626**	**0.1079**	**18.2141**	**1.4254**	**19.4810**	**9.9699**	**1.3114**	**11.1354**	**0.0000**	**10,883.8991**	**10,883.8991**	**1.9470**	**0.0000**	**10,912.4269**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Energy	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Mobile	2.5675	30.3789	37.4056	0.2548	19.1219	0.1435	19.2654	5.1409	0.1347	5.2756		26,169.3524	26,169.3524	1.0836		26,196.4434
Offroad	0.6986	6.5811	9.1154	0.0123		0.3523	0.3523		0.3241	0.3241		1,190.1679	1,190.1679	0.3849		1,199.7910
Total	**21.5551**	**40.8846**	**49.8894**	**0.2906**	**19.1219**	**0.7943**	**19.9162**	**5.1409**	**0.7573**	**5.8982**		**32,068.4589**	**32,068.4589**	**1.5592**	**0.0863**	**32,133.1650**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Energy	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Mobile	2.5675	30.3789	37.4056	0.2548	19.1219	0.1435	19.2654	5.1409	0.1347	5.2756		26,169.3524	26,169.3524	1.0836		26,196.4434
Offroad	0.6986	6.5811	9.1154	0.0123		0.3523	0.3523		0.3241	0.3241		1,190.1679	1,190.1679	0.3849		1,199.7910
Total	**21.5551**	**40.8846**	**49.8894**	**0.2906**	**19.1219**	**0.7943**	**19.9162**	**5.1409**	**0.7573**	**5.8982**		**32,068.4589**	**32,068.4589**	**1.5592**	**0.0863**	**32,133.1650**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2023	3/28/2023	5	20	
2	Grading	Grading	3/29/2023	5/30/2023	5	45	
3	Building Construction	Building Construction	5/31/2023	2/4/2025	5	440	
4	Paving	Paving	2/5/2025	3/25/2025	5	35	
5	Architectural Coating	Architectural Coating	3/26/2025	5/13/2025	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 10

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,050,000; Non-Residential Outdoor: 350,000; Striped Parking Area: 26,136 (Architectural Coating – sqft)

OffRoad Equipment

Fresno County Industrial Project - Fresno County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	477.00	186.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	95.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**18.0663**	**1.2660**	**19.3323**	**9.9307**	**1.1647**	**11.0954**		**3,687.308 1**	**3,687.308 1**	**1.1926**		**3,717.121 9**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0657	0.0383	0.3699	1.1900e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		118.2588	118.2588	2.5300e-003		118.3221
Total	**0.0657**	**0.0383**	**0.3699**	**1.1900e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**118.2588**	**118.2588**	**2.5300e-003**		**118.3221**

3.2 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**18.0663**	**1.2660**	**19.3323**	**9.9307**	**1.1647**	**11.0954**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0657	0.0383	0.3699	1.1900e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		118.2588	118.2588	2.5300e-003		118.3221
Total	**0.0657**	**0.0383**	**0.3699**	**1.1900e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**118.2588**	**118.2588**	**2.5300e-003**		**118.3221**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**8.6733**	**1.4245**	**10.0978**	**3.5965**	**1.3105**	**4.9070**		**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0730	0.0426	0.4110	1.3200e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		131.3987	131.3987	2.8100e-003		131.4690
Total	**0.0730**	**0.0426**	**0.4110**	**1.3200e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**131.3987**	**131.3987**	**2.8100e-003**		**131.4690**

3.3 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**8.6733**	**1.4245**	**10.0978**	**3.5965**	**1.3105**	**4.9070**	**0.0000**	**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0730	0.0426	0.4110	1.3200e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		131.3987	131.3987	2.8100e-003		131.4690
Total	**0.0730**	**0.0426**	**0.4110**	**1.3200e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**131.3987**	**131.3987**	**2.8100e-003**		**131.4690**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3704	15.4427	2.6155	0.0496	1.2604	0.0151	1.2754	0.3629	0.0144	0.3773		5,194.8306	5,194.8306	0.4662		5,206.4861
Worker	1.7405	1.0160	9.8032	0.0314	3.9184	0.0225	3.9409	1.0394	0.0207	1.0600		3,133.8586	3,133.8586	0.0671		3,135.5347
Total	**2.1110**	**16.4588**	**12.4186**	**0.0810**	**5.1788**	**0.0375**	**5.2163**	**1.4022**	**0.0351**	**1.4373**		**8,328.6892**	**8,328.6892**	**0.5333**		**8,342.0209**

3.4 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3704	15.4427	2.6155	0.0496	1.2604	0.0151	1.2754	0.3629	0.0144	0.3773		5,194.830 6	5,194.830 6	0.4662		5,206.486 1
Worker	1.7405	1.0160	9.8032	0.0314	3.9184	0.0225	3.9409	1.0394	0.0207	1.0600		3,133.858 6	3,133.858 6	0.0671		3,135.534 7
Total	**2.1110**	**16.4588**	**12.4186**	**0.0810**	**5.1788**	**0.0375**	**5.2163**	**1.4022**	**0.0351**	**1.4373**		**8,328.689 2**	**8,328.689 2**	**0.5333**		**8,342.020 9**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3604	15.3250	2.4881	0.0492	1.2604	0.0149	1.2753	0.3629	0.0142	0.3771		5,156.3187	5,156.3187	0.4705		5,168.0809
Worker	1.6306	0.9127	8.9986	0.0302	3.9184	0.0219	3.9404	1.0394	0.0202	1.0595		3,011.4949	3,011.4949	0.0599		3,012.9927
Total	**1.9910**	**16.2377**	**11.4867**	**0.0794**	**5.1788**	**0.0368**	**5.2156**	**1.4023**	**0.0344**	**1.4367**		**8,167.8136**	**8,167.8136**	**0.5304**		**8,181.0737**

3.4 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3604	15.3250	2.4881	0.0492	1.2604	0.0149	1.2753	0.3629	0.0142	0.3771		5,156.318 7	5,156.318 7	0.4705		5,168.080 9
Worker	1.6306	0.9127	8.9986	0.0302	3.9184	0.0219	3.9404	1.0394	0.0202	1.0595		3,011.4949	3,011.4949	0.0599		3,012.992 7
Total	**1.9910**	**16.2377**	**11.4867**	**0.0794**	**5.1788**	**0.0368**	**5.2156**	**1.4023**	**0.0344**	**1.4367**		**8,167.813 6**	**8,167.813 6**	**0.5304**		**8,181.073 7**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3520	15.2023	2.3904	0.0489	1.2604	0.0147	1.2751	0.3629	0.0141	0.3770		5,120.5407	5,120.5407	0.4725		5,132.3542
Worker	1.5353	0.8243	8.2793	0.0290	3.9184	0.0215	3.9399	1.0394	0.0198	1.0591		2,891.7188	2,891.7188	0.0539		2,893.0658
Total	**1.8873**	**16.0266**	**10.6697**	**0.0779**	**5.1789**	**0.0362**	**5.2151**	**1.4023**	**0.0338**	**1.4361**		**8,012.2595**	**8,012.2595**	**0.5264**		**8,025.4200**

