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March 7, 2022

Robert Gran Jr., Chairperson
Honorable Members of the Planning Commission
City of Madera
205 W. 4th St.
Madera, CA 93637

Robert Smith, Senior Planner
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Re: Comment on the Mitigated Negative Declaration for Amond World Cold Storage Warehouse, SPR 2021-41

Dear Chair Gran Jr. and Honorable Members of the Planning Commission:

I am writing on behalf of Laborers' International Union of North America, Local Union No. 294 regarding the Initial Study and Mitigated Negative Declaration ("IS/MND") prepared for the Amond World Cold Storage Warehouse (SPR 2021-41), including all actions related or referring to the proposed construction, use, and maintenance of a 235,000 square foot (sf) warehouse with refrigerated storage area, administrative office, shipping office and flatbed annex building and a 250,000 sf warehouse and storage facility on 30.16 acres on the westside of Golden State Boulevard between Avenue 16 and 17 in the City of Madera ("Project").

After reviewing the IS/MND, we conclude the IS/MND fails as an informational document, and that there is a fair argument that the Project may have adverse environmental impacts. Therefore, we request that the City of Madera ("City") prepare an environmental impact report ("EIR") for the Project pursuant to the California Environmental Quality Act ("CEQA"), Public Resources Code section 21000, et seq.

This comment has been prepared with the assistance of environmental consulting firm Soil/Water/Air Protection Enterprise ("SWAPE"), expert wildlife biologist Shawn Smallwood, Ph.D, and acoustics, noise, and vibration consulting firm Wilson Ihrig. SWAPE's, Dr. Smallwood's, and Wilson Ihrig's comments and curriculum vitae are attached as Exhibits A, B, and C hereto, respectively, and are incorporated herein by reference in their entirety.

I. PROJECT DESCRIPTION

The proposed Project would consist of a cold storage warehouse for agricultural products built in two phases on two parcels totaling 30.16 acres. The first phase would include a 235,000 sf warehouse with refrigerated storage area, a 4,000 sf administrative office, a 2,204 sf shipping office, and a 12,544 sf flatbed annex building. The second phase would include a 250,000 sf warehouse and storage facility with a ground mount solar PV array. The Project would also include an on-site stormwater retention basin.

There are single-family residential uses located to north of the Project, as well as vacant land to the north and south, and industrial uses to the east and west. Each phase of construction is anticipated to last nine months. The Project site has a Madera General Plan land use designation of Industrial, which provides for both light and heavy industrial development.

II. LEGAL STANDARD

As the California Supreme Court has 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 Env't v. South Coast Air Quality Mgmt. 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). "Significant environmental effect" is defined very broadly as "a substantial or potentially substantial adverse change in the environment." Pub. Res. Code ("PRC") § 21068; *see also* 14 CCR § 15382. An effect on the environment need not be "momentous" to meet the CEQA test for significance; it is enough that the impacts are "not trivial*.*" *No Oil, Inc.*, 13 Cal.3d at 83. "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 Env't v. Cal. Res. 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 (*Bakersfield Citizens*); *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 Univ. of Cal.* (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." PRC § 21080(d); see also *Pocket Protectors*, 124 Cal.App.4th at 927. In very 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 CCR § 15371), only if there is not even a "fair argument" that the project will have a significant environmental effect. PRC, §§ 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.

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. 14 CCR § 15064(f)(1); *Pocket Protectors,* 124 Cal.App.4th at 931; *Stanislaus Audubon Society v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150-51; *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*, 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 & Zischke*, Practice Under CEQA*, §6.29, pp. 273–74. 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).

III. DISCUSSION

A. There is Substantial Evidence of a Fair Argument that the Project May Result in Significant Air Quality, Health Risk, and Greenhouse Gas Impacts.

Matt Hagemann, P.G., C.Hg., and Dr. Paul E. Rosenfeld, Ph.D., of the environmental consulting firm SWAPE reviewed the IS/MND's analysis of the Project's impacts from air quality, health risk, and greenhouse gases. SWAPE's comment letter and CVs are attached as Exhibit A and their comments are briefly summarized here.

1. The IS/MND relied on unsubstantiated input parameters to estimate project emissions and thus the project may result in significant air quality impacts.

SWAPE found that the IS/MND incorrectly estimated the Project's construction and operational emissions and therefore cannot be relied upon to determine the significance of the Project's impacts on local and regional air quality. The IS/MND relies on emissions calculated from the California Emissions Estimator Version CalEEMod.2020.4.0 ("CalEEMod"). IS/MND, p. 4-48. This model, which is used to generate a project's construction and operational emissions, relies on recommended default values based on site specific information related to a number of factors. Ex. A, p. 2. CEQA requires any changes to the default values to be justified by substantial evidence. *Id*.

SWAPE reviewed the IS/MND's CalEEMod output files and found that the values input into the model were inconsistent with information provided in the IS/MND. Ex. A, p. 2. As a result, the IS/MND's air quality analysis cannot be relied upon to determine the Project's emissions.

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

1. Failure to Model All Proposed Land Uses. Ex. A, p. 2-3.
2. Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Areas. Ex. A, p. 3-5.
3. Incorrect Construction Schedule. Ex. A, p. 5-6.
4. Failure to Substantiate Amount of Required Material Import and Export. Ex. A, p. 6-7.
5. Incorrect Application of Operational Mitigation Measures. Ex. A, p. 7-8.

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

2. An updated air model analysis found that the Project will have a significant air quality impact.

To more accurately determine the Project's construction and operational emissions, SWAPE prepared an updated CalEEMod model using more site-specific information and corrected input parameters. *See* Ex. A, p. 8. SWAPE's updated analysis demonstrates that the Project's construction-related ROG emissions for Phase I and Phase II are 370.3 and 365.7, respectively, both of which exceed the applicable SJVAPCD threshold of 100 pounds per day. *Id*. at 8-9. Thus, SWAPE's application of the model is substantial evidence of a fair argument that the Project may result in a potentially significant air quality impact. An EIR should be prepared to adequately assess and mitigate the potential air quality impacts that the Project may have on the surrounding environment.

3. There is substantial evidence of a fair argument that the Project may have a significant health impact as a result of Diesel Particulate emissions.

One of the primary emissions of concern regarding health effects for land development projects is diesel particulate matter ("DPM"), which can be released during Project construction and operation. DPM consists of fine particles with a diameter less than 2.5 micrometers including a subgroup of ultrafine particles (with a diameter less than 0.1 micrometers). Diesel exhaust also contains a variety of harmful gases and cancer-causing substances. Exposure to DPM is a recognized health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. According to the California Air Resources Board ("CARB"), DPM exposure may lead to the following adverse health effects: aggravated asthma; chronic bronchitis; increased respiratory and cardiovascular hospitalizations; decreased lung function in children; lung cancer; and premature deaths for those with heart or lung disease.[1]

The IS/MND failed to conduct a quantified construction health risk analysis ("HRA"), resulting in an inadequate health risk emissions analysis. SWAPE identifies three main reasons for why the IS/MND's evaluation of health risk impacts and subsequent less-than-significant conclusion is incorrect.

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[1] *See* CARB Resources - Overview: Diesel Exhaust & Health, available at https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health.).

First, the IS/MND's failure to prepare a construction HRA is inconsistent with CEQA's requirement to correlate potential emissions with adverse impacts on human health. *Id.* at 10. SWAPE identifies potential emissions of DPM from exhaust stacks of construction equipment during the Project's 18 months of construction. *Id.* In failing to connect Toxic Air Contaminant emissions to potential health risks to nearby receptors, the Project fails to meet the CEQA requirement that projects correlate increases in project-generated emissions to adverse impacts on human health caused by those emissions. *Id.*; *See Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 510.

Second, the California Department of Justice recommends the preparation of a quantitative HRA pursuant to the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California, as well as local air district guidelines. OEHHA released its most recent guidance document in 2015 describing which types of projects warrant preparation of an HRA. *See* "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. OEHHA recommends that projects lasting at least 2 months be evaluated for cancer risks to nearby sensitive receptors, a time period which this Project easily exceeds. Ex. A, p.10. SWAPE therefore recommends that health risk impacts from the project be evaluated, and an EIR is required to analyze these impacts. *Id.*

Third, the IS/MND's claim that there will be a less than significant impact without having evaluated the combined lifetime cancer risk from Project construction and operation *together* represents a failure under OEHHA guidelines. *Id.* at 11. OEHHA guidance states that "the excess cancer risk is calculated separately from each age grouping and then summed to yield cancer risk at the receptor location." *Id*. SWAPE recommends that an updated analysis be prepared which quantifies the Project's construction and operational health risks together. *Id*.

SWAPE prepared a screening-level HRA to evaluate potential impacts from Project construction. SWAPE used AERSCREEN, a screening-level air quality dispersion model. *Id.* at 11. SWAPE applied a sensitive receptor distance of 250 meters and analyzed impacts to individuals at different stages of life based on OEHHA and SJVAPCD guidance utilizing age sensitivity factors. *Id*. at 11-14.

SWAPE found that the excess cancer risks at a sensitive receptor located approximately 250 meters away over the course of Project construction is approximately 39.63 in one million for infants *Id*. at 13. Moreover, **the excess lifetime cancer risk over the course of a Project operation of 30 years is approximately 45.01 in one million**. *Id*. The risks to infants and lifetime residents exceed SJVAPCD's threshold of 20 in one million.

SWAPE's analysis constitutes substantial evidence that the Project may have a significant health impact as a result of diesel particulate emissions. An EIR including discussion of a completed health risk assessment must be prepared disclosing the health risk impacts from toxic air contaminants from Project construction.

4. The IS/MND failed to adequately analyze the Project's greenhouse gas impacts and thus the Project may result in significant greenhouse gas emissions.

The IS/MND estimates that in 2023, the Project would generate net annual GHG emissions of 10,213 metric tons of carbon dioxide equivalent per year ("MT CO2e/year"), without regulations and design features, and 3,786 MTCO2e/year with them. IS/MND, p.4-50, Table 4-10. In 2030, the IS/MND estimates 10,190 MTCO2e/year without regulations and design features, and 3,321 MTCO2e/year with them. *Id.* The IS/MND relies on consistency with CARB's Adopted Scoping Plans and GHG Reduction Goals for 2050 under Executive Order S-3-05 to conclude that the project would have a less-than-significant GHG impact. However, SWAPE states that the IS/MND's analysis and conclusion about greenhouse gas impacts is incorrect for two reasons:

1. Incorrect and Unsubstantiated Air Model. Ex. A, p. 16.
2. Unsubstantiated Reduction Measures. Ex. A, p. 16-17.

SWAPE's analysis demonstrates a potentially significant GHG emission impact from the project that necessitates mitigation, and it proposes numerous feasible mitigation measures. The City must prepare an EIR with an updated GHG analysis and requiring the implementation of these measures.

B. The Project Will Have Significant Adverse Biological Impacts That the IS/MND Fails to Adequately Analyze and Mitigate.

Shawn Smallwood, Ph.D. reviewed the IS/MND's analysis of the Project's biological impacts. Dr. Smallwood's comment letter and CV are attached as Exhibit B and his comments are briefly summarized here.

1. The IS/MND is inadequate in its characterization of the existing environmental setting as it relates to wildlife.

Dr. Smallwood visited the site on February 21, 2022 and reconnoitered the area for 2 hours and 10 minutes with the use of binoculars. Ex. B, p.1. During that visit, he observed the presence of 25 species of vertebrate wildlife at the Project site, five of which are special-status species. *Id.* at 2, see Table 1, Ex. B, p. 3. Dr. Smallwood found that after being disked last year, the site was "covered by ruderal grassland species," and bordered by eucalyptus and other trees. *Id.* at 1. Dr. Smallwood observed birds using the site and its surroundings throughout his time visiting the area, and concluded that the site is "inherently rich in wildlife species, and [] offers wildlife opportunities for forage, refugia, and breeding that are otherwise rapidly disappearing from [the] region." *Id.* at 3.

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. Dr. Smallwood found that the essential steps of the characterization of the Project site's environmental setting were "grossly incomplete." Ex. B, p. 6. The reconnaissance-level survey conducted for the site failed to report key information on the survey, including the time of day when the survey began and how long the biologist surveyed the site, which Dr. Smallwood stated are "the most important methodological elements of the survey." *Id.* The survey also detected only 24% of the species that Dr. Smallwood observed, a discrepancy which Dr. Smallwood's experience suggests is likely due to a brief site visit or a visit at a time of day least likely to detect wildlife. *Id.* at 6-7. Dr. Smallwood concludes that "the site is richer in wildlife than the 26 species documented there so far" by the MND survey and his own survey, and that "the environmental setting of the project remains insufficiently characterized as foundation for analysis of impacts to special-status species." *Id.* at 8. He also notes that "[n]o reconnaissance-level survey is capable of detecting enough of the wildlife species that occur at a site to realistically characterize the site's wildlife community." *Id.* at 11.

Dr. Smallwood's analysis next turned to the MND's biological survey's review of literature and databases for documented occurrences of species in the area. *Id.* at 11-14. The MND's survey did not consult eBird or iNaturalist, which Dr. Smallwood states would have led to determinations of occurrence likelihoods for many more species. *Id.* at 11. In his review of databases, Dr. Smallwood identified 75 special-status species that had the potential to use the site, which demonstrates that the site "holds much more potential for supporting special-status species of wildlife than has been determined by the City of Madera." *Id.* While the MND's survey consulted the California Natural Diversity Data Base ("CNDDB"), Dr. Smallwood stated that it misapplied CNDDB by using it to screen out species not reported within 5 miles of the Project site. *Id.* He noted that "[w]hereas CNDDB can be helpful for confirming occurrences of special-status species where they have been reported, it cannot be relied upon for determining absences of species." *Id.*

A skewed baseline such as the one used by the City here ultimately "mislead(s) the public" by engendering inaccurate analyses of environmental impacts, mitigation measures and cumulative impacts for biological resources. *See San Joaquin Raptor Rescue Center,* 149 Cal.App.4th 645, 656; *Woodward Park Homeowners,* 150 Cal.App.4th 683, 708-711. This inaccurate baseline and the species identified by Dr. Smallwood warrants discussion and analysis in an EIR to ensure species are accurately detected and that any impacts are mitigated to a less than significant level. Because of the failure to characterize the site, a fair argument exists that the Project may have a significant impact on wildlife requiring the preparation of an EIR.

2. The IS/MND fails to accurately analyze potential biological impacts to wildlife.

The MND's analysis of biological impacts determined that due to the site's historical use as agricultural land and the disking and agricultural activity associated with that, it was highly disturbed and impacts would be less than significant. IS/MND, p.4-23, 4-29-4-32. Dr. Smallwood found, however, that "in the face of rapidly diminishing habitat, wildlife must make use of whatever opportunities remain available to them," and that "[m]any species of wildlife continue to use the site." Ex. B, p. 15. He then described five main impacts that were not adequately analyzed in the MND: habitat loss, wildlife movement, wildlife mortality, traffic impacts to wildlife, and cumulative impacts. *Id.* at 15-20.

a. Habitat Loss

Dr. Smallwood found that the MND did not address potential impacts of habitat loss to breeding birds. *Id.* at 15. There has been a 29% decline in birds in North America over the last approximately 50 years largely due to habitat loss and fragmentation, a trend which could be further exacerbated by this project. *Id*. Based on studies on the subject, Dr. Smallwood estimates that the presence of the Project on the site could lead to as many as 259 bird nests lost annually. *Id.* at 20. He further found that the reproductive capacity of the site would be lost, as the Project would prevent 751 fledglings per year, which would in turn contribute to the lost capacity of 855 birds per year. *Id.*

Because this impact was not addressed in the IS/MND and Dr. Smallwood has presented substantial evidence of a fair argument that habitat loss will impact species, the City must prepare an EIR to analyze the impact.

b. Wildlife Movement

The IS/MND improperly dismisses the Project's potential to impact wildlife movement based on the fact that the site does not occur within a wildlife movement corridor. Ex. B, p. 16. However, this conclusion relies on an incorrect CEQA standard. 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..." CEQA Guidelines, App. G. "The primary phrase of the CEQA standard goes to wildlife movement regardless of whether the movement is channeled by a corridor." Ex. B, p. 16. Dr. Smallwood states that the Project site is "critically important for wildlife movement because it composes an increasingly diminishing area of open space within a growing expanse of anthropogenic uses . . ." *Id.* He concludes that [t]he project would interfere with wildlife movement in the region." *Id.*

Because of its reliance on a false CEQA standard for determining impacts on wildlife movement, the IS/MND contains no evidence to support the conclusion that the

Project will not have a significant impact on wildlife movement. An EIR must be prepared to analyze the Project's impacts on wildlife movement.

c. Wildlife Mortality

The Project site would be surrounded by a 6-foot-tall chain link fence, measuring about 1.9-km. IS/MND, p. 2-9. Dr. Smallwood states that fences "interfere with wildlife movement," "entangle wildlife," and "are barriers into which volant animals collide with lethal force." Ex. B, p. 16. Based on recent fatality monitoring of fencing surrounding utility-scale solar projects in California, Dr. Smallwood estimates that the Project would kill 27.4 birds per year, adding up to 2,740 birds killed over the course of 100 years. This represents an unanalyzed and unmitigated significant impact and an EIR must be prepared to assess the Project's impacts to wildlife from the proposed security fence. *Id.*

d. Traffic Impacts to Wildlife

According to the IS/MND, the Project will generate 1,068.5 new daily Vehicle Miles Traveled ("VMT"). Ex. B, p. 17. Yet the IS/MND provides no analysis of the impacts on wildlife that will be caused by this increase in traffic on the roadways servicing the Project. "Project-generated traffic would endanger wildlife that must, for various reasons, cross roads used by the Project's traffic." *Id.*

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:

> . . . 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. The nearest study of traffic-caused wildlife mortality was performed along a 2.5 mile stretch of Vasco Road in Contra Costa County, California. Fatality searches in this study found 1,275 carcasses of 49 species of mammals, birds, amphibians, and reptiles over 15 months of searches (Mendelsohn et al. 2009).