3.4 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3520	15.2023	2.3904	0.0489	1.2604	0.0147	1.2751	0.3629	0.0141	0.3770		5,120.5407	5,120.5407	0.4725		5,132.3542
Worker	1.5353	0.8243	8.2793	0.0290	3.9184	0.0215	3.9399	1.0394	0.0198	1.0591		2,891.7188	2,891.7188	0.0539		2,893.0658
Total	**1.8873**	**16.0266**	**10.6697**	**0.0779**	**5.1789**	**0.0362**	**5.2151**	**1.4023**	**0.0338**	**1.4361**		**8,012.2595**	**8,012.2595**	**0.5264**		**8,025.4200**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.745 2	2,206.745 2	0.7137		2,224.587 8
Paving	0.7486					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6637**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.745 2**	**2,206.745 2**	**0.7137**		**2,224.587 8**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0483	0.0259	0.2604	9.1000e-004	0.1232	6.8000e-004	0.1239	0.0327	6.2000e-004	0.0333		90.9346	90.9346	1.6900e-003		90.9769
Total	**0.0483**	**0.0259**	**0.2604**	**9.1000e-004**	**0.1232**	**6.8000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**90.9346**	**90.9346**	**1.6900e-003**		**90.9769**

3.5 Paving - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.7486					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6637**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0483	0.0259	0.2604	9.1000e-004	0.1232	6.8000e-004	0.1239	0.0327	6.2000e-004	0.0333		90.9346	90.9346	1.6900e-003		90.9769
Total	**0.0483**	**0.0259**	**0.2604**	**9.1000e-004**	**0.1232**	**6.8000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**90.9346**	**90.9346**	**1.6900e-003**		**90.9769**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	283.2917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**283.4626**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3058	0.1642	1.6489	5.7700e-003	0.7804	4.2800e-003	0.7847	0.2070	3.9400e-003	0.2109		575.9188	575.9188	0.0107		576.1871
Total	**0.3058**	**0.1642**	**1.6489**	**5.7700e-003**	**0.7804**	**4.2800e-003**	**0.7847**	**0.2070**	**3.9400e-003**	**0.2109**		**575.9188**	**575.9188**	**0.0107**		**576.1871**

3.6 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	283.2917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**283.4626**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3058	0.1642	1.6489	5.7700e-003	0.7804	4.2800e-003	0.7847	0.2070	3.9400e-003	0.2109		575.9188	575.9188	0.0107		576.1871
Total	**0.3058**	**0.1642**	**1.6489**	**5.7700e-003**	**0.7804**	**4.2800e-003**	**0.7847**	**0.2070**	**3.9400e-003**	**0.2109**		**575.9188**	**575.9188**	**0.0107**		**576.1871**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.5675	30.3789	37.4056	0.2548	19.1219	0.1435	19.2654	5.1409	0.1347	5.2756		26,169.35 24	26,169.35 24	1.0836		26,196.44 34
Unmitigated	2.5675	30.3789	37.4056	0.2548	19.1219	0.1435	19.2654	5.1409	0.1347	5.2756		26,169.35 24	26,169.35 24	1.0836		26,196.44 34

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	980.00	980.00	980.00	8,847,003	8,847,003
Parking Lot	0.00	0.00	0.00		
Total	980.00	980.00	980.00	8,847,003	8,847,003

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	40.00	7.30	7.30	59.00	28.00	13.00	92	5	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.505528	0.029619	0.172275	0.104063	0.012782	0.003929	0.033727	0.128026	0.002328	0.001354	0.004810	0.001048	0.000512
Parking Lot	0.505528	0.029619	0.172275	0.104063	0.012782	0.003929	0.033727	0.128026	0.002328	0.001354	0.004810	0.001048	0.000512

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.783 2	4,708.783 2	0.0903	0.0863	4,736.765 2
NaturalGas Unmitigated	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.783 2	4,708.783 2	0.0903	0.0863	4,736.765 2

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	40024.7	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4316**	**3.9240**	**3.2962**	**0.0235**		**0.2982**	**0.2982**		**0.2982**	**0.2982**		**4,708.7832**	**4,708.7832**	**0.0903**	**0.0863**	**4,736.7652**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	40.0247	0.4316	3.9240	3.2962	0.0235		0.2982	0.2982		0.2982	0.2982		4,708.7832	4,708.7832	0.0903	0.0863	4,736.7652
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4316**	**3.9240**	**3.2962**	**0.0235**		**0.2982**	**0.2982**		**0.2982**	**0.2982**		**4,708.7832**	**4,708.7832**	**0.0903**	**0.0863**	**4,736.7652**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Unmitigated	17.8574	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.7165					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	15.1343					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.6600e-003	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Total	**17.8575**	**6.6000e-004**	**0.0723**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**		**0.1554**	**0.1554**	**4.0000e-004**		**0.1655**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.7165					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	15.1343					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.6600e-003	6.6000e-004	0.0723	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		0.1554	0.1554	4.0000e-004		0.1655
Total	**17.8575**	**6.6000e-004**	**0.0723**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**		**0.1554**	**0.1554**	**4.0000e-004**		**0.1655**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	8	8.00	260	89	0.20	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Forklifts	0.6986	6.5811	9.1154	0.0123		0.3523	0.3523		0.3241	0.3241		1,190.167 9	1,190.167 9	0.3849		1,199.791 0
Total	**0.6986**	**6.5811**	**9.1154**	**0.0123**		**0.3523**	**0.3523**		**0.3241**	**0.3241**		**1,190.167 9**	**1,190.167 9**	**0.3849**		**1,199.791 0**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education:

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

Professional Experience:

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

Professional History:

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

Publications:

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

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Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

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

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

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

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Presentations:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Teaching Experience:

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

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

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

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

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

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

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

Academic Grants Awarded:

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

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

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

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

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

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

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

Deposition and/or Trial Testimony:

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September, 2015

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

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

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

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

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

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

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

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

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

In the Court of Common Pleas of Tuscarawas County Ohio

John Michael Abicht, et al., *Plaintiffs*, vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Email: mhagemann@swape.com

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

Geologic and Hydrogeologic Characterization
Industrial Stormwater Compliance
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
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 25 years of experience in environmental policy, assessment and remediation. 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) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014;
- 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).

<u>Senior Regulatory and Litigation Support Analyst:</u>

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 100 environmental impact reports since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, Valley Fever, 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 industrial facilities.
- Manager of a project to provide technical assistance to a community adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- 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.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.

- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt taught physical geology (lecture and lab and introductory geology at Golden West College in Huntington Beach, California from 2010 to 2014.

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 examination, 2009-2011.

EXHIBIT B

December 9, 2019

Ms. Rebecca Davis
Lozeau Drury
1939 Harrison Street, Suite 150
Oakland, CA 94612

Subject: We Be Jammin Project IS/MND (Initial Study Application 7449) P19050

Dear Ms. Davis:

At your request, I have reviewed traffic matters associated with the We Be Jamin Project (the "Project") Initial Study/Mitigated Negative Declaration (the "IS/MND") in the County of Fresno (the "County"). My review is specific to the Transportation section of the IS/MND.

My qualifications to perform this review include registration as a Civil and Traffic Engineer in California and over 50 years professional consulting engineering practice in the traffic and transportation industry. I have both prepared and performed adequacy reviews of numerous transportation and circulation sections of environmental impact reports prepared under the California Environmental Quality Act (CEQA) including those for warehouse and industrial facilities. My professional resume is attached. Findings of my review are summarized below.

The Project Includes a Rezone of the Project Site M-3 (c) Designation That Permits Different and More Traffic Intense Uses Than Analyzed in the Traffic Study Supporting The IS/MND

The action being taken is to rezone the 46 acre property to M-3 (c) which allows development of limited heavy industrial, general industrial and light manufacturing uses. The traffic study evaluates the project as ITE Land Use Category 154, High-Cube Transload and Short Term Storage Warehouse that is also permissible in the M-3 (c) zoning. This specific use is by far the lightest trip generating use in the broad category of industrial uses that are permissible in the M-3 (c) zoning. The table below illustrates the differences in trip generation rates applicable to use types permissible in the M-3 (c) zoning classification. As can be seen in the table, there is a vast difference in the other permissible uses and that of Category 154, High-Cube Transload and Short Term Storage Warehouse.

TRIP GENERATION RATE COMPARISON

Land Use	Units	Daily Rate	AM Pk Rate	PM Pk Rate
154 Hi-Cube Transf Wrhs	1,000 Sq. Ft.	1.40	0.08	0.10
150 Warehousing	1,000 Sq. Ft.	1.74	0.17	0.19
110 Light Industrial	1,000 Sq. Ft	4.96	0.70	0.63
140 Manufacturing	1,000 Sq. Ft	3.93	0.62	0.67
155 E-Commerce Fulfill	1,000 Sq. Ft	8.18	0.59	1.37
156 Hi Cube Parcel Hub	1,000 Sq. Ft	7.75	0.7	0.64

Source: *Trip Generation, 10th Edition.*

The traffic study justifies this by stating "the applicant proposes a conditional zoning that would limit the site to construction of 700,000 square feet of warehousing and other similar uses." The problem with that is nowhere in the IS/MND document is there inclusion of a conditional zoning clause conditioning as per the above. The only reference to conditional zoning in that document is in reference to the portion of the site that is already M-3 (c) and conditioned to be a parking lot.

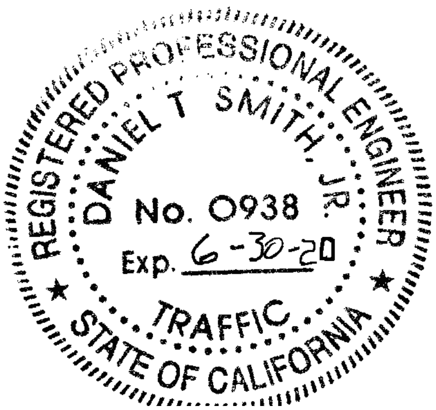
If the project really is 700,000 square feet of transload and short term storage high-cube warehouse development, there is no traffic argument. But if, after getting the zoning, the applicant comes in with something else that is permissible in M-3(c) like manufacturing or an industrial park, there would be much more traffic. Here are the dimensions. The project as analyzed generates 56 AM and 70 PM peak trips. If it becomes manufacturing instead, the totals become 434 AM and 469 PM. If it becomes industrial park, the totals become 280 AM and 280 PM. Obviously, the Project's traffic impacts and shares of mitigation fees would be much more consequential and considerable if these other permissible uses were developed instead of Category 154, High-Cube Transload and Short Term Storage Warehouse.

Conclusion

This concludes my current comments on the We Be Jammin Project IS/MND. I am convinced, for the reasons stated above, that the analysis in the Transportation and Circulation section does not meet the requirements of CEQA for a good faith effort to disclose impact. Either the County must include a conditional clause limiting the development to the Category 154, High-Cube Transload and Short Term Storage Warehouse land use type or a revised Transportation and Circulation analysis that considers a logical mix of uses permissible in the M-3 (c) must be performed and the IS/MND recirculated.

Sincerely,

Smith Engineering & Management
A California Corporation



Daniel T. Smith Jr., P.E.
President

Attachment 1
Resume of Daniel T. Smith Jr., P.E.

DANIEL T. SMITH, Jr.
President

EDUCATION

Bachelor of Science, Engineering and Applied Science, Yale University, 1967
Master of Science, Transportation Planning, University of California, Berkeley, 1968

PROFESSIONAL REGISTRATION

California No. 21913 (Civil) Nevada No. 7969 (Civil, Ret.) Washington No. 29337 (Civil, Ret.)
California No. 938 (Traffic) Arizona No. 22131 (Civil, Ret.)

PROFESSIONAL EXPERIENCE

Smith Engineering & Management, 1993 to present. President.
DKS Associates, 1979 to 1993. Founder, Vice President, Principal Transportation Engineer.
De Leuw, Cather & Company, 1968 to 1979. Senior Transportation Planner.
Personal specialties and project experience include:

Litigation Consulting. Provides consultation, investigations and expert witness testimony in highway design, transit design and traffic engineering matters including condemnations involving transportation access issues; traffic accidents involving highway design or traffic engineering factors; land use and development matters involving access and transportation impacts; parking and other traffic and transportation matters.

Urban Corridor Studies/Alternatives Analysis. Principal-in-charge for State Route (SR) 102 Feasibility Study, a 35-mile freeway alignment study north of Sacramento. Consultant on I-280 Interstate Transfer Concept Program, San Francisco, an AA/EIS for completion of I-280, demolition of Embarcadero freeway, substitute light rail and commuter rail projects. Principal-in-charge, SR 238 corridor freeway/expressway design/environmental study, Hayward (Calif.). Project manager, Sacramento Northeast Area multi-modal transportation corridor study. Transportation planner for I-80N West Terminal Study, and Harbor Drive Traffic Study, Portland, Oregon. Project manager for design of surface segment of Woodward Corridor LRT, Detroit, Michigan. Directed staff on I-80 National Strategic Corridor Study (Sacramento-San Francisco), US 101-Sonoma freeway operations study, SR 92 freeway operations study, I-880 freeway operations study, SR 152 alignment studies, Sacramento RTD light rail systems study, Tasman Corridor LRT AA/EIS, Fremont-Warm Springs BART extension plan/EIR, SRs 70/99 freeway alternatives study, and Richmond Parkway (SR 93) design study.

Area Transportation Plans. Principal-in charge for transportation element of City of Los Angeles General Plan Framework, shaping nations largest city two decades into 21'st century. Project manager for the transportation element of 300-acre Mission Bay development in downtown San Francisco. Mission Bay involves 7 million gsf office/commercial space, 8,500 dwelling units, and community facilities. Transportation features include relocation of commuter rail station; extension of MUNI-Metro LRT; a multi-modal terminal for LRT, commuter rail and local bus; removal of a quarter mile elevated freeway; replacement by new ramps and a boulevard; an internal roadway network overcoming constraints imposed by an internal tidal basin; freeway structures and rail facilities; and concept plans for 20,000 structured parking spaces. Principal-in-charge for circulation plan to accommodate 9 million gsf of office/commercial growth in downtown Bellevue (Wash.). Principal-in-charge for 64 acre, 2 million gsf multi-use complex for FMC adjacent to San Jose International Airport. Project manager for transportation element of Sacramento Capitol Area Plan for the state governmental complex, and for Downtown Sacramento Redevelopment Plan. Project manager for Napa (Calif.) General Plan Circulation Element and Downtown Riverfront Redevelopment Plan, on parking program for downtown Walnut Creek, on downtown transportation plan for San Mateo and redevelopment plan for downtown Mountain View (Calif.), for traffic circulation and safety plans for California cities of Davis, Pleasant Hill and Hayward, and for Salem, Oregon.

Transportation Centers. Project manager for Daly City Intermodal Study which developed a $7 million surface bus terminal, traffic access, parking and pedestrian circulation improvements at the Daly City BART station plus development of functional plans for a new BART station at Colma. Project manager for design of multi-modal terminal (commuter rail, light rail, bus) at Mission Bay, San Francisco. In Santa Clarita Long Range Transit Development Program, responsible for plan to relocate system's existing timed-transfer hub and development of three satellite transfer hubs. Performed airport ground transportation system evaluations for San Francisco International, Oakland International, Sea-Tac International, Oakland International, Los Angeles International, and San Diego Lindberg.

Campus Transportation. Campus transportation planning assignments for UC Davis, UC Berkeley, UC Santa Cruz and UC San Francisco Medical Center campuses; San Francisco State University; University of San Francisco; and the University of Alaska and others. Also developed master plans for institutional campuses including medical centers, headquarters complexes and research & development facilities.

Special Event Facilities. Evaluations and design studies for football/baseball stadiums, indoor sports arenas, horse and motor racing facilities, theme parks, fairgrounds and convention centers, ski complexes and destination resorts throughout western United States.

Parking. Parking programs and facilities for large area plans and individual sites including downtowns, special event facilities, university and institutional campuses and other large site developments; numerous parking feasibility and operations studies for parking structures and surface facilities; also, resident preferential parking .

Transportation System Management & Traffic Restraint. Project manager on FHWA program to develop techniques and guidelines for neighborhood street traffic limitation. Project manager for Berkeley, (Calif.), Neighborhood Traffic Study, pioneered application of traffic restraint techniques in the U.S. Developed residential traffic plans for Menlo Park, Santa Monica, Santa Cruz, Mill Valley, Oakland, Palo Alto, Piedmont, San Mateo County, Pasadena, Santa Ana and others. Participated in development of photo/radar speed enforcement device and experimented with speed humps. Co-author of Institute of Transportation Engineers reference publication on neighborhood traffic control.

Bicycle Facilities. Project manager to develop an FHWA manual for bicycle facility design and planning, on bikeway plans for Del Mar, (Calif.), the UC Davis and the City of Davis. Consultant to bikeway plans for Eugene, Oregon, Washington, D.C., Buffalo, New York, and Skokie, Illinois. Consultant to U.S. Bureau of Reclamation for development of hydraulically efficient, bicycle safe drainage inlets. Consultant on FHWA research on effective retrofits of undercrossing and overcrossing structures for bicyclists, pedestrians, and handicapped.

MEMBERSHIPS

Institute of Transportation Engineers   Transportation Research Board

PUBLICATIONS AND AWARDS

Residential Street Design and Traffic Control, with W. Homburger *et al*. Prentice Hall, 1989.

Co-recipient, Progressive Architecture Citation, *Mission Bay Master Plan*, with I.M. Pei WRT Associated, 1984.

Residential Traffic Management, State of the Art Report, U.S. Department of Transportation, 1979.

Improving The Residential Street Environment, with Donald Appleyard et al., U.S. Department of Transportation, 1979.

Strategic Concepts in Residential Neighborhood Traffic Control, International Symposium on Traffic Control Systems, Berkeley, California, 1979.

Planning and Design of Bicycle Facilities: Pitfalls and New Directions, Transportation Research Board, Research Record 570, 1976.

Co-recipient, Progressive Architecture Award, *Livable Urban Streets, San Francisco Bay Area and London*, with Donald Appleyard, 1979.

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EXHIBIT C

Shawn Smallwood, PhD
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Davis, CA 95616

Ejaz Ahmad
Fresno County Department of Public Works and Planning
Development Services and Capital Projects Division
2220 Tulare Street, Suite A
Fresno, CA 93721 3 December 2019

RE: We Be Jammin rezone

Dear Mr. Ahmad,

I write to comment on the potential biological impacts (Argonaut 2019) summarized in the Initial Study and Mitigated Negative Declaration of the proposed We Be Jammin rezone project (County of Fresno 2019), which I understand would accommodate 700,000 ft^2 of warehousing (Peters Engineering Group 2019) on all or a portion of 42.6 acres on the southeast corner of Central Ave. and S. Willow Ave.

My qualifications for preparing expert comments are the following. I hold a Ph.D. degree in Ecology from University of California at Davis, where I subsequently worked for four years as a post-graduate researcher in the Department of Agronomy and Range Sciences. My research has been on animal density and distribution, habitat selection, habitat restoration, interactions between wildlife and human infrastructure and activities, conservation of rare and endangered species, and on the ecology of invading species. I performed research on wildlife mortality caused by wind turbines, electric distribution lines, agricultural practices, and road traffic. I authored numerous papers on special-status species issues, including "Using the best scientific data for endangered species conservation" (Smallwood et al. 1999), and "Suggested standards for science applied to conservation issues" (Smallwood et al. 2001). I served as Chair of the Conservation Affairs Committee for The Wildlife Society – Western Section. I am a member of The Wildlife Society and the Raptor Research Foundation, and I've been a part-time lecturer at California State University, Sacramento. I was Associate Editor of wildlife biology's premier scientific journal, The Journal of Wildlife Management, as well as of Biological Conservation, and I was on the Editorial Board of Environmental Management. I have performed wildlife surveys in California for thirty-three years, including at many proposed project sites. My CV is attached.