Ex. B, p. 17.

Using the IS/MND's estimates of VMT as a basis, Dr. Smallwood was able to predict the impacts to wildlife that could be caused by the project. *Id.* at 19. Dr. Smallwood calculates that operation of the Project over 50 years would accumulate 79,850 wildlife fatalities. *Id.* He therefore states that "the project-generated traffic would cause substantial, significant impacts to wildlife." *Id.* at 20. The IS/MND must be revised to include an analysis and mitigation of the result increased traffic from the Project will have on wildlife.

e. Cumulative Impacts

The IS/MND concludes that the Project's impacts would not be cumulatively considerable because of its relatively nominal impacts and mitigation measures that will be provided. IS/MND, p. 4-110. However, Dr. Smallwood states that the IS/MND's interpretation of the CEQA standard for cumulative impacts is erroneous. Ex. B, p. 20.

He also states that "[g]iven that North America has lost nearly a third of its birds over the past half century, and given that simple calculations reveal the project's impacts would deny Californians of many birds, an appropriate cumulative effects analysis is warranted." *Id.* An EIR should be prepared to adequately analyze potential cumulative impacts to wildlife caused by the Project.

As for the proposed mitigation measures, Dr. Smallwood first addresses the proposed preconstruction surveys for burrowing owls, and states that because ground squirrels occur on site, breeding-season detection surveys are necessary before preconstruction take-avoidance surveys. *Id.* Dr. Smallwood also states that while preconstruction surveys should be conducted for breeding birds, they "typically detect small fractions of the animals targeted." *Id.* Lastly, he states that the Project's potential to eliminate 30.16 acres of Swainson's hawk habitat warrants a greater commitment to mitigation than that currently proposed by the MND. *Id.* at 21.

C. There is Substantial Evidence that the Project Will Have Adverse Noise Impacts that the IS/MND Failed to Address.

Deborah Jue, Principal of Acoustics, Noise, and Vibration consulting firm Wilson Ihrig, reviewed the IS/MND for the Project and found that the IS/MND lacks quantitative thresholds to evaluate the suitability of its proposed mitigation measures. Wilson Ihrig's comment letter and CV are attached as Exhibit C and their comments are summarized here.

1. The IS/MND contains errors in its references which render it inadequate as an informational document.

Wilson Ihrig first identified errors in several of the references in the IS/MND which should be corrected. Specifically, Wilson Ihrig found that there were corrupted graphics in the Project Description and that the IS/MND omitted a section of the Madera Municipal Code which defines Unlawful Noise. Ex. C, p. 1. This code section is important, as it defines unlawful noise as ". . . unnecessary noise or sound which is physically annoying to persons of ordinary and normal sensitivity . . ." Ex. C, p. 1-2; Madera Municipal Code § 3-11.01. These errors conflict with CEQA's purpose that environmental documents serve as "informational document[s] which will inform public agency decisionmakers and the public generally of the significant environmental effect of a project . . ." CEQA § 15121(a). The IS/MND must be revised to correct these errors.

2. The thresholds of significance used in the IS/MND are not properly developed and the impact analyses are incomplete.

Wilson Ihrig next found that the IS/MND failed to define thresholds of significance, rendering the IS/MND's analysis of noise impacts inadequate. Under CEQA, an MND "must clearly show that the mitigation would eliminate significant effects." Ex. C, p. 2; *see also* CEQA § 15070(b). However, Wilson Ihrig found that the IS/MND failed to clearly define thresholds of significance for annoyance and sleep disruption. Ex. C, p. 2. These thresholds are necessary for an adequate assessment of whether mitigation measures are sufficient to eliminate potentially significant impacts. *Id.*

Madera Municipal Code § 3.11-01(A) prohibits a Project from generating unlawful noise, which is further defined as "annoying" noise. *Id.* Wilson Ihrig describes two potential methods for how the IS/MND could assess the Project's potential for noise annoyance:

1) Absolute Noise Level: The first suggested method is to use absolute noise level as a measure, using the World Health Organization's threshold of 55 dBA Leq, and the Madera General Plan's threshold of 60 dBA Leq to assess whether the Project has a potential to cause annoying noise. Ex. C, p. 2. Based on the information in the IS/MND, the Project currently exceeds these thresholds, and Wilson Ihrig recommends that "Project noise should be limited to an hourly Leq of 55 dBA at the R/V park and 60 dBA hourly Leq near the Boles residences." *Id.*
2) Relative Noise Increase: The second suggested method is to assess annoyance levels based on relative noise increase. The Madera General Plan has guidance on this threshold, defining significance as a 5 dB increase in the Ldn. Ex. C, p. 3.

The other threshold of significance that is inadequately defined in the IS/MND is sleep disruption. Although the IS/MND identifies a potential for a significant impact from sleep disruption and proposes mitigation measure NOISE-2 to limit this, there is no significance threshold against which these impacts are being evaluated, and therefore the assessment is incomplete. Ex. C, p. 3; IS/MND, p. 4-84. Wilson Ihrig suggests using the World Health Organization's guidance of "45 dBA Leq (outdoors) to avoid sleep disturbance from a continuous source, and a limit of 60 dBA Lmax for intermittent sources for conventional homes." Ex. C, p. 3.

Wilson Ihrig's final note on the IS/MND's discussion of potential impacts is that it lacks clarity. *Id.* Wilson Ihrig identifies several instances in which results regarding significance are not presented with sufficient clarity, and suggests a table which could help illustrate relevant thresholds and analysis. *Id.* at 3-4. Wilson Ihrig also notes that on-going construction noise has not been calculated for the Project, and recommends a method by which to do so. *Id.* at 4.

These comments identify unanalyzed and unmitigated significant noise impacts of the Project. As a result of these expert comments, a fair argument exists that the Project may have significant noise impacts and an EIR must be prepared to sufficiently address these impacts.

IV. CONCLUSION

In light of the above comments, the City must prepare an EIR for the Project and the draft EIR should be circulated for public review and comment in accordance with CEQA. Thank you for considering these comments.

Sincerely,

Amalia Bowley Fuentes

LOZEAU DRURY LLP

EXHIBIT A

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

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March 4, 2022

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Subject: **Comments on the Amond World Cold Storage Warehouse Site Plan Review (SPR 2021-41) Project**

Dear Mr. Lozeau,

We have reviewed the February 2022 Administrative Draft Initial Study / Mitigated Negative Declaration ("IS/MND") for the Amond World Cold Storage Warehouse Site Plan Review (SPR 2021-41) ("Project") located in the City of Madera ("City"). The Project consists of two phases: Phase I and Phase II. Phase I proposes to construct a 254,016-square foot ("SF") refrigerated warehouse and storage facility, with 6,204-SF of total office space, and Phase II proposes to construct an additional 250,000-SF refrigerated warehouse and storage facility on the adjoining parcel and would include a ground mount solar PV array, on the 30.16-acre site.

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

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The IS/MND's air quality analysis relies on emissions calculated with CalEEMod.2020.4.0 (p. 4-48).[1] CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence. Once all of the values are inputted into the model, the Project's construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters are utilized in calculating the Project's air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

When reviewing the Project's CalEEMod output files, provided in Air Quality, Health Risk Analysis, and Greenhouse Gas Technical Memo ("AQ, HRA, & GHG Memo") as Appendix A to the IS/MND, we found that several model inputs were not consistent with information disclosed in the IS/MND. Thus, the Project's construction and operational emissions are underestimated. As a result, an EIR 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.

Failure to Model All Proposed Land Uses

According to the IS/MND:

> "Phase I involves the construction of an approximately 254,016-sf. refrigerated warehouse and storage facility on the parcel identified as APN 013-200-005 and would include a 235,200-sf. warehouse with refrigerated storage area, in addition to an administrative office (4,000 sf.), shipping office (2,204 sf.), and flatbed annex building (12,544 sf.). Phase II would include a 250,000-sf. warehouse and storage facility on the adjoining parcel to the east" (p. 2-7).

As demonstrated above, the models should have included 6,204-SF of office space in addition to the 497,812-SF of total warehouse space.[2] However, review of the CalEEMod output files demonstrates that the following models include all building area square footage as "Refrigerated Warehouse-No Rail" (see excerpts below) (Appendix A, pp. 196, 262, 304, 331, 412, 427, 472, 494, 536).

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[1] "CalEEMod User's Guide Version 2020.4.0." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide.

[2] Calculated: (254,016-SF Phase I warehouse space – 6,204-SF Phase I office space) + (250,000-SF Phase II warehouse space) = 497,812-SF total warehouse space.

"Origo Cold Madera - Phase 1 Unmitigated Project Construction," "Origo Cold Madera - Phase 1 Unmitigated Construction (On-site Only)"

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area
Refrigerated Warehouse-No Rail	254.02	1000sqft	5.83	254,016.00
Other Asphalt Surfaces	1.50	Acre	1.50	65,340.00
Other Non-Asphalt Surfaces	1.50	Acre	1.50	65,340.00
Parking Lot	6.17	Acre	6.17	268,765.20

"Origo Cold Madera - Buildout Scenario in the Earliest Occupancy Year (2023)," "Project Operations (Autos, Building, Area) - Localized Assessment," "Origo Cold Madera - Passenger Vehicles + Building (BAU Operations)"

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area
Refrigerated Warehouse-No Rail	504.02	1000sqft	11.57	504,016.00
Other Asphalt Surfaces	3.06	Acre	3.06	133,293.60
Other Non-Asphalt Surfaces	3.06	Acre	3.06	133,293.60
Parking Lot	12.91	Acre	12.91	562,359.60

As you can see in the excerpts above, the models fail to distinguish between the refrigerated warehouse and office land uses. This inconsistency presents an issue, as CalEEMod includes 63 different land use types that are each assigned a distinctive set of energy usage emission factors.[3] Furthermore, each land use type includes a specific trip rate that CalEEMod uses to calculate mobile-source emissions.[4] Thus, by failing to include all proposed land use types, the models may underestimate the Project's construction-related and operational emissions and should not be relied upon to determine Project significance.

Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Areas

Review of the CalEEMod output files demonstrates that the following models include several reductions to the default architectural and area coating emission factors and areas (see excerpts below) (Appendix A, pp. 197, 230, 263, 305, 332, 359, 386, 413, 428, 473, 495, 537).

"Origo Cold Madera - Phase 1 Unmitigated Project Construction," "Origo Cold Madera - Buildout Scenario in the Earliest Occupancy Year (2023)," "Origo Cold Madera - Phase 1 Unmitigated Construction (On-site Only)," "Project Operations (Autos, Building, Area) - Localized Assessment," "Origo Cold Madera - Passenger Vehicles + Building (2030 Operations)"

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	127,008.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	50
tblAreaCoating	Area_EF_Nonresidential_Interior	150	50

[3] "CalEEMod User's Guide, Appendix D." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide.
[4] "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 29.

“Origo Cold Madera - Phase 2 Unmitigated Construction,” “Origo Cold Madera - Phase 2 Unmitigated Construction (On-site Only),” “Origo Cold Madera - Passenger Vehicles + Building (BAU Operations)”

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00

As you can see in the excerpts above, the architectural coating area associated with nonresidential exterior surfaces was decreased from the default value of 127,008-SF to 50-SF. Furthermore, the architectural and area coating emission factors associated with nonresidential interior and exterior surfaces were reduced from the default values of 150- to 50-grams per liter (“g/L”). As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.[5] According to the “User Entered Comments & Non-Default Data” table, the justification provided for these changes is:

> “SJVAPCD Rule 4601 Architectural Coatings” (Appendix A, pp. 197, 230, 263, 305, 332, 359, 386, 413, 428, 473, 495, 537).

Furthermore, regarding SJVAPCD Rule 4601, the IS/MND states:

> “The SJVAPCD adopted rules and regulations for development projects prior to and during construction to reduce air contaminants, including but not limited to the following: […]
>
> ***Rule 4601 – Architectural Coatings***. *The purpose of this rule is to limit VOC emissions from architectural coatings. This rule specifies architectural coatings storage, cleanup, and labeling requirements*” (p. 4-8 – 4-9).

However, these justifications remain insufficient for three reasons.

First, we cannot verify the accuracy of the revised architectural and area coating emission factors based on SJVAPCD Rule 4601 alone. The SJVAPCD Rule 4601 VOC Content Limits for Coatings Table provides the required VOC limits (grams of VOC per liter of coating) for 46 different coating categories (e.g., Aluminum Roof coatings, Faux Finishing Coatings, Fire Resistive Coatings, Multi-Color Coatings, Primers, Sealers, Recycled Coatings, Shellacs, Stains, Traffic Marking Coatings, Waterproofing Membranes, Wood Coatings, etc.).[6] The VOC limits for each coating varies from a minimum value of 50 g/L to a maximum value of 730 g/L. As such, we cannot verify that SJVAPCD Rule 4601 substantiates a reduction to the default coating values without more information regarding what category of coatings will be used on the Project site. As the IS/MND and associated documents fail to explicitly require the use of a specific type of coating in a formal mitigation measure, we are unable to verify the revised emission factors assumed in the model.

[5] “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 1, 14.

[6] “SJVAPCD Rule 4601 Architectural Coatings.” SJVAPCD, April 2020, *available at:* https://www.valleyair.org/rules/currntrules/r4601.pdf, p. 4601-17, Table 1 VOC Content Limits for Coatings.

Second, SJVAPCD Rule 4601 does not address coating areas whatsoever. Thus, as the IS/MND and associated documents also fail to mention or justify the coating area square footage, we cannot verify the revised architectural coating area value.

Third, regarding the modeling of operational emissions under the business-as-usual ("BAU") scenario, the IS/MND states:

> "CalEEMod defaults were used for project energy usage, water usage, waste generation, and area sources (architectural coating, consumer products, and landscaping)" (p. 4-49).

As demonstrated above, the IS/MND claims architectural coating values were left as default when estimating BAU operational emissions. As such, the changes to default architectural coating emission factors included in the "Origo Cold Madera - Passenger Vehicles + Building (BAU Operations)" model are incorrect and inconsistent with the information provided in the IS/MND.

These unsubstantiated reductions present an issue, as CalEEMod uses architectural and area coating emission factors and areas to calculate the Project's reactive organic gas/volatile organic compound ("ROG"/"VOC") emissions.[7] Thus, by including unsubstantiated reductions to the default architectural and area coating emission factors and areas, the models may underestimate the Project's construction and operational ROG/VOC emissions and should not be relied upon to determine Project significance.

Incorrect Construction Schedule

Regarding the Project's anticipated construction duration, the IS/MND states:

> "Construction of Phase I is expected to require approximately nine (9) months. Phase I construction is anticipated to begin upon securing the required permits and Phase II construction is to be determined" (p. 2-8).

As demonstrated above, construction of Phase I will require approximately 9 months. Furthermore, as Phase II is similar in land use size and type to Phase I, we can reasonably assume that construction of Phase II will also require approximately 9 months. As such, the models associated with Project construction should include construction schedules that reflect the anticipated construction duration as indicated by the IS/MND. However, review of the CalEEMod output files demonstrates that following models include construction durations of approximately one year (see excerpts below) (Appendix A, pp. 201-202, 234-235, 310, 337, 364, 391).

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[7] "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 36, 42.

"Origo Cold Madera – Phase 2 Unmitigated Project Construction," "Origo Cold Madera – Phase 2 Unmitigated Construction (On-site Only)"

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days
1	Site Preparation	Site Preparation	3/18/2023	3/31/2023	5	10
2	Grading	Grading	4/1/2023	5/12/2023	5	30
3	Paving	Paving	5/13/2023	6/9/2023	5	20
4	Building Construction	Building Construction	6/10/2023	2/19/2024	5	181
5	Architectural Coating	Architectural Coating	2/20/2024	3/18/2024	5	20

"Origo Cold Madera – Phase 1 Unmitigated Project Construction," "Origo Cold Madera – Phase 1 Unmitigated Construction (On-site Only)"

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days
1	Site Preparation	Site Preparation	3/7/2022	3/18/2022	5	10
2	Grading	Grading	3/19/2022	4/29/2022	5	30
3	Paving	Paving	4/30/2022	5/27/2022	5	20
4	Building Construction	Building Construction	5/28/2022	2/19/2023	5	190
5	Architectural Coating	Architectural Coating	2/20/2023	3/17/2023	5	20

As demonstrated in the excerpts above, the models include overestimated construction schedules and are inconsistent with the information provided in the IS/MND. These inconsistencies present an issue, as construction-related emissions are improperly spread out over a longer period of time during the individual construction phases. Thus, the models assume there are a greater number of days to complete the construction activities required by each phase. As such, there will be less construction activities required per day and, consequently, less pollutants emitted per day. As a result, the models underestimate the peak daily emissions associated with each phase of construction and should not be relied upon to determine Project significance.

Failure to Substantiate Amount of Required Material Import and Export

According to the CalEEMod User's Guide:

> "Grading involves the cut and fill of land to ensure that the proper base and slope is created for the foundation."[8]

As demonstrated above, grading involves the use of material import (fill) and export (cut). According to the IS/MND:

> "Site preparation would include typical grading activities to ensure an adequately graded site for drainage purposes. Part of the preparation would include the removal of any vegetation necessary to accommodate the Project. Other site preparation activities would include minor

[8] "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 32.

excavation for the installation of utility infrastructure, for coneyance of water, sewer, stormwater, and irrigation" (IS/MND, p. 2-8, 2-9).

As demonstrated above, Project construction requires typical grading activities and excavation. However, the IS/MND fails to discuss the amount of material import or export required for Project construction whatsoever. Furthermore, review of the CalEEMod output files demonstrates that the models associated with Project construction fail to include any amount of material import or export. According to the "User Entered Comments & Non-Default Data" table, the justification provided for the lack of material import or export is:

> "Cut and fill expected to balance on-site for the entire project" (Appendix A, pp. 197, 305, 332).

However, the IS/MND fails to support the assumption that cut and fill are expected to be balanced during Project construction. As such, the models may underestimate the amount of material import and export required during Project construction.

This potential underestimation presents an issue, as the inclusion of material import and export within the model is necessary to calculate emissions produced from material movement, including truck loading and unloading, and additional hauling truck trips.[9] As the IS/MND fails to substantiate any amount of material import or export, the models may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance. An EIR should be prepared to verify the amount of required material import and export and revise the model, if necessary.

Incorrect Application of Operational Mitigation Measures

Review of the CalEEMod output files demonstrates that the models associated with Project operation include the following energy- and area-related operational mitigation measures (Appendix A, pp. 272, 276, 421, 423, 436, 438, 546, 550).

Energy-Related:

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

Area-Related:

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

[9] "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 34.

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[10] According to the "User Entered Comments & Non-Default Data" table, the justification provided for the energy-related operational mitigation measure is:

> "Anticipated on-site renewable energy production (kWh/year): ~7,500,000 kWh" (Appendix A, pp. 263, 413, 428, 537).

However, the inclusion of the above-mentioned operational mitigation measures remains unsupported for two reasons.

First, the "User Entered Comments & Non-Default Data" table fails to provide a justification for area-related operational mitigation measures. Furthermore, the IS/MND fails to mention or explicitly require the Project use low VOC paint or electric landscape equipment. As such, we cannot verify that these measures would actually be implemented, monitored, and enforced on the Project site.

Second, while the IS/MND indicates that Phase II would include a ground mount solar PV array, the IS/MND fails to discuss or justify the anticipated amount of on-site renewable energy production whatsoever (p. 2-7). As such, the assumption that the solar PV array would generate 7,500,000 kilowatt hours per year ("kWh/year") is unsubstantiated. Thus, the model may overestimate the amount of on-site renewable energy is generated and, as a result, underestimate the Project's actual electricity demand.

By including several operational mitigation measures without properly committing to their implementation, the models may underestimate the Project's operational emissions and should not be relied upon to determine Project significance.

Updated Analysis Indicates a Potentially Significant Air Quality Impact

In an effort to more accurately estimate the Project's construction-related emissions associated with Phase I and Phase II, we prepared updated CalEEMod models, using the Project-specific information provided by the IS/MND. In our updated models, we included the correct land use types and sizes; proportionately altered the individual construction phase lengths to match the proposed construction duration of 9 months; and omitted the unsubstantiated architectural and area coating emission factors and areas.

Our updated analysis estimates that the Project's construction-related ROG emissions associated with both Phase I and Phase II exceed the applicable SJVAPCD threshold of 100 pounds per day ("lbs/day") (see table below).[11]

[10] "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 1, 14.
[11] "San Joaquin Valley Unified Air Pollution Control District." SCAQMD, June 2012, *available at*: https://www.valleyair.org/transportation/CEQA%20Rules/FYI-329.pdf, p. 1.

SWAPE Criteria Air Pollutant Emissions (Pounds Per Day)		
Construction	**Phase I** **ROG**	**Phase II** **ROG**
SWAPE	370.3	365.7
SJVAPCD Threshold	**100**	**100**
Exceeds?	***Yes***	***Yes***

As you can see in the excerpt above, the Project's Phase I and Phase II construction-related ROG emissions, as estimated by SWAPE, exceed the applicable SJVAPCD significance threshold. Thus, our model demonstrates that the Project would result in a potentially significant air quality impact that was not previously identified or addressed by the IS/MND. As a result, an EIR should be prepared to adequately assess and mitigate the potential air quality impacts that the Project may have on the surrounding environment.

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The IS/MND estimates that the maximum cancer risk posed to nearby, existing sensitive receptors as a result of diesel trucks and diesel-powered Transportation Refrigeration Units ("TRUs") during Project operation would be 3.54 in one million, which would not exceed the SJVAPCD significance threshold of 20 in one million (see excerpt below) (p. 4.6-17, Table 4-5).

Table 4-5: Summary of the Health Impacts from Operations of the Proposed Project

(70-year Scenario)

Exposure Scenario	Maximum Cancer Risk (Risk per Million)	Chronic Non-Cancer Hazard Index
70-Year Exposure at the MER (from DPM Emissions)	$\boxed{3.54}$	0.007
Applicable Threshold of Significance	20	1
Threshold Exceeded?	No	No
Notes: MER = Maximally Exposed Receptor Origo Cold Madera Project Total DPM MER UTM: 758610.13, 4097186.34 Source: Attachment B.		

However, regarding the health risk impacts associated with toxic air contaminant ("TAC") emissions generated during Project construction, the IS/MND states:

> "Project construction would involve the use of diesel-fueled vehicles and equipment that emit DPM, which is considered a TAC. The SJVAPCD's current threshold of significance for TAC emissions is an increase in cancer risk for the maximally exposed individual of 20 in a million (formerly 10 in a million). The SJVAPCD's 2015 GAMAQI does not currently recommend analysis of TAC emissions from project construction activities, but instead focuses on projects with operational emissions that would expose sensitive receptors over a typical lifetime of 70 years.

> In addition, the most intense construction activities of the project's construction would occur during site preparation and grading phases over a short period. There are no conditions unique to the project site that would require more intense construction activity compared to typical development. Examples of situations that would warrant closer scrutiny may include sites that would require extensive excavation and hauling due to existing site conditions. Building construction typically requires limited amounts of diesel equipment relative to site clearing activities" (p. 4-16).

As demonstrated above, the IS/MND concludes that the Project would result in a less-than-significant construction-related health risk impact because SJVAPCD's 2015 GAMAQI only focuses on operational emissions and the Project site does not require closer scrutiny. However, the IS/MND's evaluation of the Project's potential health risk impacts, as well as the subsequent less-than-significant impact conclusion, is incorrect for three reasons.

First, by failing to prepare a quantified construction HRA, the Project is inconsistent with CEQA's requirement to correlate the increase in emissions that the Project would generate to the adverse impacts on human health caused by those emissions.[12] This is incorrect, as construction of each phase of the proposed Project will produce emissions of diesel particulate matter ("DPM") through the exhaust stacks of construction equipment over construction schedules of 9 months each (p. 2-8). However, the IS/MND fails to discuss the potential TACs associated with Project construction or evaluate the concentrations at which such pollutants would trigger adverse health effects. Thus, without making a reasonable effort to connect the Project's construction-related TAC emissions to the potential health risks posed to nearby receptors, the Project is inconsistent with CEQA's requirement to correlate the increase in TAC emissions with potential adverse impacts on human health.

Second, the State of California Department of Justice recommends the preparation of a quantitative HRA pursuant to the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California, as well as local air district guidelines.[13] OEHHA released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments* in February 2015, as referenced by the IS/MND (p. 4.3-17).[14] This guidance document describes the types of projects that warrant the preparation of an HRA. The OEHHA document recommends that all short-term projects lasting at least two months be evaluated for cancer risks to nearby sensitive receptors. As the Project's proposed construction duration vastly exceeds the 2-month requirement set forth by OEHHA, it is clear that the Project meets the threshold warranting a quantified construction-related HRA under OEHHA guidance. These recommendations reflect the most recent state health risk policies, and as such, we recommend that an analysis of health

[12] "Sierra Club v. County of Fresno." Supreme Court of California, December 2018, a*vailable at:* https://ceqaportal.org/decisions/1907/Sierra%20Club%20v.%20County%20of%20Fresno.pdf.

[13] "Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act." State of California Department of Justice, *available at*: https://oag.ca.gov/sites/all/files/agweb/pdfs/environment/warehouse-best-practices.pdf, p. 6.

[14] "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.

risk impacts posed to nearby sensitive receptors from Project-generated construction DPM emissions be included in an EIR for the Project.

Third, while the IS/MND includes a HRA evaluating the health risk impacts to nearby, existing receptors as a result of diesel trucks and diesel-powered TRUs during Project operation, the HRA fails to evaluate the combined lifetime cancer risk to nearby, existing receptors as a result of Project construction and operation together. According to OEHHA guidance, as referenced by the AQ, HRA, & GHG Memo, "the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk at the receptor location" (Appendix A, pp. 167).[15] However, the Project's HRA fails to sum each age bin to evaluate the total cancer risk over the course of the Project's total construction and operation. This is incorrect and thus, an updated analysis should quantify the entirety of the Project's construction and operational health risks together and sum them to compare to the SJVAPCD threshold of 20 in one million, as referenced by the IS/MND (p. 4.6-17, Table 4-5).

Screening-Level Analysis Indicates a Potentially Significant Health Risk Impact

In order to conduct our screening-level risk assessment we relied upon AERSCREEN, which is a screening level air quality dispersion model.[16] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[17] and the California Air Pollution Control Officers Associated ("CAPCOA")[18] 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-related health risk impact to residential sensitive receptors using the annual PM_{10} exhaust estimates from the IS/MND's CalEEMod output files. Consistent with recommendations set forth by OEHHA, we assumed residential exposure begins during the third trimester stage of life. The IS/MND's CalEEMod model indicates that construction activities will generate approximately 526 pounds of DPM over the 742-day construction period.[19] 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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[15] "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

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

[17] OEHHA (February 2015) Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments, https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

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

[19] See Attachment A for calculations.

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{526.0\ lbs}{742\ days} \times \frac{453.6\ grams}{1\ lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.00372\ g/s}$$

Using this equation, we estimated a construction emission rate of 0.00372 grams per second ("g/s"). Construction was simulated as a 30.16-acre rectangular area source in AERSCREEN, with approximate dimensions of 494.07- by 247.04-meters. A release height of three meters was selected to represent the height of stacks of 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 population of Madera was obtained from U.S. 2020 Census data.[20]

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 to be estimated by multiplying the single-hour concentration by 10%.[21] According to the IS/MND, the nearest sensitive receptor is located approximately 50 feet, or 15 meters to the north of the Project site (p. 4-14). However, review of the AERSCREEN output files demonstrates that the maximally exposed receptor is located approximately 250 meters from the Project site. Thus, the single-hour concentration estimated by AERSCREEN for Project construction is approximately 1.592 $\mu g/m^3$ DPM at approximately 250 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.1592 $\mu g/m^3$ for Project construction at the MEIR.

We calculated the excess cancer risk to the MEIR using applicable HRA methodologies prescribed by OEHHA. Consistent with the 742-day construction schedule, the annualized average concentration for Project construction was used for the entire third trimester of pregnancy (0.25 years) and the first 0.75 years of the infantile stage of life (0 – 2 years). The IS/MND's operational cancer risk accounts for the remainder of the 30-year exposure period, which includes the remaining 1.25 years of the infantile stage of life, the entire child stage of life (2 – 16 years), and the entire the adult stage of life (16 – 30 years).

Consistent with OEHHA guidance, as recommended by SJVAPCD and referenced by the IS/MND, we used Age Sensitivity Factors ("ASF(s)") to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution (Appendix A, pp. 167). [22] According to this guidance, the quantified cancer risk should be multiplied by a factor of ten during the third trimester of pregnancy and during the first two years of life (infant). Furthermore, in accordance with guidance set forth by OEHHA, we used the 95th percentile breathing rates for infants.[23] Finally, according to SJVAPCD guidance, we used a

[20] "Madera." U.S. Census Bureau, 2020, *available at:* https://datacommons.org/place/geoId/0645022.
[21] U.S. EPA (October 1992) Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised, http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf.
[22] "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. 8, 20, 24.
[23] SCAQMD (Jun 2015) Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act, p. 19, http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588-risk-assessment-guidelines.pdf?sfvrsn=6; *see also* OEHHA (Feb 2015) Risk Assessment Guidelines Guidance

Fraction of Time At Home (FAH) Value of 0.85 for the 3rd trimester and infant receptors. [24] 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 Maximally Exposed Individual at an Existing Residential Receptor

Age Group	Emissions Source	Duration (years)	Concentration (ug/m3)	Breathing Rate (L/kg-day)	Cancer Risk (without ASFs*)	ASF	Cancer Risk (with ASFs*)
3rd Trimester	Construction	0.25	0.1592	361	1.84E-07	10	**1.84E-06**
	Construction	*1.78*	*0.1592*	*1090*	*3.963E-06*		
	Operation	*0.22*	*	*1090*	*		
Infant (Age 0 - 2)	Total	2			3.963E-06	10	**3.963E-05**
Child (Age 2 - 16)	Operation	14	*	572	*	3	*
Adult (Age 16 - 30)	Operation	14	*	261	*	1	*
Lifetime		**30**			**4.147E-06**		**4.147E-05**

* Cancer risk calculated separately in the IS/MND.

As demonstrated in the table above, the excess cancer risks for the 3rd trimester of pregnancy and infants at the MEIR located approximately 250 meters away, over the course of Project construction, utilizing ASFs, are approximately 1.84 and 39.63 in one million, respectively. The excess cancer risk associated with Project construction over the course of a residential lifetime (30 years), utilizing ASFs, is approximately 41.47 in one million. When summing the Project's construction-related cancer risk, as estimated by SWAPE, with the IS/MND's operational cancer risk of 3.54 in one million, we estimate an excess cancer risk of approximately 45.01 in one million over the course of a residential lifetime (p. 4.6-17, Table 4-5).[25] As such, the infant and lifetime cancer risks exceed the SJVAPCD threshold of 20 in one million, thus resulting in a potentially significant 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. The purpose of the screening-level

Manual for Preparation of Health Risk Assessments, https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

[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. 11.

[25] Calculated: 41.47 in one million + 3.54 in one million = 45.01 in one million.

construction and operational HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. Our screening-level HRA demonstrates that construction and operation of the Project could result in a potentially significant health risk impact, when correct exposure assumptions and up-to-date, applicable guidance are used. Thus, an EIR should be prepared, including a 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 estimates that the Project would generate net annual greenhouse gas ("GHG") emissions of 10,213- and 3,786-metric tons of carbon dioxide equivalents per year ("MT CO_2e/year") without and with regulations and design features, respectively, during the buildout year of 2023 (see excerpt below) (p. 4-50, Table 4-10).

Table 4-10: Unmitigated Project Operational GHG Emissions (Buildout Year Scenario)

Emission Source	Emissions (MT CO_2e per year)	
	Business as Usual Total Emissions (MT CO_2e per year)	Buildout Year (2023) Total Emissions with Regulations and Design Features (MT CO_2e per year)
Area	0.01	0.01
Energy	3,921	492
Mobile (Passenger Vehicles)	1,302	950
Mobile (Trucks)	2,102	1,589
Fugitive Refrigerants	2,249	241
Waste	238	238
Water	343	218
Amortized Construction Emissions	58	58
Total	10,213	3,786
Reduction from BAU		6,427
Percent Reduction		62.9%
SJVAPCD Significance Threshold (Shown for Informational Proposes Only)		29%

MT CO_2e = metric tons of carbon dioxide equivalent.
Totals were calculated using unrounded emissions; totals may not appear to sum exactly due to rounding.
The project achieves the SJVAPCD 29 percent reduction from BAU threshold, and the 21.7 percent required to show consistency with AB 32 targets.
Source of SJVAPCD Significance Threshold: San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Final Draft Guidance for Assessing and Mitigating Air Quality Impacts. Website: https://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF. Accessed February 6, 2022.
Source of Business as Usual Emissions: CalEEMod output for the buildout year BAU scenario (see Attachment A).
Source of Buildout Year Emissions: CalEEMod output for the year 2023 (Attachment A).

Furthermore, the IS/MND estimates that the Project would generate net annual GHG emissions of 10,190- and 3,321-MT CO_2e/year without and with regulations and design features, respectively, during the buildout year of 2030 (see excerpt below) (p. 4-51, Table 4-11).

Table 4-11: Unmitigated Project Operational GHG Emissions (Year 2030 Scenario)

Emission Source	Emissions (MT CO_2e per year) Business as Usual Total Emissions (MT CO_2e per year)	2030 Year Total Emissions with Regulations and Design Features (MT CO_2e per year)
Area	0.01	0.01
Energy	3,921	445
Mobile (Passenger Vehicles)	1,279	766
Mobile (Trucks)	2,102	1,361
Fugitive Refrigerants	2,249	241
Waste	238	238
Water	343	212
Amortized Construction Emissions	58	58
Total	10,190	3,321
Reduction from BAU		6,868
Percent Reduction		67.4%
Significance Threshold (Shown for Informational Purposes Only)		29%

MT CO_2e = metric tons of carbon dioxide equivalent.
Totals were calculated using unrounded emissions; totals may not appear to sum exactly due to rounding.
Source of Business-as-Usual Emissions: CalEEMod output for 2030 BAU scenario (see Attachment A).
Source of 2030 Emissions: CalEEMod output for the year 2030 (Attachment A).

As such, the IS/MND concludes:

> "As shown in Table 4-10 and Table 4-11, the Project would achieve a 62.9 percent reduction from BAU at project buildout (2023) and 67.4 percent reduction from BAU by the year 2030 with adopted regulations and design features incorporated. This is above the 29 percent reduction required by the SJVAPCD threshold, and the required 21.7 percent average reduction from all GHG emission sources to meet the AB 32 targets. The CARB originally identified a reduction of 29 percent from business as usual as needed to achieve AB 32 targets. The 2008 recession and slower growth in the years since 2008 have reduced the growth forecasted for 2020 and the amount needed to be reduced to achieve 1990 levels as required by AB 32; the target was revised to 21.7 percent" (p. 4-51).

As demonstrated above, the Project commits to meeting the SJVAPDC threshold of reducing Project-generated GHG emissions by 29% from BAU emissions. Furthermore, the IS/MND's analysis relies upon the Project's consistency with the CARB's Adopted Scoping Plans and the GHG Reduction Goals for 2050 under Executive Order S-3-05 to conclude that the Project would result in a less-than-significant GHG impact (p. 4.8-7 - 4.8-14). However, the IS/MND's analysis, as well as the subsequent less-than-significant impact conclusion, is incorrect for two reasons.