SITE VISIT

I visited the site of the proposed project from 10:39 to 11:39 hours on 30 November 2019. I parked along South Willow Avenue and scanned the project site for wildlife using 10+15 × 50 binoculars from South Willow and East Central Avenues. The temperature was cool and skies partly cloudy. The site proposed for We Be Jammin rezone was covered by ruderal vegetation following disking earlier in the year (Photo 1).

Trees lined portions of the perimeter, especially around the auto wrecking yard. I saw 22 species of vertebrate wildlife within only one hour (Table 1). I am confident I would have detected many more species had I visited longer, at different times of day, or on different days or seasons. I would be astonished if the site is not used by Swanson's hawks.

Photo 1. *View east of We Be Jammin project site, 30 November 2019.*

Table 1. *Species of wildlife I observed during 10:39 to 11:39 hours on 30 November 2019 at the site of the proposed We Be Jammin rezone site.*

Species	***Scientific name***	**Status**[1]	**Note**
Red-tailed hawk	*Buteo jamaicensis*	FGC 3503.5	Perched on site
Cooper's hawk	*Accipiter cooperi*	TWL, FGC 3503.5	Flew over
Rock pigeon	*Columba livea*	Non-native	
Mourning dove	*Zenaida macroura*		
Anna's hummingbird	*Calypte anna*		At auto wrecking
Western kingbird	*Tyrannus verticalis*		Foraging on site
Say's phoebe	*Sayornis saya*		Foraging on site
Black phoebe	*Sayornis nigricans*		Foraging on site
Northern mockingbird	*Mimus polyglottos*		
California scrub-jay	*Aphelocoma californica*		At auto wrecking
Common raven	*Corvus corax*		
American crow	*Corvus brachyrhynchos*		Foraging on site
European starling	*Sturnus vulgaris*	Non-native	In mixed flock
Yellow-rumped warbler	*Dendroica coronata*		Foraging on site
Savannah sparrow	*Passerculus sandwichensis*		Foraging on site
Lincoln's sparrow	*Melospiza lincolnii*		Foraging on site
White-crowned sparrow	*Zonotrichia leucophrys*		Foraging on site
Brewer's blackbird	*Euphagus cyanocephalus*		In mixed flock
Red-winged blackbird	*Agelaius phoeniceus*		In mixed flock
House finch	*Carpodacus mexicanus*		
House sparrow	*Passer domesticus*	Non-native	
Botta's pocket gopher	*Thomomys bottae*		

[1] Listed as FGC 3503.5 = California Fish and Game Code 3503.5 (Birds of prey), TWL = Taxa to Watch List (Shuford and Gardali 2008).

During my hour at the site, I saw a Cooper's hawk (Photo 2), red-tailed hawk (Photo 3), house finches (Photo 4), northern mockingbirds (Photo 5), white-crowned sparrows (Photos 6 and 7), and Lincoln's sparrows (Photos 8 and 9) among other species. For having been disked, the site was sufficiently teaming with birds to draw the attention of a Cooper's hawk – a specialist predator of birds and a species appearing on California's Taxa to Watch List.

Photos 2 and 3. *Cooper's hawk and red-tailed hawk flying over the project site, 30 November 2019.*

Photos 4 and 5. *House finch (left) and northern mockingbird (right) on the project site, 30 November 2019.*

Photos 6 and 7. *White-crowned sparrows on the project site, 30 November 2019.*

Photos 8 and 9. *Lincoln's sparrows on the project site, 30 November 2019.*

BIOLOGICAL IMPACTS ASSESSMENT

County of Fresno's (2019) IS/MND was informed by only a single visit to the site by an unidentified biologist(s) who started at an unreported time and continued for an unreported period on 28 May 2019. Argonaut (2019) does not inform the reader of the biologist(s) qualifications or survey effort, and therefore leaves the CEQA review grossly inadequate.

Argonaut reviewed only the California Natural Diversity Data Base (CNDDB) for special-status species records prior to visiting the site. Based on the site visit and CNDDB review, Argonaut (2019) dismisses the occurrence likelihoods of any and all special-status species, and concludes impacts on wildlife would be less than significant. However, CNDDB is based on voluntary reporting, and is not scientific; it cannot be relied upon for concluding any species are absent from a site. County of Fresno would benefit from better information, including a review of other data bases such as eBird, and by a larger survey effort on the project site, including detection surveys as appropriate. eBird has been used in scientific investigations, and is rapidly expanding our understanding of bird species' geographic ranges (https://ebird.org/science/publications). eBird is much more informative than is CNDDB.

My review of eBird reveals occurrence potential for 39 special-status species of birds (Table 2), which is many more species that the two species assessed by Argonaut (2019). Some of these bird species likely fly over the site during migration or home range patrol, some likely stopover on the site during migration, some likely stage on the site on their way to forage, multiple species likely forage on the site, and some might occasionally breed on the site. At one time or another, most of the species in Table 2 likely make use of the site. Project impacts to any of these species would be significant. After all, they are indictive of the 29% overall decline in North American bird abundance over the last 48 years (Rosenberg et al. 2019), a trend for which the ecological, cultural, and economic costs remain unknown but must be substantial.

In dismissing impacts to special-status species, Argonaut's (2019) arguments are inconsistent and narrow. For example, Swanson's hawks are said to potentially forage on site, but are otherwise determined to be absent, implying that nesting is the only form of occurrence that matters in a CEQA review. However, nesting cannot succeed without sufficient forage, so any nesting Swanson's hawks nearby the project site can be adversely affected by the project. This is why detection surveys are performed to certain buffer distances around a project site (CDFW 1994).

In another example, Argonaut (2019) reports that burrowing owls are absent because there are no ground squirrels on the site. However, in the Table on page 15, Argonaut reports that suitable burrows were seen along Willow Avenue. Argonaut (2019) further reasons that a suitable prey base for burrowing owls is unavailable, which is hard for me to believe, given that I have many times recorded burrowing owls on agricultural landscapes where the main food source consists of arthropods. It is unlikely Argonaut (2019) measured burrowing owl prey base during the single visit made to the site.