(1) The IS/MND's quantitative GHG analysis relies upon an incorrect and unsubstantiated air model; and
(2) The IS/MND's qualitative GHG analysis relies upon unsubstantiated reduction measures.

1) *Incorrect and Unsubstantiated Quantitative Analysis of Emissions*

As previously stated, IS/MND estimates that the Project would generate net annual GHG emissions of 10,213- and 3,786-MT CO_2e/year without and with regulations and design features, respectively, during the buildout year of 2023, and net annual GHG emissions of 10,190- and 3,321-MT CO_2e/year without and with regulations and design features, respectively, during the buildout year of 2030 (p. 4-50, Table 4-10; p. 4-51, Table 4-11). However, the IS/MND's quantitative GHG analysis is unsubstantiated. As previously discussed, when we reviewed the Project's CalEEMod output files, provided in the AQ, HRA, & GHG Memo Report as Appendix A to the IS/MND, we found that several of the values inputted into the model are not consistent with information disclosed in the IS/MND. As a result, the model underestimates the Project's emissions, and the IS/MND's quantitative GHG analysis should not be relied upon to determine Project significance. An EIR should be prepared that adequately assesses the potential GHG impacts that construction and operation of the proposed Project may have on the surrounding environment.

2) *Incorrect Reliance on GHG Reduction Measures*

As previously stated, IS/MND estimates that the Project would generate net annual GHG emissions of 10,213- and 3,786-MT CO_2e/year without and with regulations and design features, respectively, during the buildout year of 2023, and net annual GHG emissions of 10,190- and 3,321-MT CO_2e/year without and with regulations and design features, respectively, during the buildout year of 2030 (p. 4-50, Table 4-10; p. 4-51, Table 4-11). Regarding the GHG emissions reductions, the IS/MND states:

> "Accordingly, taking into account the proposed project's design features and the progress being made by the State towards reducing emissions in key sectors such as transportation, industry, and electricity, the proposed project would be consistent with State GHG Plans and would further the State's goals of reducing GHG emissions 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050, and does not obstruct their attainment" (p. 4-54).

However, the Project's use of GHG reduction features is unsupported, as none of the purported Project Design Features ("PDFs") are formally included as mitigation measures. This incorrect, as AEP guidance states:

> "While not 'mitigation', a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact."[26]

As demonstrated in the excerpt above, PDFs that are not formally included as mitigation measures may be eliminated from the Project's design altogether. Thus, as the Project's GHG reduction design features

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

are not formally included as mitigation measures, we cannot guarantee that they would be implemented, monitored, and enforced on the Project site. As such, the IS/MND underestimates the Project's GHG emissions reduction, and the less-than-significant GHG impact conclusion is unsubstituted.

Feasible Mitigation Measures Available to Reduce Emissions

Our analysis demonstrates that the Project would result in potentially significant air quality and health risk impacts that should be mitigated further. In an effort to reduce the Project's emissions, we identified several mitigation measures that are applicable to the proposed Project. Feasible mitigation measures can be found in the Department of Justice Warehouse Project Best Practices document.[27] Therefore, to reduce the Project's emissions, consideration of the following measures should be made:

- Requiring off-road construction equipment to be zero-emission, where available, and all diesel-fueled off-road construction equipment, to be equipped with CARB Tier IV-compliant engines or better, and including this requirement in applicable bid documents, purchase orders, and contracts, with successful contractors demonstrating the ability to supply the compliant construction equipment for use prior to any ground-disturbing and construction activities.
- Prohibiting off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day.
- Requiring on-road heavy-duty haul trucks to be model year 2010 or newer if diesel-fueled.
- Providing electrical hook ups to the power grid, rather than use of diesel-fueled generators, for electric construction tools, such as saws, drills and compressors, and using electric tools whenever feasible.
- Limiting the amount of daily grading disturbance area.
- Prohibiting grading on days with an Air Quality Index forecast of greater than 100 for particulates or ozone for the project area.
- Forbidding idling of heavy equipment for more than two minutes.
- Keeping onsite and furnishing to the lead agency or other regulators upon request, all equipment maintenance records and data sheets, including design specifications and emission control tier classifications.
- Conducting an on-site inspection to verify compliance with construction mitigation and to identify other opportunities to further reduce construction impacts.
- Using paints, architectural coatings, and industrial maintenance coatings that have volatile organic compound levels of less than 10 g/L.
- Providing information on transit and ridesharing programs and services to construction employees.
- Providing meal options onsite or shuttles between the facility and nearby meal destinations for construction employees.

[27] "Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act." State of California Department of Justice.

- Requiring that all facility-owned and operated fleet equipment with a gross vehicle weight rating greater than 14,000 pounds accessing the site meet or exceed 2010 model-year emissions equivalent engine standards as currently defined in California Code of Regulations Title 13, Division 3, Chapter 1, Article 4.5, Section 2025. Facility operators shall maintain records on-site demonstrating compliance with this requirement and shall make records available for inspection by the local jurisdiction, air district, and state upon request.
- Requiring all heavy-duty vehicles entering or operated on the project site to be zero-emission beginning in 2030.
- Requiring on-site equipment, such as forklifts and yard trucks, to be electric with the necessary electrical charging stations provided.
- Requiring tenants to use zero-emission light- and medium-duty vehicles as part of business operations.
- Forbidding trucks from idling for more than two minutes and requiring operators to turn off engines when not in use.
- Posting both interior- and exterior-facing signs, including signs directed at all dock and delivery areas, identifying idling restrictions and contact information to report violations to CARB, the air district, and the building manager.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, air filtration systems at sensitive receptors within a certain radius of facility for the life of the project.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, an air monitoring station proximate to sensitive receptors and the facility for the life of the project, and making the resulting data publicly available in real time. While air monitoring does not mitigate the air quality or greenhouse gas impacts of a facility, it nonetheless benefits the affected community by providing information that can be used to improve air quality or avoid exposure to unhealthy air.
- Constructing electric truck charging stations proportional to the number of dock doors at the project.
- Constructing electric plugs for electric transport refrigeration units at every dock door, if the warehouse use could include refrigeration.
- Constructing electric light-duty vehicle charging stations proportional to the number of parking spaces at the project.
- Installing solar photovoltaic systems on the project site of a specified electrical generation capacity, such as equal to the building's projected energy needs.
- Requiring all stand-by emergency generators to be powered by a non-diesel fuel.
- Requiring facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks.
- Requiring operators to establish and promote a rideshare program that discourages single-occupancy vehicle trips and provides financial incentives for alternate modes of transportation, including carpooling, public transit, and biking.

- Meeting CalGreen Tier 2 green building standards, including all provisions related to designated parking for clean air vehicles, electric vehicle charging, and bicycle parking.
- Achieving certification of compliance with LEED green building standards.
- Providing meal options onsite or shuttles between the facility and nearby meal destinations.
- Posting signs at every truck exit driveway providing directional information to the truck route.
- Improving and maintaining vegetation and tree canopy for residents in and around the project area.
- Requiring that every tenant train its staff in charge of keeping vehicle records in diesel technologies and compliance with CARB regulations, by attending CARB approved courses. Also require facility operators to maintain records on-site demonstrating compliance and make records available for inspection by the local jurisdiction, air district, and state upon request.
- Requiring tenants to enroll in the United States Environmental Protection Agency's SmartWay program, and requiring tenants to use carriers that are SmartWay carriers.
- Providing tenants with information on incentive programs, such as the Carl Moyer Program and Voucher Incentive Program, to upgrade their fleets.

These measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduce emissions released during Project construction and operation. An EIR should be prepared to include all feasible mitigation measures, as well as include updated air quality and health risk analyses to ensure that the necessary mitigation measures are implemented to reduce emissions to below thresholds. The EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's significant emissions are reduced to the maximum extent possible.

Disclaimer

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

Sincerely,

M Hagemann

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

Paul Rosenfeld

Paul E. Rosenfeld, Ph.D.

Attachment A: CalEEMod Output Files
Attachment B: Health Risk Calculations
Attachment C: AERSCREEN Output Files
Attachment D: Matt Hagemann CV
Attachment E: Paul E. Rosenfeld CV

Attachment A

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Origo Cold Madera - Phase 1 Unmitigated Construction

Madera County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	254.02	1000sqft	5.83	247,812.00	0
General Office Building	6.20	1000sqft	0.14	6,204.00	0
Other Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0
Other Non-Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0
Parking Lot	6.17	Acre	6.17	268,765.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/MND's model.

Land Use - See SWAPE comment regarding "Failure to Model All Proposed Land Uses."

Construction Phase - See SWAPE comment regarding "Incorrect Construction Schedule." See Attachment A for calculations.

Off-road Equipment - Consistent with changes in the IS/MND's model.

Off-road Equipment -

Grading -

Trips and VMT - Consistent with changes in the IS/MND's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Areas."

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

Construction Off-road Equipment Mitigation - Consistent with the IS/MND's model.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	300.00	155.00
tblConstructionPhase	NumDays	30.00	16.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	9/15/2023	1/2/2023
tblConstructionPhase	PhaseEndDate	7/21/2023	12/5/2022
tblConstructionPhase	PhaseEndDate	5/27/2022	5/2/2022
tblConstructionPhase	PhaseEndDate	8/18/2023	12/19/2022
tblConstructionPhase	PhaseEndDate	4/15/2022	4/8/2022
tblConstructionPhase	PhaseStartDate	8/19/2023	12/20/2022
tblConstructionPhase	PhaseStartDate	5/28/2022	5/3/2022
tblConstructionPhase	PhaseStartDate	4/16/2022	4/9/2022
tblConstructionPhase	PhaseStartDate	7/22/2023	12/6/2022
tblLandUse	LandUseSquareFeet	254,020.00	247,812.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.50
tblOffRoadEquipment	UsageHours	8.00	7.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	7.00	6.60

tblOffRoadEquipment	UsageHours	8.00	6.30
tblTripsAndVMT	HaulingTripNumber	0.00	54.00
tblTripsAndVMT	HaulingTripNumber	0.00	56.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	2.0273	2.8889	3.1739	7.4400e-003	0.3525	0.1256	0.4781	0.1169	0.1178	0.2347	0.0000	668.4712	668.4712	0.0943	0.0302	679.8317
2023	0.1851	8.1000e-004	1.7000e-003	0.0000	2.3000e-004	4.0000e-005	2.7000e-004	6.0000e-005	4.0000e-005	1.0000e-004	0.0000	0.3544	0.3544	1.0000e-005	1.0000e-005	0.3583
Maximum	**2.0273**	**2.8889**	**3.1739**	**7.4400e-003**	**0.3525**	**0.1256**	**0.4781**	**0.1169**	**0.1178**	**0.2347**	**0.0000**	**668.4712**	**668.4712**	**0.0943**	**0.0302**	**679.8317**

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					
2022	2.0273	2.8889	3.1739	7.4400e-003	0.3525	0.1256	0.4781	0.1169	0.1178	0.2347	0.0000	668.4708	668.4708	0.0943	0.0302	679.8313
2023	0.1851	8.1000e-004	1.7000e-003	0.0000	2.3000e-004	4.0000e-005	2.7000e-004	6.0000e-005	4.0000e-005	1.0000e-004	0.0000	0.3544	0.3544	1.0000e-005	1.0000e-005	0.3583
Maximum	**2.0273**	**2.8889**	**3.1739**	**7.4400e-003**	**0.3525**	**0.1256**	**0.4781**	**0.1169**	**0.1178**	**0.2347**	**0.0000**	**668.4708**	**668.4708**	**0.0943**	**0.0302**	**679.8313**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	**3-7-2022**	**6-6-2022**	0.9028	0.9028
2	**6-7-2022**	**9-6-2022**	1.1520	1.1520
3	**9-7-2022**	**12-6-2022**	1.1408	1.1408
4	**12-7-2022**	**3-6-2023**	1.9290	1.9290
		Highest	1.9290	1.9290

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	1.2031	2.0000e-005	2.4800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8100e-003	4.8100e-003	1.0000e-005	0.0000	5.1300e-003
Energy	6.3000e-004	5.7500e-003	4.8300e-003	3.0000e-005		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	590.0414	590.0414	0.0946	0.0116	595.8512
Mobile	0.0258	0.0424	0.2204	4.6000e-004	0.0410	4.7000e-004	0.0414	0.0110	4.4000e-004	0.0114	0.0000	42.8330	42.8330	2.6600e-003	2.5700e-003	43.6660
Waste						0.0000	0.0000		0.0000	0.0000	49.6414	0.0000	49.6414	2.9337	0.0000	122.9846
Water						0.0000	0.0000		0.0000	0.0000	18.9858	30.1794	49.1652	1.9549	0.0466	111.9353
Total	**1.2294**	**0.0482**	**0.2277**	**4.9000e-004**	**0.0410**	**9.2000e-004**	**0.0419**	**0.0110**	**8.9000e-004**	**0.0119**	**68.6272**	**663.0586**	**731.6858**	**4.9859**	**0.0608**	**874.4421**

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	1.2031	2.0000e-005	2.4800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8100e-003	4.8100e-003	1.0000e-005	0.0000	5.1300e-003
Energy	6.3000e-004	5.7500e-003	4.8300e-003	3.0000e-005		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	590.0414	590.0414	0.0946	0.0116	595.8512
Mobile	0.0258	0.0424	0.2204	4.6000e-004	0.0410	4.7000e-004	0.0414	0.0110	4.4000e-004	0.0114	0.0000	42.8330	42.8330	2.6600e-003	2.5700e-003	43.6660
Waste						0.0000	0.0000		0.0000	0.0000	49.6414	0.0000	49.6414	2.9337	0.0000	122.9846
Water						0.0000	0.0000		0.0000	0.0000	18.9858	30.1794	49.1652	1.9549	0.0466	111.9353
Total	**1.2294**	**0.0482**	**0.2277**	**4.9000e-004**	**0.0410**	**9.2000e-004**	**0.0419**	**0.0110**	**8.9000e-004**	**0.0119**	**68.6272**	**663.0586**	**731.6858**	**4.9859**	**0.0608**	**874.4421**

	ROG	NOx	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	4/2/2022	4/8/2022	5	5	
2	Grading	Grading	4/9/2022	5/2/2022	5	16	
3	Building Construction	Building Construction	5/3/2022	12/5/2022	5	155	

4	Paving	Paving	12/6/2022	12/19/2022	5	10	
5	Architectural Coating	Architectural Coating	12/20/2022	1/2/2023	5	10	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 48

Acres of Paving: 9.17

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 381,024; Non-Residential Outdoor: 127,008; Striped Parking Area: 23,967 (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
Building Construction	Cranes	2	5.50	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	5	7.60	89	0.20
Building Construction	Generator Sets	2	6.30	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	5	6.60	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	2	6.30	46	0.45

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	54.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	56.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	274.00	107.00	32.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	55.00	4.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3599	8.3599	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0491**	**4.0300e-003**	**0.0532**	**0.0253**	**3.7100e-003**	**0.0290**	**0.0000**	**8.3599**	**8.3599**	**2.7000e-003**	**0.0000**	**8.4274**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	4.0900e-003	8.0000e-004	2.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.5721	1.5721	0.0000	2.5000e-004	1.6459
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	1.7000e-004	1.2000e-004	1.3800e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3078	0.3078	1.0000e-005	1.0000e-005	0.3109
Total	**2.7000e-004**	**4.2100e-003**	**2.1800e-003**	**2.0000e-005**	**8.2000e-004**	**4.0000e-005**	**8.6000e-004**	**2.3000e-004**	**4.0000e-005**	**2.7000e-004**	**0.0000**	**1.8799**	**1.8799**	**1.0000e-005**	**2.6000e-004**	**1.9568**

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					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3598	8.3598	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0491**	**4.0300e-003**	**0.0532**	**0.0253**	**3.7100e-003**	**0.0290**	**0.0000**	**8.3598**	**8.3598**	**2.7000e-003**	**0.0000**	**8.4274**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	4.0900e-003	8.0000e-004	2.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.5721	1.5721	0.0000	2.5000e-004	1.6459
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	1.7000e-004	1.2000e-004	1.3800e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3078	0.3078	1.0000e-005	1.0000e-005	0.3109
Total	**2.7000e-004**	**4.2100e-003**	**2.1800e-003**	**2.0000e-005**	**8.2000e-004**	**4.0000e-005**	**8.6000e-004**	**2.3000e-004**	**4.0000e-005**	**2.7000e-004**	**0.0000**	**1.8799**	**1.8799**	**1.0000e-005**	**2.6000e-004**	**1.9568**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0736	0.0000	0.0736	0.0292	0.0000	0.0292	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0290	0.3108	0.2323	5.0000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	43.6277	43.6277	0.0141	0.0000	43.9804
Total	**0.0290**	**0.3108**	**0.2323**	**5.0000e-004**	**0.0736**	**0.0131**	**0.0867**	**0.0292**	**0.0120**	**0.0413**	**0.0000**	**43.6277**	**43.6277**	**0.0141**	**0.0000**	**43.9804**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	4.2400e-003	8.3000e-004	2.0000e-005	4.8000e-004	4.0000e-005	5.2000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.6303	1.6303	1.0000e-005	2.6000e-004	1.7068
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	6.0000e-004	4.1000e-004	4.8900e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0943	1.0943	4.0000e-005	3.0000e-005	1.1056
Total	**7.1000e-004**	**4.6500e-003**	**5.7200e-003**	**3.0000e-005**	**1.7500e-003**	**5.0000e-005**	**1.8000e-003**	**4.7000e-004**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**2.7246**	**2.7246**	**5.0000e-005**	**2.9000e-004**	**2.8124**

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					0.0736	0.0000	0.0736	0.0292	0.0000	0.0292	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0290	0.3108	0.2323	5.0000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	43.6276	43.6276	0.0141	0.0000	43.9804
Total	**0.0290**	**0.3108**	**0.2323**	**5.0000e-004**	**0.0736**	**0.0131**	**0.0867**	**0.0292**	**0.0120**	**0.0413**	**0.0000**	**43.6276**	**43.6276**	**0.0141**	**0.0000**	**43.9804**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	4.2400e-003	8.3000e-004	2.0000e-005	4.8000e-004	4.0000e-005	5.2000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.6303	1.6303	1.0000e-005	2.6000e-004	1.7068
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	6.0000e-004	4.1000e-004	4.8900e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0943	1.0943	4.0000e-005	3.0000e-005	1.1056
Total	**7.1000e-004**	**4.6500e-003**	**5.7200e-003**	**3.0000e-005**	**1.7500e-003**	**5.0000e-005**	**1.8000e-003**	**4.7000e-004**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**2.7246**	**2.7246**	**5.0000e-005**	**2.9000e-004**	**2.8124**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2083	1.9059	1.9975	3.2900e-003		0.0988	0.0988		0.0929	0.0929	0.0000	282.7885	282.7885	0.0677	0.0000	284.4821
Total	**0.2083**	**1.9059**	**1.9975**	**3.2900e-003**		**0.0988**	**0.0988**		**0.0929**	**0.0929**	**0.0000**	**282.7885**	**282.7885**	**0.0677**	**0.0000**	**284.4821**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-005	2.4200e-003	4.7000e-004	1.0000e-005	2.7000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	0.9316	0.9316	0.0000	1.5000e-004	0.9753
Vendor	0.0194	0.4576	0.1452	1.7600e-003	0.0548	5.2000e-003	0.0600	0.0159	4.9800e-003	0.0208	0.0000	168.3813	168.3813	9.9000e-004	0.0247	175.7680
Worker	0.0795	0.0547	0.6495	1.5800e-003	0.1691	1.0800e-003	0.1702	0.0450	9.9000e-004	0.0460	0.0000	145.2360	145.2360	5.2600e-003	4.5700e-003	146.7292
Total	**0.0989**	**0.5147**	**0.7951**	**3.3500e-003**	**0.2242**	**6.3000e-003**	**0.2306**	**0.0609**	**5.9900e-003**	**0.0669**	**0.0000**	**314.5489**	**314.5489**	**6.2500e-003**	**0.0294**	**323.4725**

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	0.2083	1.9059	1.9975	3.2900e-003		0.0988	0.0988		0.0929	0.0929	0.0000	282.7882	282.7882	0.0677	0.0000	284.4817
Total	**0.2083**	**1.9059**	**1.9975**	**3.2900e-003**		**0.0988**	**0.0988**		**0.0929**	**0.0929**	**0.0000**	**282.7882**	**282.7882**	**0.0677**	**0.0000**	**284.4817**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-005	2.4200e-003	4.7000e-004	1.0000e-005	2.7000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	0.9316	0.9316	0.0000	1.5000e-004	0.9753
Vendor	0.0194	0.4576	0.1452	1.7600e-003	0.0548	5.2000e-003	0.0600	0.0159	4.9800e-003	0.0208	0.0000	168.3813	168.3813	9.9000e-004	0.0247	175.7680
Worker	0.0795	0.0547	0.6495	1.5800e-003	0.1691	1.0800e-003	0.1702	0.0450	9.9000e-004	0.0460	0.0000	145.2360	145.2360	5.2600e-003	4.5700e-003	146.7292
Total	**0.0989**	**0.5147**	**0.7951**	**3.3500e-003**	**0.2242**	**6.3000e-003**	**0.2306**	**0.0609**	**5.9900e-003**	**0.0669**	**0.0000**	**314.5489**	**314.5489**	**6.2500e-003**	**0.0294**	**323.4725**

3.5 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5100e-003	0.0556	0.0729	1.1000e-004		2.8400e-003	2.8400e-003		2.6100e-003	2.6100e-003	0.0000	10.0138	10.0138	3.2400e-003	0.0000	10.0948
Paving	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0156**	**0.0556**	**0.0729**	**1.1000e-004**		**2.8400e-003**	**2.8400e-003**		**2.6100e-003**	**2.6100e-003**	**0.0000**	**10.0138**	**10.0138**	**3.2400e-003**	**0.0000**	**10.0948**

3.5 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	9.1000e-004	1.8000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3494	0.3494	0.0000	5.0000e-005	0.3658
Vendor	5.0000e-005	1.1000e-003	3.5000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4061	0.4061	0.0000	6.0000e-005	0.4239
Worker	2.8000e-004	1.9000e-004	2.2900e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5130	0.5130	2.0000e-005	2.0000e-005	0.5182
Total	**3.5000e-004**	**2.2000e-003**	**2.8200e-003**	**1.0000e-005**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**2.3000e-004**	**2.0000e-005**	**2.5000e-004**	**0.0000**	**1.2684**	**1.2684**	**2.0000e-005**	**1.3000e-004**	**1.3079**

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	5.5100e-003	0.0556	0.0729	1.1000e-004		2.8400e-003	2.8400e-003		2.6100e-003	2.6100e-003	0.0000	10.0138	10.0138	3.2400e-003	0.0000	10.0947
Paving	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0156**	**0.0556**	**0.0729**	**1.1000e-004**		**2.8400e-003**	**2.8400e-003**		**2.6100e-003**	**2.6100e-003**	**0.0000**	**10.0138**	**10.0138**	**3.2400e-003**	**0.0000**	**10.0947**

3.5 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	9.1000e-004	1.8000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3494	0.3494	0.0000	5.0000e-005	0.3658
Vendor	5.0000e-005	1.1000e-003	3.5000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4061	0.4061	0.0000	6.0000e-005	0.4239
Worker	2.8000e-004	1.9000e-004	2.2900e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5130	0.5130	2.0000e-005	2.0000e-005	0.5182
Total	**3.5000e-004**	**2.2000e-003**	**2.8200e-003**	**1.0000e-005**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**2.3000e-004**	**2.0000e-005**	**2.5000e-004**	**0.0000**	**1.2684**	**1.2684**	**2.0000e-005**	**1.3000e-004**	**1.3079**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6644					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	6.3400e-003	8.1600e-003	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	1.1490	1.1490	7.0000e-005	0.0000	1.1508
Total	**1.6654**	**6.3400e-003**	**8.1600e-003**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**1.1490**	**1.1490**	**7.0000e-005**	**0.0000**	**1.1508**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.4000e-004	3.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0524	0.0524	0.0000	1.0000e-005	0.0549
Vendor	4.0000e-005	9.9000e-004	3.2000e-004	0.0000	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.3655	0.3655	0.0000	5.0000e-005	0.3815
Worker	9.3000e-004	6.4000e-004	7.5700e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9800e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.6928	1.6928	6.0000e-005	5.0000e-005	1.7102
Total	**9.7000e-004**	**1.7700e-003**	**7.9200e-003**	**2.0000e-005**	**2.1100e-003**	**2.0000e-005**	**2.1300e-003**	**5.5000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**2.1107**	**2.1107**	**6.0000e-005**	**1.1000e-004**	**2.1466**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6644					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	6.3400e-003	8.1600e-003	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	1.1490	1.1490	7.0000e-005	0.0000	1.1508
Total	**1.6654**	**6.3400e-003**	**8.1600e-003**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**1.1490**	**1.1490**	**7.0000e-005**	**0.0000**	**1.1508**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.4000e-004	3.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0524	0.0524	0.0000	1.0000e-005	0.0549
Vendor	4.0000e-005	9.9000e-004	3.2000e-004	0.0000	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.3655	0.3655	0.0000	5.0000e-005	0.3815
Worker	9.3000e-004	6.4000e-004	7.5700e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9800e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.6928	1.6928	6.0000e-005	5.0000e-005	1.7102
Total	**9.7000e-004**	**1.7700e-003**	**7.9200e-003**	**2.0000e-005**	**2.1100e-003**	**2.0000e-005**	**2.1300e-003**	**5.5000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**2.1107**	**2.1107**	**6.0000e-005**	**1.1000e-004**	**2.1466**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1849					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0000e-004	6.5000e-004	9.1000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**0.1850**	**6.5000e-004**	**9.1000e-004**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.5800e-003	5.5800e-003	0.0000	0.0000	5.8500e-003
Vendor	0.0000	9.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0391	0.0391	0.0000	1.0000e-005	0.0408
Worker	9.0000e-005	6.0000e-005	7.7000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1820	0.1820	1.0000e-005	1.0000e-005	0.1838
Total	**9.0000e-005**	**1.6000e-004**	**8.0000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.3000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2267**	**0.2267**	**1.0000e-005**	**2.0000e-005**	**0.2305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1849					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0000e-004	6.5000e-004	9.1000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**0.1850**	**6.5000e-004**	**9.1000e-004**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.5800e-003	5.5800e-003	0.0000	0.0000	5.8500e-003
Vendor	0.0000	9.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0391	0.0391	0.0000	1.0000e-005	0.0408
Worker	9.0000e-005	6.0000e-005	7.7000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1820	0.1820	1.0000e-005	1.0000e-005	0.1838
Total	**9.0000e-005**	**1.6000e-004**	**8.0000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.3000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2267**	**0.2267**	**1.0000e-005**	**2.0000e-005**	**0.2305**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive 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	0.0258	0.0424	0.2204	4.6000e-004	0.0410	4.7000e-004	0.0414	0.0110	4.4000e-004	0.0114	0.0000	42.8330	42.8330	2.6600e-003	2.5700e-003	43.6660
Unmitigated	0.0258	0.0424	0.2204	4.6000e-004	0.0410	4.7000e-004	0.0414	0.0110	4.4000e-004	0.0114	0.0000	42.8330	42.8330	2.6600e-003	2.5700e-003	43.6660

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	60.43	13.71	4.34	109,310	109,310
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	60.43	13.71	4.34	109,310	109,310

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 Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Refrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Other Asphalt Surfaces	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Other Non-Asphalt Surfaces	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Parking Lot	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Refrigerated Warehouse-No Rail	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972

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	583.7804	583.7804	0.0944	0.0115	589.5529
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	583.7804	583.7804	0.0944	0.0115	589.5529
NaturalGas Mitigated	6.3000e-004	5.7500e-003	4.8300e-003	3.0000e-005		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	6.2610	6.2610	1.2000e-004	1.1000e-004	6.2983
NaturalGas Unmitigated	6.3000e-004	5.7500e-003	4.8300e-003	3.0000e-005		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	6.2610	6.2610	1.2000e-004	1.1000e-004	6.2983

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 Office Building	80155.7	4.3000e-004	3.9300e-003	3.3000e-003	2.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	4.2774	4.2774	8.0000e-005	8.0000e-005	4.3028
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	37171.8	2.0000e-004	1.8200e-003	1.5300e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	1.9836	1.9836	4.0000e-005	4.0000e-005	1.9954
Total		**6.3000e-004**	**5.7500e-003**	**4.8300e-003**	**3.0000e-005**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**6.2610**	**6.2610**	**1.2000e-004**	**1.2000e-004**	**6.2983**

5.2 Energy by Land Use - NaturalGas

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 Office Building	80155.7	4.3000e-004	3.9300e-003	3.3000e-003	2.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	4.2774	4.2774	8.0000e-005	8.0000e-005	4.3028
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	37171.8	2.0000e-004	1.8200e-003	1.5300e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	1.9836	1.9836	4.0000e-005	4.0000e-005	1.9954
Total		**6.3000e-004**	**5.7500e-003**	**4.8300e-003**	**3.0000e-005**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**6.2610**	**6.2610**	**1.2000e-004**	**1.2000e-004**	**6.2983**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	54843.4	5.0743	8.2000e-004	1.0000e-004	5.1245
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	94067.8	8.7035	1.4100e-003	1.7000e-004	8.7896
Refrigerated Warehouse-No Rail	6.16061e+006	570.0025	0.0922	0.0112	575.6389
Total		**583.7804**	**0.0945**	**0.0115**	**589.5529**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	54843.4	5.0743	8.2000e-004	1.0000e-004	5.1245
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	94067.8	8.7035	1.4100e-003	1.7000e-004	8.7896
Refrigerated Warehouse-No Rail	6.16061e+006	570.0025	0.0922	0.0112	575.6389
Total		**583.7804**	**0.0945**	**0.0115**	**589.5529**

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	1.2031	2.0000e-005	2.4800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8100e-003	4.8100e-003	1.0000e-005	0.0000	5.1300e-003
Unmitigated	1.2031	2.0000e-005	2.4800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8100e-003	4.8100e-003	1.0000e-005	0.0000	5.1300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1849					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3000e-004	2.0000e-005	2.4800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8100e-003	4.8100e-003	1.0000e-005	0.0000	5.1300e-003
Total	**1.2031**	**2.0000e-005**	**2.4800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.8100e-003**	**4.8100e-003**	**1.0000e-005**	**0.0000**	**5.1300e-003**

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	0.1849					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3000e-004	2.0000e-005	2.4800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8100e-003	4.8100e-003	1.0000e-005	0.0000	5.1300e-003
Total	**1.2031**	**2.0000e-005**	**2.4800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.8100e-003**	**4.8100e-003**	**1.0000e-005**	**0.0000**	**5.1300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	49.1652	1.9549	0.0466	111.9353
Unmitigated	49.1652	1.9549	0.0466	111.9353

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	1.10195 / 0.675388	1.1200	0.0360	8.6000e-004	2.2780
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	58.7421 / 0	48.0452	1.9189	0.0458	109.6573
Total		**49.1652**	**1.9549**	**0.0466**	**111.9353**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	1.10195 / 0.675388	1.1200	0.0360	8.6000e-004	2.2780
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	58.7421 / 0	48.0452	1.9189	0.0458	109.6573
Total		**49.1652**	**1.9549**	**0.0466**	**111.9353**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	49.6414	2.9337	0.0000	122.9846
Unmitigated	49.6414	2.9337	0.0000	122.9846

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	5.77	1.1713	0.0692	0.0000	2.9017
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	238.78	48.4702	2.8645	0.0000	120.0828
Total		**49.6414**	**2.9337**	**0.0000**	**122.9846**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	5.77	1.1713	0.0692	0.0000	2.9017
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	238.78	48.4702	2.8645	0.0000	120.0828
Total		**49.6414**	**2.9337**	**0.0000**	**122.9846**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Origo Cold Madera - Phase 1 Unmitigated Construction

Madera County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	254.02	1000sqft	5.83	247,812.00	0
General Office Building	6.20	1000sqft	0.14	6,204.00	0
Other Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0
Other Non-Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0
Parking Lot	6.17	Acre	6.17	268,765.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/MND's model.

Land Use - See SWAPE comment regarding "Failure to Model All Proposed Land Uses."

Construction Phase - See SWAPE comment regarding "Incorrect Construction Schedule." See Attachment A for calculations.

Off-road Equipment - Consistent with changes in the IS/MND's model.

Off-road Equipment -

Grading -

Trips and VMT - Consistent with changes in the IS/MND's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Areas."

Origo Cold Madera - Phase 1 Unmitigated Construction - Madera County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Construction Off-road Equipment Mitigation - Consistent with the IS/MND's model.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	300.00	155.00
tblConstructionPhase	NumDays	30.00	16.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	9/15/2023	1/2/2023
tblConstructionPhase	PhaseEndDate	7/21/2023	12/5/2022
tblConstructionPhase	PhaseEndDate	5/27/2022	5/2/2022
tblConstructionPhase	PhaseEndDate	8/18/2023	12/19/2022
tblConstructionPhase	PhaseEndDate	4/15/2022	4/8/2022
tblConstructionPhase	PhaseStartDate	8/19/2023	12/20/2022
tblConstructionPhase	PhaseStartDate	5/28/2022	5/3/2022
tblConstructionPhase	PhaseStartDate	4/16/2022	4/9/2022
tblConstructionPhase	PhaseStartDate	7/22/2023	12/6/2022
tblLandUse	LandUseSquareFeet	254,020.00	247,812.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.50
tblOffRoadEquipment	UsageHours	8.00	7.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	7.00	6.60

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	UsageHours	8.00	6.30
tblTripsAndVMT	HaulingTripNumber	0.00	54.00
tblTripsAndVMT	HaulingTripNumber	0.00	56.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	370.2981	39.4414	35.9420	0.0851	19.9943	1.6413	21.6245	10.1936	1.5102	11.6941	0.0000	8,431.4854	8,431.4854	1.9507	0.4234	8,584.0739
2023	370.2627	1.6454	3.3894	7.7500e-003	0.4824	0.0748	0.5573	0.1286	0.0746	0.2032	0.0000	768.6425	768.6425	0.0315	0.0273	777.5762
Maximum	**370.2981**	**39.4414**	**35.9420**	**0.0851**	**19.9943**	**1.6413**	**21.6245**	**10.1936**	**1.5102**	**11.6941**	**0.0000**	**8,431.4854**	**8,431.4854**	**1.9507**	**0.4234**	**8,584.0739**

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					
2022	370.2981	39.4414	35.9420	0.0851	19.9943	1.6413	21.6245	10.1936	1.5102	11.6941	0.0000	8,431.4854	8,431.4854	1.9507	0.4234	8,584.0739
2023	370.2627	1.6454	3.3894	7.7500e-003	0.4824	0.0748	0.5573	0.1286	0.0746	0.2032	0.0000	768.6425	768.6425	0.0315	0.0273	777.5762
Maximum	**370.2981**	**39.4414**	**35.9420**	**0.0851**	**19.9943**	**1.6413**	**21.6245**	**10.1936**	**1.5102**	**11.6941**	**0.0000**	**8,431.4854**	**8,431.4854**	**1.9507**	**0.4234**	**8,584.0739**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Energy	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418
Mobile	0.1778	0.3246	1.6693	3.2900e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		335.8314	335.8314	0.0229	0.0213	342.7623
Total	**6.7745**	**0.3563**	**1.7233**	**3.4800e-003**	**0.3064**	**5.9200e-003**	**0.3123**	**0.0819**	**5.7200e-003**	**0.0876**		**373.7074**	**373.7074**	**0.0238**	**0.0220**	**380.8670**