Table 2. *Special-status species occurrence likelihoods on or near the proposed project sites, where occurrences are likely if species appear as eBird posts nearby.*

Species	**Scientific name**	**Status**[1]	**Occurrence likelihood**	
			Argonaut 2019	**Smallwood**
American white pelican	*Pelecanus erythrorhynchos*	SSC1		eBird nearby
Sandhill crane	*Grus c. canadensis*	SSC3		eBird nearby
Whimbrel	*Numenius phaeopus*	BCC		eBird nearby
Long-billed curlew	*Numenius americanus*	TWL		eBird nearby
Snowy plover	*Charadrius alexandrinus*	SSC3		eBird nearby
Black tern	*Chlidonias niger*	SSC2		eBird nearby
California gull	*Larus californicus*	TWL		eBird nearby
Turkey vulture	*Cathartes aura*	FGC 3503.5		eBird nearby
Osprey	*Pandion haliaetus*	TWL, FGC 3503.5		eBird nearby
Golden eagle	*Aquila chrysaetos*	BGEPA, BCC, CFP		eBird nearby
Red-tailed hawk	*Buteo jamaicensis*	FGC 3503.5		eBird nearby
Ferruginous hawk	*Buteo regalis*	FGC 3503.5, TWL		eBird nearby
Swainson's hawk	*Buteo swainsoni*	BCC, CT	Absent	eBird nearby
Rough-legged hawk	*Buteo regalis*	FGC 3503.5		eBird nearby
Red-shouldered hawk	*Buteo lineatus*	FGC 3503.5		eBird nearby
Sharp-shinned hawk	*Accipiter striatus*	FGC 3503.5, TWL		eBird nearby
Cooper's hawk	*Accipiter cooperi*	FGC 3503.5, TWL		eBird nearby
Northern harrier	*Circus cyaneus*	SSC3, FGC 3503.5		eBird nearby
White-tailed kite	*Elanus leucurus*	CFP, TWL		eBird nearby
American kestrel	*Falco sparverius*	FGC 3503.5		eBird nearby
Merlin	*Falco columbarius*	FGC 3503.5, TWL		eBird nearby
Prairie falcon	*Falco mexicanus*	FGC 3503.5, TWL		eBird nearby
Peregrine falcon	*Falco peregrinus*	CE, CFP		eBird nearby
Burrowing owl	*Athene cunicularia*	BCC, SSC2	Likely absent	eBird nearby
Great-horned owl	*Bubo virginianus*	FGC 3503.5		eBird nearby
Short-eared owl	*Asio flammeus*	SSC3, FGC 3503.5		eBird nearby
Barn owl	*Tyto alba*	FGC 3503.5		eBird nearby
Nuttall's woodpecker	*Picoides nuttallii*	BCC		eBird nearby
Vaux's swift	*Chaetura vauxi*	SSC2		eBird nearby

Species	Scientific name	Status[1]	Occurrence likelihood	
			Argonaut 2019	Smallwood
Willow flycatcher	*Epidomax trailii*	CE, BCC		eBird nearby
Oak titmouse	*Baeolophus inornatus*	BCC		eBird nearby
Loggerhead shrike	*Lanius ludovicianus*	BCC, SSC2		eBird nearby
Yellow-billed magpie	*Pica nuttalli*	BCC		eBird nearby
Horned lark	*Eremophila alpestris*	TWL		eBird nearby
Yellow warbler	*Setophaga petechia*	SSC2		eBird nearby
Oregon vesper sparrow	*Pooecetes gramineus affinis*	SSC2		eBird nearby
Tricolored blackbird	*Agelaius tricolor*	CT		eBird nearby
Yellow-headed blackbird	*X. xanthocephalus*	SSC3		eBird nearby
Lawrence's goldfinch	*Spinus lawrencei*	BCC		eBird nearby
Pallid bat	*Antrozous pallidus*	SSC	Absent	Possible foraging
Townsend's western big-eared bat	*Plecotus t. townsendii*	SSC		Possible foraging
Western red bat	*Lasiurus blossevillii*	SSC		Possible foraging
Western yellow bat	*Lasiurus xanthinus*	SSC		Possible foraging
Small-footed myotis	*Myotis cililabrum*	WBWG		Possible foraging
Long-eared myotis	*Myotis evotis*	WBWG		Possible foraging
Fringed myotis	*Myotis thysanodes*	WBWG		Possible foraging
Long-legged myotis	*Myotis volans*	WBWG		Possible foraging
Yuma myotis	*Myotis yumanensis*	WBWG		Possible foraging
Western mastiff bat	*Eumops perotis*	SSC	Absent	Possible foraging
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, CT		Transit possible
American badger	Taxidea taxus	SSC		Transit possible

[1] Listed as FT = federally Threatened, BGEPA = Bald and Golden Eagle Protection Act, BCC = federal Bird Species of Conservation Concern, CE & CT = California endangered and threatened, CFP = California Fully Protected (CDFG Code 4700), FGC 3503.5 = California Fish and Game Code 3503.5 (Birds of prey), and SSC1, SSC2 and SSC3 = California Bird Species of Special Concern priorities 1, 2 and 3 (Shuford and Gardali 2008), TWL = Taxa to Watch List (Shuford and Gardali 2008), WBWG = Western Bat Working Group listing as moderate or high priority.

In yet another example, Argonaut (2019) concludes special-status species of bats do not occur on site because bats require roosting habitat, which is not present on the site. However, bat roosts take many structural forms (Kunz and Lumsden 2003), which at the site could include trees, old buildings and stacked cars in the auto wrecking yard. And anyway, roosts are not the only habitat elements needed by bats for survival. Bats also require forage; without sufficient forage, bats are not going to be able to roost wherever their roost habitat happens to be. I have many times seen bats foraging over agricultural fields. I see no reason why bats cannot forage over the project site.

An EIR needs to be prepared to analyze impacts and formulate mitigation measures for 51 special-status species (Table 2) and for migratory birds. Detection surveys are needed for Swainson's hawks in the area (CDFW 1994), and for burrowing owls (CDFW 2012). Surveys are also needed for wildlife movement across the project site and for the abundance and distribution of nesting birds. Detection surveys for special-status species are necessary for assessing potential project impacts and for formulating appropriate mitigation measures.

According to Argonaut (2019:12), "*The information presented…is designed to provide sufficient information to identify what, if any, biological resources are present that may be considered unique, sensitive, or protected by current law and the potential impacts to those resources if the site is developed.*" However, this statement is misleading for several reasons. First, the "if any" phrase implies that a 42.6-acre parcel of open spaces could possibly support no biological resources – an application of scientific uncertainty that is both false and absurd. Not even frequent disking can eliminate biological resources from the rich soils of the Great Central Valley. Biological resources most certainly would occur on a 42.6-acre patch of open space, as amply confirmed by my site visit.

Second, as I commented earlier, no detection surveys were performed. Detection surveys have been developed by species experts to provide biologists with reasonable opportunity for detection of a species when it is present or for supporting negative determinations. Detection surveys need to be performed before determining that Swanson's hawks or burrowing owls are absent from the site, as examples. For the CEQA review to be "*designed to provide sufficient information…*," it would have been founded on detection surveys.