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	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Energy	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418
Mobile	0.1778	0.3246	1.6693	3.2900e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		335.8314	335.8314	0.0229	0.0213	342.7623
Total	**6.7745**	**0.3563**	**1.7233**	**3.4800e-003**	**0.3064**	**5.9200e-003**	**0.3123**	**0.0819**	**5.7200e-003**	**0.0876**		**373.7074**	**373.7074**	**0.0238**	**0.0220**	**380.8670**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	4/2/2022	4/8/2022	5	5	
2	Grading	Grading	4/9/2022	5/2/2022	5	16	
3	Building Construction	Building Construction	5/3/2022	12/5/2022	5	155	
4	Paving	Paving	12/6/2022	12/19/2022	5	10	
5	Architectural Coating	Architectural Coating	12/20/2022	1/2/2023	5	10	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 48

Acres of Paving: 9.17

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 381,024; Non-Residential Outdoor: 127,008; Striped Parking Area: 23,967 (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
Building Construction	Cranes	2	5.50	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	5	7.60	89	0.20
Building Construction	Generator Sets	2	6.30	84	0.74
Grading	Graders	1	8.00	187	0.41

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	5	6.60	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	2	6.30	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	54.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	56.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	274.00	107.00	32.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	55.00	4.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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	0.0401	1.6697	0.3224	6.5500e-003	0.1894	0.0168	0.2062	0.0520	0.0160	0.0680		693.4654	693.4654	2.1500e-003	0.1090	726.0032
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
Worker	0.0692	0.0511	0.5423	1.3000e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		131.3742	131.3742	5.2400e-003	4.5600e-003	132.8648
Total	**0.1093**	**1.7208**	**0.8648**	**7.8500e-003**	**0.3373**	**0.0177**	**0.3549**	**0.0912**	**0.0169**	**0.1081**		**824.8396**	**824.8396**	**7.3900e-003**	**0.1136**	**858.8679**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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	0.0401	1.6697	0.3224	6.5500e-003	0.1894	0.0168	0.2062	0.0520	0.0160	0.0680		693.4654	693.4654	2.1500e-003	0.1090	726.0032
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
Worker	0.0692	0.0511	0.5423	1.3000e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		131.3742	131.3742	5.2400e-003	4.5600e-003	132.8648
Total	**0.1093**	**1.7208**	**0.8648**	**7.8500e-003**	**0.3373**	**0.0177**	**0.3549**	**0.0912**	**0.0169**	**0.1081**		**824.8396**	**824.8396**	**7.3900e-003**	**0.1136**	**858.8679**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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	0.0130	0.5411	0.1045	2.1200e-003	0.0614	5.4300e-003	0.0668	0.0168	5.2000e-003	0.0220		224.7342	224.7342	7.0000e-004	0.0353	235.2788
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
Worker	0.0768	0.0568	0.6026	1.4400e-003	0.1643	1.0100e-003	0.1653	0.0436	9.3000e-004	0.0445		145.9713	145.9713	5.8200e-003	5.0700e-003	147.6275
Total	**0.0898**	**0.5979**	**0.7071**	**3.5600e-003**	**0.2257**	**6.4400e-003**	**0.2321**	**0.0604**	**6.1300e-003**	**0.0666**		**370.7055**	**370.7055**	**6.5200e-003**	**0.0404**	**382.9063**

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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	0.0130	0.5411	0.1045	2.1200e-003	0.0614	5.4300e-003	0.0668	0.0168	5.2000e-003	0.0220		224.7342	224.7342	7.0000e-004	0.0353	235.2788
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
Worker	0.0768	0.0568	0.6026	1.4400e-003	0.1643	1.0100e-003	0.1653	0.0436	9.3000e-004	0.0445		145.9713	145.9713	5.8200e-003	5.0700e-003	147.6275
Total	**0.0898**	**0.5979**	**0.7071**	**3.5600e-003**	**0.2257**	**6.4400e-003**	**0.2321**	**0.0604**	**6.1300e-003**	**0.0666**		**370.7055**	**370.7055**	**6.5200e-003**	**0.0404**	**382.9063**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6875	24.5922	25.7743	0.0424		1.2746	1.2746		1.1992	1.1992		4,022.2057	4,022.2057	0.9635		4,046.2940
Total	**2.6875**	**24.5922**	**25.7743**	**0.0424**		**1.2746**	**1.2746**		**1.1992**	**1.1992**		**4,022.2057**	**4,022.2057**	**0.9635**		**4,046.2940**

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	7.7000e-004	0.0319	6.1600e-003	1.3000e-004	3.6200e-003	3.2000e-004	3.9400e-003	9.9000e-004	3.1000e-004	1.3000e-003		13.2562	13.2562	4.0000e-005	2.0800e-003	13.8782
Vendor	0.2473	6.0333	1.9062	0.0227	0.7256	0.0673	0.7928	0.2090	0.0643	0.2733		2,396.2167	2,396.2167	0.0139	0.3518	2,501.4046
Worker	1.0528	0.7781	8.2554	0.0198	2.2509	0.0139	2.2648	0.5970	0.0128	0.6098		1,999.8068	1,999.8068	0.0798	0.0695	2,022.4971
Total	**1.3008**	**6.8433**	**10.1677**	**0.0426**	**2.9801**	**0.0815**	**3.0615**	**0.8070**	**0.0775**	**0.8844**		**4,409.2797**	**4,409.2797**	**0.0937**	**0.4234**	**4,537.7799**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6875	24.5922	25.7743	0.0424		1.2746	1.2746		1.1992	1.1992	0.0000	4,022.2057	4,022.2057	0.9635		4,046.2940
Total	**2.6875**	**24.5922**	**25.7743**	**0.0424**		**1.2746**	**1.2746**		**1.1992**	**1.1992**	**0.0000**	**4,022.2057**	**4,022.2057**	**0.9635**		**4,046.2940**

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	7.7000e-004	0.0319	6.1600e-003	1.3000e-004	3.6200e-003	3.2000e-004	3.9400e-003	9.9000e-004	3.1000e-004	1.3000e-003		13.2562	13.2562	4.0000e-005	2.0800e-003	13.8782
Vendor	0.2473	6.0333	1.9062	0.0227	0.7256	0.0673	0.7928	0.2090	0.0643	0.2733		2,396.2167	2,396.2167	0.0139	0.3518	2,501.4046
Worker	1.0528	0.7781	8.2554	0.0198	2.2509	0.0139	2.2648	0.5970	0.0128	0.6098		1,999.8068	1,999.8068	0.0798	0.0695	2,022.4971
Total	**1.3008**	**6.8433**	**10.1677**	**0.0426**	**2.9801**	**0.0815**	**3.0615**	**0.8070**	**0.0775**	**0.8844**		**4,409.2797**	**4,409.2797**	**0.0937**	**0.4234**	**4,537.7799**

3.5 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	2.0095					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.1124**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

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	4.4600e-003	0.1855	0.0358	7.3000e-004	0.0210	1.8600e-003	0.0229	5.7700e-003	1.7800e-003	7.5600e-003		77.0517	77.0517	2.4000e-004	0.0121	80.6670
Vendor	9.2400e-003	0.2255	0.0713	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4100e-003	0.0102		89.5782	89.5782	5.2000e-004	0.0132	93.5105
Worker	0.0576	0.0426	0.4519	1.0800e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		109.4785	109.4785	4.3700e-003	3.8000e-003	110.7206
Total	**0.0713**	**0.4537**	**0.5590**	**2.6600e-003**	**0.1714**	**5.1300e-003**	**0.1765**	**0.0463**	**4.8900e-003**	**0.0512**		**276.1084**	**276.1084**	**5.1300e-003**	**0.0291**	**284.8981**

3.5 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	2.0095					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.1124**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

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	4.4600e-003	0.1855	0.0358	7.3000e-004	0.0210	1.8600e-003	0.0229	5.7700e-003	1.7800e-003	7.5600e-003		77.0517	77.0517	2.4000e-004	0.0121	80.6670
Vendor	9.2400e-003	0.2255	0.0713	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4100e-003	0.0102		89.5782	89.5782	5.2000e-004	0.0132	93.5105
Worker	0.0576	0.0426	0.4519	1.0800e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		109.4785	109.4785	4.3700e-003	3.8000e-003	110.7206
Total	**0.0713**	**0.4537**	**0.5590**	**2.6600e-003**	**0.1714**	**5.1300e-003**	**0.1765**	**0.0463**	**4.8900e-003**	**0.0512**		**276.1084**	**276.1084**	**5.1300e-003**	**0.0291**	**284.8981**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**370.0768**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	7.4000e-004	0.0309	5.9700e-003	1.2000e-004	3.5100e-003	3.1000e-004	3.8200e-003	9.6000e-004	3.0000e-004	1.2600e-003		12.8420	12.8420	4.0000e-005	2.0200e-003	13.4445
Vendor	9.2400e-003	0.2255	0.0713	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4100e-003	0.0102		89.5782	89.5782	5.2000e-004	0.0132	93.5105
Worker	0.2113	0.1562	1.6571	3.9700e-003	0.4518	2.7900e-003	0.4546	0.1198	2.5700e-003	0.1224		401.4211	401.4211	0.0160	0.0139	405.9757
Total	**0.2213**	**0.4126**	**1.7343**	**4.9400e-003**	**0.4824**	**5.6100e-003**	**0.4881**	**0.1286**	**5.2800e-003**	**0.1339**		**503.8412**	**503.8412**	**0.0166**	**0.0291**	**512.9306**

3.6 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**370.0768**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	7.4000e-004	0.0309	5.9700e-003	1.2000e-004	3.5100e-003	3.1000e-004	3.8200e-003	9.6000e-004	3.0000e-004	1.2600e-003		12.8420	12.8420	4.0000e-005	2.0200e-003	13.4445
Vendor	9.2400e-003	0.2255	0.0713	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4100e-003	0.0102		89.5782	89.5782	5.2000e-004	0.0132	93.5105
Worker	0.2113	0.1562	1.6571	3.9700e-003	0.4518	2.7900e-003	0.4546	0.1198	2.5700e-003	0.1224		401.4211	401.4211	0.0160	0.0139	405.9757
Total	**0.2213**	**0.4126**	**1.7343**	**4.9400e-003**	**0.4824**	**5.6100e-003**	**0.4881**	**0.1286**	**5.2800e-003**	**0.1339**		**503.8412**	**503.8412**	**0.0166**	**0.0291**	**512.9306**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**370.0640**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.1000e-004	0.0252	5.3800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3214	12.3214	2.0000e-005	1.9400e-003	12.8992
Vendor	4.6600e-003	0.1810	0.0605	8.2000e-004	0.0271	1.1600e-003	0.0283	7.8100e-003	1.1100e-003	8.9200e-003		86.3536	86.3536	3.0000e-004	0.0126	90.1251
Worker	0.1937	0.1362	1.5124	3.8400e-003	0.4518	2.6200e-003	0.4544	0.1198	2.4200e-003	0.1223		388.5195	388.5195	0.0144	0.0128	392.6829
Total	**0.1987**	**0.3424**	**1.5783**	**4.7800e-003**	**0.4824**	**4.0200e-003**	**0.4865**	**0.1286**	**3.7600e-003**	**0.1324**		**487.1945**	**487.1945**	**0.0147**	**0.0273**	**495.7072**

3.6 Architectural Coating - 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					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**370.0640**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.1000e-004	0.0252	5.3800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3214	12.3214	2.0000e-005	1.9400e-003	12.8992
Vendor	4.6600e-003	0.1810	0.0605	8.2000e-004	0.0271	1.1600e-003	0.0283	7.8100e-003	1.1100e-003	8.9200e-003		86.3536	86.3536	3.0000e-004	0.0126	90.1251
Worker	0.1937	0.1362	1.5124	3.8400e-003	0.4518	2.6200e-003	0.4544	0.1198	2.4200e-003	0.1223		388.5195	388.5195	0.0144	0.0128	392.6829
Total	**0.1987**	**0.3424**	**1.5783**	**4.7800e-003**	**0.4824**	**4.0200e-003**	**0.4865**	**0.1286**	**3.7600e-003**	**0.1324**		**487.1945**	**487.1945**	**0.0147**	**0.0273**	**495.7072**

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	0.1778	0.3246	1.6693	3.2900e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		335.8314	335.8314	0.0229	0.0213	342.7623
Unmitigated	0.1778	0.3246	1.6693	3.2900e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		335.8314	335.8314	0.0229	0.0213	342.7623

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	60.43	13.71	4.34	109,310	109,310
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	60.43	13.71	4.34	109,310	109,310

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 Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Refrigerated Warehouse-No	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Other Asphalt Surfaces	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Other Non-Asphalt Surfaces	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Parking Lot	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Refrigerated Warehouse-No Rail	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972

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	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418
NaturalGas Unmitigated	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418

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 Office Building	219.605	2.3700e-003	0.0215	0.0181	1.3000e-004		1.6400e-003	1.6400e-003		1.6400e-003	1.6400e-003		25.8358	25.8358	5.0000e-004	4.7000e-004	25.9894
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	101.841	1.1000e-003	9.9800e-003	8.3900e-003	6.0000e-005		7.6000e-004	7.6000e-004		7.6000e-004	7.6000e-004		11.9812	11.9812	2.3000e-004	2.2000e-004	12.0524
Total		**3.4700e-003**	**0.0315**	**0.0265**	**1.9000e-004**		**2.4000e-003**	**2.4000e-003**		**2.4000e-003**	**2.4000e-003**		**37.8171**	**37.8171**	**7.3000e-004**	**6.9000e-004**	**38.0418**

5.2 Energy by Land Use - NaturalGas

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 Office Building	0.219605	2.3700e-003	0.0215	0.0181	1.3000e-004		1.6400e-003	1.6400e-003		1.6400e-003	1.6400e-003		25.8358	25.8358	5.0000e-004	4.7000e-004	25.9894
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	0.101841	1.1000e-003	9.9800e-003	8.3900e-003	6.0000e-005		7.6000e-004	7.6000e-004		7.6000e-004	7.6000e-004		11.9812	11.9812	2.3000e-004	2.2000e-004	12.0524
Total		**3.4700e-003**	**0.0315**	**0.0265**	**1.9000e-004**		**2.4000e-003**	**2.4000e-003**		**2.4000e-003**	**2.4000e-003**		**37.8171**	**37.8171**	**7.3000e-004**	**6.9000e-004**	**38.0418**

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	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Unmitigated	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628

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	1.0134					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.5500e-003	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Total	**6.5933**	**2.5000e-004**	**0.0275**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0590**	**0.0590**	**1.5000e-004**		**0.0628**

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	1.0134					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.5500e-003	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Total	**6.5933**	**2.5000e-004**	**0.0275**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0590**	**0.0590**	**1.5000e-004**		**0.0628**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Origo Cold Madera - Phase 1 Unmitigated Construction

Madera County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	254.02	1000sqft	5.83	247,812.00	0
General Office Building	6.20	1000sqft	0.14	6,204.00	0
Other Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0
Other Non-Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0
Parking Lot	6.17	Acre	6.17	268,765.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/MND's model.

Land Use - See SWAPE comment regarding "Failure to Model All Proposed Land Uses."

Construction Phase - See SWAPE comment regarding "Incorrect Construction Schedule." See Attachment A for calculations.

Off-road Equipment - Consistent with changes in the IS/MND's model.

Off-road Equipment -

Grading -

Trips and VMT - Consistent with changes in the IS/MND's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Areas."