Third, not only were the appropriate detection surveys not performed, but Argonaut (2019) neglected to report the species that *were* observed on site, if any. Did Argonaut see nothing? If so, then Argonaut's report is not credible. After all, I tallied 22 species of vertebrate wildlife, including two special-status species, within an hour after arriving at the site. The site of the proposed project maintains substantial value for wildlife, including for multiple special-status species and for birds protected by the federal Migratory Bird Treaty Act and California Fish and Game Code section 3513, which was recently amended to protect migratory birds after Governor Newsom signed AB 454 into law on 27 September 2019. An EIR needs to be prepared to appropriately analyze potential impacts to wildlife.

Wildlife Movement

Argonaut (2019) provides no analysis of the project's potential interference with wildlife movement in the region. County of Fresno (2019) argues that no migratory movement corridor exists in south Fresno, which is contrary to Fresno's location within the middle of the Pacific Flyway – a world-famous corridor trafficked by millions of birds annually. Regardless of the overwhelming presence of the Pacific Flyway, the County's conclusion sets up a false CEQA standard by implying that a migratory movement corridor must exist for interference of wildlife movement to qualify as significant. The primary phrase of the CEQA standard goes to wildlife movement regardless of whether the movement is channeled by a corridor. A site such as the proposed project site is critically important for wildlife movement because it composes an increasingly diminishing patch of open space within a growing expanse of residential and industrial uses, forcing more volant wildlife to use the site as stopover and staging habitat during migration, dispersal, and home range patrol (Warnock 2010, Taylor et al. 2011, Runge et al. 2014). The project would cut wildlife off from stopover and staging habitat, and would therefore interfere with wildlife movement in the region. An EIR needs to be prepared to address the project's impacts on wildlife movement in the region

Traffic Impacts on Wildlife

Neither Argonaut (2019) nor County of Fresno (2019) considered the likely most substantial type of impact of the rezone, and that is wildlife traffic mortality generated by the project and extending to locations as far away from the eventual building footprint as cars and trucks will travel to and from the project. Peters Engineering Group (2019) predicts the project will generate 980 average daily vehicle trips (weekdays only), including 318 average daily truck trips for 4- and 5-axle trucks. These truck trips, and the more numerous car trips, will kill wildlife for as long as the project continues. The resulting impacts on wildlife can be predicted to various degrees of accuracy.

One type of impact to consider is blunt-force injury and death caused by collisions with the front ends of vehicles. Assuming the average car frontal surface area is 3.08 m^2 (average height of 1.7 m and average wheelbase of 1.81 m) then the predicted average daily trips by cars would equal about 2,039 m^2 (3.08 $m^2 \times 662$ trips) of impact surface area crossing the roadways leading to the project, not including the surface area of tires. Assuming the average frontal surface area of shipping trucks is 14 m^2 (average height of 5.2 m and average width of 2.7 m), then the predicted average 318 daily trips by trucks in this distribution warehousing project would equal about 4,465 m^2 crossing the roadways leading to the project. Altogether the average daily trips associated with the project would equal about 6,504 m^2 of high-speed impact surface added to a landscape that is already extremely hazardous to wildlife due to existing vehicle traffic.

At 60 mph, a truck is intercepting airspace at 26.8 m/s. Restricting my calculation to a 1-hour trip perimeter, the daily volume of airspace intercepted by truck traffic alone would be $14\ m^2 \times 26.8\ m/s \times 1\ hr \times 3600\ s/hr = 1.35$ million m^3. A project with 318 daily truck trips within a 1-hour radius would thus intercept a daily airspace of 429.5 million m^3. This volume would be equivalent to the intercepted winds of 5 2.3-MW wind turbines. This many turbines in in a year takes 25 to 35 birds at the Vasco Winds Wind Energy project (Brown et al. 2016) to 82 birds at the same capacity of turbines at the Golden Hills Wind Energy project (H.T. Harvey & Associates 2018).[1] Therefore, front-end, blunt-force mortality would be predicted, in this example, to tally 25 to 82 birds annually, or about 1,250 to 4,100 birds over 50 years of warehouse operations. However, it remains unknown whether collision risk is higher or lower for vehicles traveling forward to intercept airspace as compared to wind turbines remaining stationary to intercept wind. Also yet to be considered are the deaths and injuries to vertebrate wildlife caused by crushing under tires, broadside impacts of flying birds, and turbulence-induced injuries and deaths above, to the side, and in the wake of traveling trucks.

For low-stature terrestrial wildlife such as snakes, small mammals and toads, the collision risk increases with the number and frequency of tires rolling over the roadways to and from the proposed project. Assuming the average auto coming to or from a residential area has 4 8-inch tires, then the cumulative tire width would be 0.82 meters. The cumulative width of car tires associated with 662 average daily trips would be 543 m. Given the predicted distribution of trucks traveling to or from the project, the cumulative width of truck tires associated with 318 truck trips would be 1,107 to 1,386 m depending on whether traditional dual tires are used with more than 2 axles or the newer single tires are used (traditional tires would be 0.2178 m wide and new single tires would be 0.436 m wide). The total width of tires crossing roadways on a daily basis would be 1,650 to 1,929 m. Assuming an average 60-mile trip per vehicle per day, the daily surface area covered by tires that can crush and kill amphibians, reptiles, terrestrial mammals or birds that landed on the roadway would be 1,650 to 1,929 m × 60 miles × 1,602 m/mile ÷ 10,000 m^2/ha = 15,860 ha to 18,542 ha. The project's traffic generation, assuming an average 60-mile trip, would cover 61 to 72 square miles with tires each day, which explains why traffic tolls on wildlife are so high (see below).

Across North America traffic impacts have taken devastating tolls on wildlife (Forman et al. 2003). In Canada, 3,562 birds were estimated killed per 100 km of road per year (Bishop and Brogan 2013), and the US estimate of avian mortality on roads is 2,200 to 8,405 deaths per 100 km per year, or 89 million to 340 million total per year (Loss et al. 2014). Local impacts can be more intense than nationally.

Just this past winter, 2,695 California newts were counted dead along a 6-mile stretch of Alma Bridge Road in Los Gatos (Lisa M. Krieger, Bay Area News Group, 19 February

[1] A 2.3-MW wind turbine is rated at 14 m/s. It runs an average of about 8 hours per day with a blade area of about 210 m^2. Daily volume of wind intercepted by the turbine blades is 210 m^2 × 14 m/s × 8 hr × 3600 s/hr = 84.67 million m^3. Fatality monitoring at the Vasco Winds and Golden Hills projects resulted in fatality estimates that accounted for the proportion of fatalities never found by searchers.

2019). In a recent study of traffic-caused wildlife mortality, investigators found 1,275 carcasses of 49 species of mammals, birds, amphibians and reptiles over 15 months of searches along a 2.5 mile stretch of Vasco Road in Contra Costa County, California (Mendelsohn et al. 2009). Using carcass detection trials performed on land immediately adjacent to the traffic mortality study (Brown et al. 2016) to adjust the found fatalities for the proportion of fatalities not found due to scavenger removal and searcher error, the estimated traffic-caused fatalities was 12,187. This fatality estimate translates to a rate of 3,900 wild animals per mile per year. In terms comparable to the national estimates, the estimates from the Mendelsohn et al. (2009) study would translate to 243,740 animals killed per 100 km of road per year, or 29 times that of Loss et al.'s (2014) upper bound estimate and 68 times the Canadian estimate. A CEQA analysis is needed of whether increased traffic generated by the project would similarly result in local impacts on wildlife.

Wildlife roadkill is not randomly distributed, so can be predicted. Causal factors include types of roadway, human population density, and temperature (Chen and Wu 2014), as well as time of day and adjacency and extent of vegetation cover (Chen and Wu 2014, Bartonička et al. 2018), and intersections with streams and riparian vegetation (Bartonička et al. 2018). For example, species of mammalian Carnivora are killed by vehicle traffic within 0.1 miles of stream crossings >40 times other than expected (K. S. Smallwood, 1989-2018 unpublished data). These factors also point the way toward mitigation measures, which should be formulated in an EIR.

CUMULATIVE IMPACTS

County of Fresno (2019) does not specifically analyze potential cumulative impacts on biological resources. For other resources, County of Fresno (2019) implies that cumulative impacts are merely residual impacts remaining after the implementation of mitigation measures. But that is not how CEQA defines cumulative impacts. County of Fresno needs to prepare an EIR to address cumulative impacts posed by the proposed project. Past, present, and foreseeable future distribution warehouses and other types of development need to be identified and their combined impacts quantified and analyzed for each special-status species occurring in the area.

When it comes to wildlife, cumulative effects can often be interpreted as effects on the numerical capacity (Smallwood 2015), breeding success, genetic diversity, or other population performance metrics expressed at the regional scale. In the case of migrating birds, the project's cumulative effects could be measured as numerical reductions of breeding birds at far-off breeding sites, as migrating adults and next-year's recruits lose access to stop-over habitat. These effects could be predicted and measured. If birds were to lose all stopover habitat across western Visalia, then the numerical capacity of migration might decline for multiple species. Unfortunately, little is known about stop-over habitat requirements, such as how often migrants lose their lives for lack of stop-over habitat. Nevertheless, crude assessments are possible and imperative.

MITIGATION MEASURES

County of Fresno (2019) proposes no mitigation for project impacts on wildlife. The County should prepare an EIR to more seriously analyze impacts and formulate mitigation. The EIR should be founded on a more thorough review of available information on special-status species occurrences in the region and on detection surveys for Swainson's hawks and other special-status species. It should also formulate appropriate mitigation measures.

Detection surveys are needed for special-status species. Detection surveys have been designed by species experts to either detect species when they are present or to support negative determinations. They are also needed to inform survey personnel where to most effectively perform preconstruction take-avoidance surveys for nesting birds and special-status species. Detection surveys are also needed for formulating appropriate mitigation measures.

Impact minimization measures are needed for traffic impacts on wildlife, and compensatory mitigation is needed for habitat loss and for traffic mortality. I recommend funding wildlife crossings at strategic locations along roads used by the project, and funding research into wildlife mortality caused by truck traffic.

Compensatory mitigation ought also to include funding contributions to wildlife rehabilitation facilities to cover the costs of injured animals that will be delivered to these facilities for care. Most of the wildlife injuries will likely be caused by collisions with cars and trucks driven to and from the site, including injuries caused by turbulence of passing trucks. But the project's impacts can also be offset by funding the treatment of injuries to animals caused by other buildings, electric lines, windows, and cats.

Thank you for your attention,

Shawn Smallwood

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Curriculum Vitae

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Born May 3, 1963 in
Sacramento, California.
Married, father of two.

Ecologist

Expertise

- Finding solutions to controversial problems related to wildlife interactions with human industry, infrastructure, and activities;
- Wildlife monitoring and field study using GPS, thermal imaging, behavior surveys;
- Using systems analysis and experimental design principles to identify meaningful ecological patterns that inform management decisions.

Education

Ph.D. Ecology, University of California, Davis. September 1990.
M.S. Ecology, University of California, Davis. June 1987.
B.S. Anthropology, University of California, Davis. June 1985.
Corcoran High School, Corcoran, California. June 1981.

Experience

- 477 professional publications, including:
- 81 peer reviewed publications
- 24 in non-reviewed proceedings
- 370 reports, declarations, posters and book reviews
- 8 in mass media outlets
- 87 public presentations of research results at meetings
- Reviewed many professional papers and reports
- Testified in 4 court cases.

Editing for scientific journals: Guest Editor, *Wildlife Society Bulletin*, 2012-2013, of invited papers representing international views on the impacts of wind energy on wildlife and how to mitigate the impacts. Associate Editor, *Journal of Wildlife Management*, March 2004 to 30 June 2007. Editorial Board Member, *Environmental Management*, 10/1999 to 8/2004. Associate Editor, *Biological Conservation*, 9/1994 to 9/1995.

Member, Alameda County Scientific Review Committee (SRC), August 2006 to April 2011. The five-member committee investigated causes of bird and bat collisions in the Altamont Pass Wind Resource Area, and recommended mitigation and monitoring measures. The SRC reviewed the science underlying the Alameda County Avian Protection Program, and advised the County on how to reduce wildlife fatalities.

Consulting Ecologist, 2004-2007, California Energy Commission (CEC). Provided consulting services as needed to the CEC on renewable energy impacts, monitoring and research, and produced several reports. Also collaborated with Lawrence-Livermore National Lab on research to understand and reduce wind turbine impacts on wildlife.

Consulting Ecologist, 1999-2013, U.S. Navy. Performed endangered species surveys, hazardous waste site monitoring, and habitat restoration for the endangered San Joaquin kangaroo rat, California tiger salamander, California red-legged frog, California clapper rail, western burrowing owl, salt marsh harvest mouse, and other species at Naval Air Station Lemoore; Naval Weapons Station, Seal Beach, Detachment Concord; Naval Security Group Activity, Skaggs Island; National Radio Transmitter Facility, Dixon; and, Naval Outlying Landing Field Imperial Beach.

Fulbright Research Fellow, Indonesia, 1988. Tested use of new sampling methods for numerical monitoring of Sumatran tiger and six other species of endemic felids, and evaluated methods used by other researchers.

Peer Reviewed Publications

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