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Construction Off-road Equipment Mitigation - Consistent with the IS/MND's model.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	300.00	155.00
tblConstructionPhase	NumDays	30.00	16.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	9/15/2023	1/2/2023
tblConstructionPhase	PhaseEndDate	7/21/2023	12/5/2022
tblConstructionPhase	PhaseEndDate	5/27/2022	5/2/2022
tblConstructionPhase	PhaseEndDate	8/18/2023	12/19/2022
tblConstructionPhase	PhaseEndDate	4/15/2022	4/8/2022
tblConstructionPhase	PhaseStartDate	8/19/2023	12/20/2022
tblConstructionPhase	PhaseStartDate	5/28/2022	5/3/2022
tblConstructionPhase	PhaseStartDate	4/16/2022	4/9/2022
tblConstructionPhase	PhaseStartDate	7/22/2023	12/6/2022
tblLandUse	LandUseSquareFeet	254,020.00	247,812.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.50
tblOffRoadEquipment	UsageHours	8.00	7.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	7.00	6.60

tblOffRoadEquipment	UsageHours	8.00	6.30
tblTripsAndVMT	HaulingTripNumber	0.00	54.00
tblTripsAndVMT	HaulingTripNumber	0.00	56.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	370.3252	39.3983	37.3256	0.0874	19.9943	1.6413	21.6245	10.1936	1.5102	11.6941	0.0000	8,670.0161	8,670.0161	1.9502	0.4148	8,819.8698
2023	370.2871	1.6101	3.6424	8.2100e-003	0.4824	0.0748	0.5573	0.1286	0.0746	0.2032	0.0000	815.0527	815.0527	0.0301	0.0259	823.5178
Maximum	**370.3252**	**39.3983**	**37.3256**	**0.0874**	**19.9943**	**1.6413**	**21.6245**	**10.1936**	**1.5102**	**11.6941**	**0.0000**	**8,670.0161**	**8,670.0161**	**1.9502**	**0.4148**	**8,819.8698**

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					
2022	370.3252	39.3983	37.3256	0.0874	19.9943	1.6413	21.6245	10.1936	1.5102	11.6941	0.0000	8,670.0161	8,670.0161	1.9502	0.4148	8,819.8698
2023	370.2871	1.6101	3.6424	8.2100e-003	0.4824	0.0748	0.5573	0.1286	0.0746	0.2032	0.0000	815.0527	815.0527	0.0301	0.0259	823.5178
Maximum	**370.3252**	**39.3983**	**37.3256**	**0.0874**	**19.9943**	**1.6413**	**21.6245**	**10.1936**	**1.5102**	**11.6941**	**0.0000**	**8,670.0161**	**8,670.0161**	**1.9502**	**0.4148**	**8,819.8698**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Energy	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418
Mobile	0.2250	0.2897	1.7060	3.5600e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		362.9242	362.9242	0.0201	0.0200	369.3855
Total	**6.8218**	**0.3214**	**1.7600**	**3.7500e-003**	**0.3064**	**5.9200e-003**	**0.3123**	**0.0819**	**5.7200e-003**	**0.0876**		**400.8002**	**400.8002**	**0.0210**	**0.0207**	**407.4901**

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	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Energy	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418
Mobile	0.2250	0.2897	1.7060	3.5600e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		362.9242	362.9242	0.0201	0.0200	369.3855
Total	**6.8218**	**0.3214**	**1.7600**	**3.7500e-003**	**0.3064**	**5.9200e-003**	**0.3123**	**0.0819**	**5.7200e-003**	**0.0876**		**400.8002**	**400.8002**	**0.0210**	**0.0207**	**407.4901**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	4/2/2022	4/8/2022	5	5	
2	Grading	Grading	4/9/2022	5/2/2022	5	16	
3	Building Construction	Building Construction	5/3/2022	12/5/2022	5	155	
4	Paving	Paving	12/6/2022	12/19/2022	5	10	
5	Architectural Coating	Architectural Coating	12/20/2022	1/2/2023	5	10	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 48

Acres of Paving: 9.17

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 381,024; Non-Residential Outdoor: 127,008; Striped Parking Area: 23,967 (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
Building Construction	Cranes	2	5.50	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	5	7.60	89	0.20
Building Construction	Generator Sets	2	6.30	84	0.74
Grading	Graders	1	8.00	187	0.41

Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	5	6.60	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	2	6.30	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	54.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	56.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	274.00	107.00	32.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	55.00	4.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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	0.0416	1.5650	0.3153	6.5400e-003	0.1894	0.0168	0.2061	0.0520	0.0160	0.0680		692.9716	692.9716	2.2200e-003	0.1089	725.4875
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
Worker	0.0779	0.0429	0.6370	1.4600e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		147.1874	147.1874	4.7600e-003	4.0600e-003	148.5154
Total	**0.1196**	**1.6079**	**0.9523**	**8.0000e-003**	**0.3373**	**0.0177**	**0.3549**	**0.0912**	**0.0169**	**0.1080**		**840.1591**	**840.1591**	**6.9800e-003**	**0.1130**	**874.0030**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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	0.0416	1.5650	0.3153	6.5400e-003	0.1894	0.0168	0.2061	0.0520	0.0160	0.0680		692.9716	692.9716	2.2200e-003	0.1089	725.4875
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
Worker	0.0779	0.0429	0.6370	1.4600e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		147.1874	147.1874	4.7600e-003	4.0600e-003	148.5154
Total	**0.1196**	**1.6079**	**0.9523**	**8.0000e-003**	**0.3373**	**0.0177**	**0.3549**	**0.0912**	**0.0169**	**0.1080**		**840.1591**	**840.1591**	**6.9800e-003**	**0.1130**	**874.0030**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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	0.0135	0.5072	0.1022	2.1200e-003	0.0614	5.4300e-003	0.0668	0.0168	5.1900e-003	0.0220		224.5741	224.5741	7.2000e-004	0.0353	235.1117
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
Worker	0.0866	0.0477	0.7077	1.6200e-003	0.1643	1.0100e-003	0.1653	0.0436	9.3000e-004	0.0445		163.5416	163.5416	5.2900e-003	4.5100e-003	165.0171
Total	**0.1001**	**0.5549**	**0.8099**	**3.7400e-003**	**0.2257**	**6.4400e-003**	**0.2321**	**0.0604**	**6.1200e-003**	**0.0665**		**388.1157**	**388.1157**	**6.0100e-003**	**0.0398**	**400.1288**

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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	0.0135	0.5072	0.1022	2.1200e-003	0.0614	5.4300e-003	0.0668	0.0168	5.1900e-003	0.0220		224.5741	224.5741	7.2000e-004	0.0353	235.1117
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
Worker	0.0866	0.0477	0.7077	1.6200e-003	0.1643	1.0100e-003	0.1653	0.0436	9.3000e-004	0.0445		163.5416	163.5416	5.2900e-003	4.5100e-003	165.0171
Total	**0.1001**	**0.5549**	**0.8099**	**3.7400e-003**	**0.2257**	**6.4400e-003**	**0.2321**	**0.0604**	**6.1200e-003**	**0.0665**		**388.1157**	**388.1157**	**6.0100e-003**	**0.0398**	**400.1288**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6875	24.5922	25.7743	0.0424		1.2746	1.2746		1.1992	1.1992		4,022.2057	4,022.2057	0.9635		4,046.2940
Total	**2.6875**	**24.5922**	**25.7743**	**0.0424**		**1.2746**	**1.2746**		**1.1992**	**1.1992**		**4,022.2057**	**4,022.2057**	**0.9635**		**4,046.2940**

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	8.0000e-004	0.0299	6.0300e-003	1.3000e-004	3.6200e-003	3.2000e-004	3.9400e-003	9.9000e-004	3.1000e-004	1.3000e-003		13.2468	13.2468	4.0000e-005	2.0800e-003	13.8683
Vendor	0.2538	5.6573	1.8494	0.0227	0.7256	0.0671	0.7927	0.2090	0.0642	0.2731		2,394.0437	2,394.0437	0.0142	0.3509	2,498.9729
Worker	1.1860	0.6530	9.6959	0.0222	2.2509	0.0139	2.2648	0.5970	0.0128	0.6098		2,240.5200	2,240.5200	0.0725	0.0618	2,260.7346
Total	**1.4405**	**6.3402**	**11.5513**	**0.0450**	**2.9801**	**0.0813**	**3.0613**	**0.8070**	**0.0773**	**0.8843**		**4,647.8104**	**4,647.8104**	**0.0867**	**0.4148**	**4,773.5758**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6875	24.5922	25.7743	0.0424		1.2746	1.2746		1.1992	1.1992	0.0000	4,022.2057	4,022.2057	0.9635		4,046.2940
Total	**2.6875**	**24.5922**	**25.7743**	**0.0424**		**1.2746**	**1.2746**		**1.1992**	**1.1992**	**0.0000**	**4,022.2057**	**4,022.2057**	**0.9635**		**4,046.2940**

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	8.0000e-004	0.0299	6.0300e-003	1.3000e-004	3.6200e-003	3.2000e-004	3.9400e-003	9.9000e-004	3.1000e-004	1.3000e-003		13.2468	13.2468	4.0000e-005	2.0800e-003	13.8683
Vendor	0.2538	5.6573	1.8494	0.0227	0.7256	0.0671	0.7927	0.2090	0.0642	0.2731		2,394.0437	2,394.0437	0.0142	0.3509	2,498.9729
Worker	1.1860	0.6530	9.6959	0.0222	2.2509	0.0139	2.2648	0.5970	0.0128	0.6098		2,240.5200	2,240.5200	0.0725	0.0618	2,260.7346
Total	**1.4405**	**6.3402**	**11.5513**	**0.0450**	**2.9801**	**0.0813**	**3.0613**	**0.8070**	**0.0773**	**0.8843**		**4,647.8104**	**4,647.8104**	**0.0867**	**0.4148**	**4,773.5758**

3.5 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	2.0095					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.1124**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

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	4.6300e-003	0.1739	0.0350	7.3000e-004	0.0210	1.8600e-003	0.0229	5.7700e-003	1.7800e-003	7.5500e-003		76.9969	76.9969	2.5000e-004	0.0121	80.6097
Vendor	9.4900e-003	0.2115	0.0691	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4000e-003	0.0102		89.4970	89.4970	5.3000e-004	0.0131	93.4196
Worker	0.0649	0.0358	0.5308	1.2100e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		122.6562	122.6562	3.9700e-003	3.3800e-003	123.7629
Total	**0.0790**	**0.4211**	**0.6350**	**2.7900e-003**	**0.1714**	**5.1300e-003**	**0.1765**	**0.0463**	**4.8800e-003**	**0.0511**		**289.1500**	**289.1500**	**4.7500e-003**	**0.0286**	**297.7921**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	2.0095					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.1124**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

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	4.6300e-003	0.1739	0.0350	7.3000e-004	0.0210	1.8600e-003	0.0229	5.7700e-003	1.7800e-003	7.5500e-003		76.9969	76.9969	2.5000e-004	0.0121	80.6097
Vendor	9.4900e-003	0.2115	0.0691	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4000e-003	0.0102		89.4970	89.4970	5.3000e-004	0.0131	93.4196
Worker	0.0649	0.0358	0.5308	1.2100e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		122.6562	122.6562	3.9700e-003	3.3800e-003	123.7629
Total	**0.0790**	**0.4211**	**0.6350**	**2.7900e-003**	**0.1714**	**5.1300e-003**	**0.1765**	**0.0463**	**4.8800e-003**	**0.0511**		**289.1500**	**289.1500**	**4.7500e-003**	**0.0286**	**297.7921**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**370.0768**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	7.7000e-004	0.0290	5.8400e-003	1.2000e-004	3.5100e-003	3.1000e-004	3.8200e-003	9.6000e-004	3.0000e-004	1.2600e-003		12.8328	12.8328	4.0000e-005	2.0200e-003	13.4350
Vendor	9.4900e-003	0.2115	0.0691	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4000e-003	0.0102		89.4970	89.4970	5.3000e-004	0.0131	93.4196
Worker	0.2381	0.1311	1.9463	4.4500e-003	0.4518	2.7900e-003	0.4546	0.1198	2.5700e-003	0.1224		449.7394	449.7394	0.0145	0.0124	453.7971
Total	**0.2483**	**0.3715**	**2.0212**	**5.4200e-003**	**0.4824**	**5.6100e-003**	**0.4881**	**0.1286**	**5.2700e-003**	**0.1339**		**552.0692**	**552.0692**	**0.0151**	**0.0275**	**560.6516**

3.6 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**370.0768**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	7.7000e-004	0.0290	5.8400e-003	1.2000e-004	3.5100e-003	3.1000e-004	3.8200e-003	9.6000e-004	3.0000e-004	1.2600e-003		12.8328	12.8328	4.0000e-005	2.0200e-003	13.4350
Vendor	9.4900e-003	0.2115	0.0691	8.5000e-004	0.0271	2.5100e-003	0.0296	7.8100e-003	2.4000e-003	0.0102		89.4970	89.4970	5.3000e-004	0.0131	93.4196
Worker	0.2381	0.1311	1.9463	4.4500e-003	0.4518	2.7900e-003	0.4546	0.1198	2.5700e-003	0.1224		449.7394	449.7394	0.0145	0.0124	453.7971
Total	**0.2483**	**0.3715**	**2.0212**	**5.4200e-003**	**0.4824**	**5.6100e-003**	**0.4881**	**0.1286**	**5.2700e-003**	**0.1339**		**552.0692**	**552.0692**	**0.0151**	**0.0275**	**560.6516**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**370.0640**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.4000e-004	0.0236	5.2800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3046	12.3046	3.0000e-005	1.9300e-003	12.8816
Vendor	4.9400e-003	0.1691	0.0587	8.2000e-004	0.0271	1.1500e-003	0.0283	7.8100e-003	1.1000e-003	8.9100e-003		86.1836	86.1836	3.1000e-004	0.0126	89.9421
Worker	0.2178	0.1144	1.7673	4.3000e-003	0.4518	2.6200e-003	0.4544	0.1198	2.4200e-003	0.1223		435.1165	435.1165	0.0129	0.0114	438.8251
Total	**0.2232**	**0.3071**	**1.8313**	**5.2400e-003**	**0.4824**	**4.0100e-003**	**0.4865**	**0.1286**	**3.7500e-003**	**0.1324**		**533.6046**	**533.6046**	**0.0133**	**0.0259**	**541.6488**

3.6 Architectural Coating - 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					
Archit. Coating	369.8723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**370.0640**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.4000e-004	0.0236	5.2800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3046	12.3046	3.0000e-005	1.9300e-003	12.8816
Vendor	4.9400e-003	0.1691	0.0587	8.2000e-004	0.0271	1.1500e-003	0.0283	7.8100e-003	1.1000e-003	8.9100e-003		86.1836	86.1836	3.1000e-004	0.0126	89.9421
Worker	0.2178	0.1144	1.7673	4.3000e-003	0.4518	2.6200e-003	0.4544	0.1198	2.4200e-003	0.1223		435.1165	435.1165	0.0129	0.0114	438.8251
Total	**0.2232**	**0.3071**	**1.8313**	**5.2400e-003**	**0.4824**	**4.0100e-003**	**0.4865**	**0.1286**	**3.7500e-003**	**0.1324**		**533.6046**	**533.6046**	**0.0133**	**0.0259**	**541.6488**

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	0.2250	0.2897	1.7060	3.5600e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		362.9242	362.9242	0.0201	0.0200	369.3855
Unmitigated	0.2250	0.2897	1.7060	3.5600e-003	0.3064	3.4200e-003	0.3098	0.0819	3.2200e-003	0.0851		362.9242	362.9242	0.0201	0.0200	369.3855

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	60.43	13.71	4.34	109,310	109,310
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	60.43	13.71	4.34	109,310	109,310

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 Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Refrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Other Asphalt Surfaces	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Other Non-Asphalt Surfaces	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Parking Lot	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972
Refrigerated Warehouse-No Rail	0.491491	0.052949	0.173689	0.164683	0.034990	0.008766	0.010778	0.027771	0.000810	0.000210	0.026873	0.002020	0.004972

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	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418
NaturalGas Unmitigated	3.4700e-003	0.0315	0.0265	1.9000e-004		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003		37.8171	37.8171	7.2000e-004	6.9000e-004	38.0418

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 Office Building	219.605	2.3700e-003	0.0215	0.0181	1.3000e-004		1.6400e-003	1.6400e-003		1.6400e-003	1.6400e-003		25.8358	25.8358	5.0000e-004	4.7000e-004	25.9894
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	101.841	1.1000e-003	9.9800e-003	8.3900e-003	6.0000e-005		7.6000e-004	7.6000e-004		7.6000e-004	7.6000e-004		11.9812	11.9812	2.3000e-004	2.2000e-004	12.0524
Total		**3.4700e-003**	**0.0315**	**0.0265**	**1.9000e-004**		**2.4000e-003**	**2.4000e-003**		**2.4000e-003**	**2.4000e-003**		**37.8171**	**37.8171**	**7.3000e-004**	**6.9000e-004**	**38.0418**

5.2 Energy by Land Use - NaturalGas

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 Office Building	0.219605	2.3700e-003	0.0215	0.0181	1.3000e-004		1.6400e-003	1.6400e-003		1.6400e-003	1.6400e-003		25.8358	25.8358	5.0000e-004	4.7000e-004	25.9894
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	0.101841	1.1000e-003	9.9800e-003	8.3900e-003	6.0000e-005		7.6000e-004	7.6000e-004		7.6000e-004	7.6000e-004		11.9812	11.9812	2.3000e-004	2.2000e-004	12.0524
Total		**3.4700e-003**	**0.0315**	**0.0265**	**1.9000e-004**		**2.4000e-003**	**2.4000e-003**		**2.4000e-003**	**2.4000e-003**		**37.8171**	**37.8171**	**7.3000e-004**	**6.9000e-004**	**38.0418**

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	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Unmitigated	6.5933	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628

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	1.0134					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.5500e-003	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Total	**6.5933**	**2.5000e-004**	**0.0275**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0590**	**0.0590**	**1.5000e-004**		**0.0628**

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	1.0134					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.5500e-003	2.5000e-004	0.0275	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0590	0.0590	1.5000e-004		0.0628
Total	**6.5933**	**2.5000e-004**	**0.0275**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0590**	**0.0590**	**1.5000e-004**		**0.0628**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Origo Cold Madera - Phase 2 Unmitigated Construction

Madera County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	250.00	1000sqft	5.74	250,000.00	0
Other Asphalt Surfaces	1.50	Acre	1.56	65,340.00	0
Other Non-Asphalt Surfaces	1.50	Acre	1.56	65,340.00	0
Parking Lot	6.74	Acre	6.74	293,594.40	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/MND's model.

Land Use - Consistent with the IS/MND's model.

Construction Phase - See SWAPE comment regarding "Incorrect Construction Schedule." See Attachment A for calculations.

Off-road Equipment - Consistent with changes in the IS/MND's model.

Grading -

Trips and VMT - Consistent with changes in the IS/MND's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Area."

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

Construction Off-road Equipment Mitigation - Consistent with the IS/MND's model.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	300.00	155.00
tblConstructionPhase	NumDays	30.00	16.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	8/30/2024	12/18/2023
tblConstructionPhase	PhaseEndDate	7/5/2024	11/20/2023
tblConstructionPhase	PhaseEndDate	5/12/2023	4/17/2023
tblConstructionPhase	PhaseEndDate	8/2/2024	12/4/2023
tblConstructionPhase	PhaseEndDate	3/31/2023	3/24/2023
tblConstructionPhase	PhaseStartDate	8/3/2024	12/5/2023
tblConstructionPhase	PhaseStartDate	5/13/2023	4/18/2023
tblConstructionPhase	PhaseStartDate	4/1/2023	3/25/2023
tblConstructionPhase	PhaseStartDate	7/6/2024	11/21/2023
tblLandUse	LotAcreage	1.50	1.56
tblLandUse	LotAcreage	1.50	1.56
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.80
tblOffRoadEquipment	UsageHours	8.00	6.60
tblOffRoadEquipment	UsageHours	8.00	6.60
tblOffRoadEquipment	UsageHours	7.00	5.80
tblOffRoadEquipment	UsageHours	8.00	6.60

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblTripsAndVMT	HaulingTripNumber	0.00	7.00
tblTripsAndVMT	HaulingTripNumber	0.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	36.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	2.1658	2.6816	3.1891	7.5800e-003	0.3596	0.1107	0.4704	0.1188	0.1039	0.2227	0.0000	679.9677	679.9677	0.0964	0.0294	691.1430
Maximum	**2.1658**	**2.6816**	**3.1891**	**7.5800e-003**	**0.3596**	**0.1107**	**0.4704**	**0.1188**	**0.1039**	**0.2227**	**0.0000**	**679.9677**	**679.9677**	**0.0964**	**0.0294**	**691.1430**

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	2.1658	2.6816	3.1891	7.5800e-003	0.3596	0.1107	0.4704	0.1188	0.1039	0.2227	0.0000	679.9673	679.9673	0.0964	0.0294	691.1426
Maximum	**2.1658**	**2.6816**	**3.1891**	**7.5800e-003**	**0.3596**	**0.1107**	**0.4704**	**0.1188**	**0.1039**	**0.2227**	**0.0000**	**679.9673**	**679.9673**	**0.0964**	**0.0294**	**691.1426**

	ROG	**NOx**	**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**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-18-2023	6-17-2023	1.1205	1.1205
2	6-18-2023	9-17-2023	1.0828	1.0828
3	9-18-2023	9-30-2023	0.1530	0.1530
		Highest	1.1205	1.1205

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	1.1867	2.0000e-005	2.3800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6400e-003	4.6400e-003	1.0000e-005	0.0000	4.9400e-003
Energy	2.0000e-004	1.8400e-003	1.5400e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	586.5439	586.5439	0.0946	0.0115	592.3359
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	47.7029	0.0000	47.7029	2.8192	0.0000	118.1819
Water						0.0000	0.0000		0.0000	0.0000	18.3412	28.9436	47.2848	1.8885	0.0451	107.9219
Total	**1.1869**	**1.8600e-003**	**3.9200e-003**	**1.0000e-005**	**0.0000**	**1.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**1.5000e-004**	**66.0441**	**615.4922**	**681.5363**	**4.8023**	**0.0566**	**818.4447**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.1867	2.0000e-005	2.3800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6400e-003	4.6400e-003	1.0000e-005	0.0000	4.9400e-003
Energy	2.0000e-004	1.8400e-003	1.5400e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	586.5439	586.5439	0.0946	0.0115	592.3359
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	47.7029	0.0000	47.7029	2.8192	0.0000	118.1819
Water						0.0000	0.0000		0.0000	0.0000	18.3412	28.9436	47.2848	1.8885	0.0451	107.9219
Total	**1.1869**	**1.8600e-003**	**3.9200e-003**	**1.0000e-005**	**0.0000**	**1.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**1.5000e-004**	**66.0441**	**615.4922**	**681.5363**	**4.8023**	**0.0566**	**818.4447**

	ROG	**NOx**	**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	3/18/2023	3/24/2023	5	5	
2	Grading	Grading	3/25/2023	4/17/2023	5	16	
3	Building Construction	Building Construction	4/18/2023	11/20/2023	5	155	

4	Paving	Paving	11/21/2023	12/4/2023	5	10	
5	Architectural Coating	Architectural Coating	12/5/2023	12/18/2023	5	10	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 48

Acres of Paving: 9.86

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 375,000; Non-Residential Outdoor: 125,000; Striped Parking Area: 25,456 (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
Building Construction	Cranes	2	5.80	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	6	6.60	89	0.20
Building Construction	Generator Sets	2	6.60	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	6	5.80	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	2	6.60	46	0.45

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	16.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	283.00	111.00	36.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	57.00	0.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

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					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	**6.6500e-003**	**0.0688**	**0.0456**	**1.0000e-004**	**0.0491**	**3.1700e-003**	**0.0523**	**0.0253**	**2.9100e-003**	**0.0282**	**0.0000**	**8.3627**	**8.3627**	**2.7000e-003**	**0.0000**	**8.4303**

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	4.3000e-004	9.0000e-005	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1955	0.1955	0.0000	3.0000e-005	0.2046
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.2500e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2979	0.2979	1.0000e-005	1.0000e-005	0.3007
Total	**1.6000e-004**	**5.3000e-004**	**1.3400e-003**	**0.0000**	**4.2000e-004**	**0.0000**	**4.2000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4933**	**0.4933**	**1.0000e-005**	**4.0000e-005**	**0.5054**

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					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	**6.6500e-003**	**0.0688**	**0.0456**	**1.0000e-004**	**0.0491**	**3.1700e-003**	**0.0523**	**0.0253**	**2.9100e-003**	**0.0282**	**0.0000**	**8.3627**	**8.3627**	**2.7000e-003**	**0.0000**	**8.4303**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	4.3000e-004	9.0000e-005	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1955	0.1955	0.0000	3.0000e-005	0.2046
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.2500e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2979	0.2979	1.0000e-005	1.0000e-005	0.3007
Total	**1.6000e-004**	**5.3000e-004**	**1.3400e-003**	**0.0000**	**4.2000e-004**	**0.0000**	**4.2000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4933**	**0.4933**	**1.0000e-005**	**4.0000e-005**	**0.5054**

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					0.0736	0.0000	0.0736	0.0292	0.0000	0.0292	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2761	0.2244	5.0000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	43.6282	43.6282	0.0141	0.0000	43.9809
Total	**0.0266**	**0.2761**	**0.2244**	**5.0000e-004**	**0.0736**	**0.0114**	**0.0850**	**0.0292**	**0.0105**	**0.0397**	**0.0000**	**43.6282**	**43.6282**	**0.0141**	**0.0000**	**43.9809**

3.3 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	9.9000e-004	2.1000e-004	0.0000	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4468	0.4468	0.0000	7.0000e-005	0.4677
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	5.5000e-004	3.6000e-004	4.4600e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0590	1.0590	4.0000e-005	3.0000e-005	1.0693
Total	**5.7000e-004**	**1.3500e-003**	**4.6700e-003**	**1.0000e-005**	**1.4100e-003**	**2.0000e-005**	**1.4300e-003**	**3.8000e-004**	**2.0000e-005**	**4.0000e-004**	**0.0000**	**1.5058**	**1.5058**	**4.0000e-005**	**1.0000e-004**	**1.5370**

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					0.0736	0.0000	0.0736	0.0292	0.0000	0.0292	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2761	0.2244	5.0000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	43.6281	43.6281	0.0141	0.0000	43.9809
Total	**0.0266**	**0.2761**	**0.2244**	**5.0000e-004**	**0.0736**	**0.0114**	**0.0850**	**0.0292**	**0.0105**	**0.0397**	**0.0000**	**43.6281**	**43.6281**	**0.0141**	**0.0000**	**43.9809**

3.3 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	9.9000e-004	2.1000e-004	0.0000	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4468	0.4468	0.0000	7.0000e-005	0.4677
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	5.5000e-004	3.6000e-004	4.4600e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0590	1.0590	4.0000e-005	3.0000e-005	1.0693
Total	**5.7000e-004**	**1.3500e-003**	**4.6700e-003**	**1.0000e-005**	**1.4100e-003**	**2.0000e-005**	**1.4300e-003**	**3.8000e-004**	**2.0000e-005**	**4.0000e-004**	**0.0000**	**1.5058**	**1.5058**	**4.0000e-005**	**1.0000e-004**	**1.5370**

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	0.2015	1.8436	2.0813	3.4500e-003		0.0897	0.0897		0.0844	0.0844	0.0000	297.0634	297.0634	0.0707	0.0000	298.8315
Total	**0.2015**	**1.8436**	**2.0813**	**3.4500e-003**		**0.0897**	**0.0897**		**0.0844**	**0.0844**	**0.0000**	**297.0634**	**297.0634**	**0.0707**	**0.0000**	**298.8315**

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	2.2200e-003	4.8000e-004	1.0000e-005	3.1000e-004	2.0000e-005	3.3000e-004	8.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.0052	1.0052	0.0000	1.6000e-004	1.0523
Vendor	0.0103	0.3797	0.1280	1.7600e-003	0.0569	2.4800e-003	0.0594	0.0164	2.3700e-003	0.0188	0.0000	168.2842	168.2842	6.0000e-004	0.0246	175.6295
Worker	0.0751	0.0493	0.6108	1.5800e-003	0.1747	1.0500e-003	0.1758	0.0465	9.6000e-004	0.0474	0.0000	145.1699	145.1699	4.8500e-003	4.3200e-003	146.5796
Total	**0.0855**	**0.4312**	**0.7392**	**3.3500e-003**	**0.2319**	**3.5500e-003**	**0.2354**	**0.0630**	**3.3500e-003**	**0.0663**	**0.0000**	**314.4593**	**314.4593**	**5.4500e-003**	**0.0291**	**323.2615**

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	0.2015	1.8436	2.0813	3.4500e-003		0.0897	0.0897		0.0844	0.0844	0.0000	297.0631	297.0631	0.0707	0.0000	298.8311
Total	**0.2015**	**1.8436**	**2.0813**	**3.4500e-003**		**0.0897**	**0.0897**		**0.0844**	**0.0844**	**0.0000**	**297.0631**	**297.0631**	**0.0707**	**0.0000**	**298.8311**

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	2.2200e-003	4.8000e-004	1.0000e-005	3.1000e-004	2.0000e-005	3.3000e-004	8.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.0052	1.0052	0.0000	1.6000e-004	1.0523
Vendor	0.0103	0.3797	0.1280	1.7600e-003	0.0569	2.4800e-003	0.0594	0.0164	2.3700e-003	0.0188	0.0000	168.2842	168.2842	6.0000e-004	0.0246	175.6295
Worker	0.0751	0.0493	0.6108	1.5800e-003	0.1747	1.0500e-003	0.1758	0.0465	9.6000e-004	0.0474	0.0000	145.1699	145.1699	4.8500e-003	4.3200e-003	146.5796
Total	**0.0855**	**0.4312**	**0.7392**	**3.3500e-003**	**0.2319**	**3.5500e-003**	**0.2354**	**0.0630**	**3.3500e-003**	**0.0663**	**0.0000**	**314.4593**	**314.4593**	**5.4500e-003**	**0.0291**	**323.2615**

3.5 Paving - 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	5.1600e-003	0.0510	0.0729	1.1000e-004		2.5500e-003	2.5500e-003		2.3500e-003	2.3500e-003	0.0000	10.0134	10.0134	3.2400e-003	0.0000	10.0944
Paving	0.0109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0160**	**0.0510**	**0.0729**	**1.1000e-004**		**2.5500e-003**	**2.5500e-003**		**2.3500e-003**	**2.3500e-003**	**0.0000**	**10.0134**	**10.0134**	**3.2400e-003**	**0.0000**	**10.0944**

3.5 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	7.4000e-004	1.6000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3351	0.3351	0.0000	5.0000e-005	0.3508
Vendor	2.0000e-005	8.8000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3912	0.3912	0.0000	6.0000e-005	0.4083
Worker	2.6000e-004	1.7000e-004	2.0900e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4964	0.4964	2.0000e-005	1.0000e-005	0.5012
Total	**2.9000e-004**	**1.7900e-003**	**2.5500e-003**	**1.0000e-005**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**2.3000e-004**	**2.0000e-005**	**2.4000e-004**	**0.0000**	**1.2227**	**1.2227**	**2.0000e-005**	**1.2000e-004**	**1.2603**

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	5.1600e-003	0.0510	0.0729	1.1000e-004		2.5500e-003	2.5500e-003		2.3500e-003	2.3500e-003	0.0000	10.0134	10.0134	3.2400e-003	0.0000	10.0944
Paving	0.0109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0160**	**0.0510**	**0.0729**	**1.1000e-004**		**2.5500e-003**	**2.5500e-003**		**2.3500e-003**	**2.3500e-003**	**0.0000**	**10.0134**	**10.0134**	**3.2400e-003**	**0.0000**	**10.0944**

3.5 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	7.4000e-004	1.6000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3351	0.3351	0.0000	5.0000e-005	0.3508
Vendor	2.0000e-005	8.8000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3912	0.3912	0.0000	6.0000e-005	0.4083
Worker	2.6000e-004	1.7000e-004	2.0900e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4964	0.4964	2.0000e-005	1.0000e-005	0.5012
Total	**2.9000e-004**	**1.7900e-003**	**2.5500e-003**	**1.0000e-005**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**2.3000e-004**	**2.0000e-005**	**2.4000e-004**	**0.0000**	**1.2227**	**1.2227**	**2.0000e-005**	**1.2000e-004**	**1.2603**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.8266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	**1.8276**	**6.5100e-003**	**9.0600e-003**	**1.0000e-005**		**3.5000e-004**	**3.5000e-004**		**3.5000e-004**	**3.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2785**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.2000e-004	3.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0558	0.0558	0.0000	1.0000e-005	0.0585
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	9.8000e-004	6.4000e-004	7.9400e-003	2.0000e-005	2.2700e-003	1.0000e-005	2.2800e-003	6.0000e-004	1.0000e-005	6.2000e-004	0.0000	1.8864	1.8864	6.0000e-005	6.0000e-005	1.9047
Total	**9.8000e-004**	**7.6000e-004**	**7.9700e-003**	**2.0000e-005**	**2.2900e-003**	**1.0000e-005**	**2.3000e-003**	**6.0000e-004**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**1.9422**	**1.9422**	**6.0000e-005**	**7.0000e-005**	**1.9632**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.8266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	**1.8276**	**6.5100e-003**	**9.0600e-003**	**1.0000e-005**		**3.5000e-004**	**3.5000e-004**		**3.5000e-004**	**3.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2785**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.2000e-004	3.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0558	0.0558	0.0000	1.0000e-005	0.0585
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	9.8000e-004	6.4000e-004	7.9400e-003	2.0000e-005	2.2700e-003	1.0000e-005	2.2800e-003	6.0000e-004	1.0000e-005	6.2000e-004	0.0000	1.8864	1.8864	6.0000e-005	6.0000e-005	1.9047
Total	**9.8000e-004**	**7.6000e-004**	**7.9700e-003**	**2.0000e-005**	**2.2900e-003**	**1.0000e-005**	**2.3000e-003**	**6.0000e-004**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**1.9422**	**1.9422**	**6.0000e-005**	**7.0000e-005**	**1.9632**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Refrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Other Non-Asphalt Surfaces	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Parking Lot	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Refrigerated Warehouse-No Rail	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700

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	584.5428	584.5428	0.0946	0.0115	590.3229
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	584.5428	584.5428	0.0946	0.0115	590.3229
NaturalGas Mitigated	2.0000e-004	1.8400e-003	1.5400e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.0011	2.0011	4.0000e-005	4.0000e-005	2.0130
NaturalGas Unmitigated	2.0000e-004	1.8400e-003	1.5400e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.0011	2.0011	4.0000e-005	4.0000e-005	2.0130

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	37500	2.0000e-004	1.8400e-003	1.5400e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.0011	2.0011	4.0000e-005	4.0000e-005	2.0130
Total		**2.0000e-004**	**1.8400e-003**	**1.5400e-003**	**1.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**2.0011**	**2.0011**	**4.0000e-005**	**4.0000e-005**	**2.0130**

5.2 Energy by Land Use - NaturalGas

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	37500	2.0000e-004	1.8400e-003	1.5400e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.0011	2.0011	4.0000e-005	4.0000e-005	2.0130
Total		**2.0000e-004**	**1.8400e-003**	**1.5400e-003**	**1.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**2.0011**	**2.0011**	**4.0000e-005**	**4.0000e-005**	**2.0130**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	102758	9.5076	1.5400e-003	1.9000e-004	9.6016
Refrigerated Warehouse-No Rail	6.215e+006	575.0352	0.0930	0.0113	580.7213
Total		**584.5428**	**0.0946**	**0.0115**	**590.3229**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	102758	9.5076	1.5400e-003	1.9000e-004	9.6016
Refrigerated Warehouse-No Rail	6.215e+006	575.0352	0.0930	0.0113	580.7213
Total		**584.5428**	**0.0946**	**0.0115**	**590.3229**

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	1.1867	2.0000e-005	2.3800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6400e-003	4.6400e-003	1.0000e-005	0.0000	4.9400e-003
Unmitigated	1.1867	2.0000e-005	2.3800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6400e-003	4.6400e-003	1.0000e-005	0.0000	4.9400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0038					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6400e-003	4.6400e-003	1.0000e-005	0.0000	4.9400e-003
Total	**1.1867**	**2.0000e-005**	**2.3800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.6400e-003**	**4.6400e-003**	**1.0000e-005**	**0.0000**	**4.9400e-003**

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	0.1827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0038					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6400e-003	4.6400e-003	1.0000e-005	0.0000	4.9400e-003
Total	**1.1867**	**2.0000e-005**	**2.3800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.6400e-003**	**4.6400e-003**	**1.0000e-005**	**0.0000**	**4.9400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	47.2848	1.8885	0.0451	107.9219
Unmitigated	47.2848	1.8885	0.0451	107.9219

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	57.8125 / 0	47.2848	1.8885	0.0451	107.9219
Total		**47.2848**	**1.8885**	**0.0451**	**107.9219**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	57.8125 / 0	47.2848	1.8885	0.0451	107.9219
Total		**47.2848**	**1.8885**	**0.0451**	**107.9219**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	47.7029	2.8192	0.0000	118.1819
Unmitigated	47.7029	2.8192	0.0000	118.1819

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	235	47.7029	2.8192	0.0000	118.1819
Total		**47.7029**	**2.8192**	**0.0000**	**118.1819**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	235	47.7029	2.8192	0.0000	118.1819
Total		**47.7029**	**2.8192**	**0.0000**	**118.1819**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Origo Cold Madera - Phase 2 Unmitigated Construction

Madera County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	250.00	1000sqft	5.74	250,000.00	0
Other Asphalt Surfaces	1.50	Acre	1.56	65,340.00	0
Other Non-Asphalt Surfaces	1.50	Acre	1.56	65,340.00	0
Parking Lot	6.74	Acre	6.74	293,594.40	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/MND's model.

Land Use - Consistent with the IS/MND's model.

Construction Phase - See SWAPE comment regarding "Incorrect Construction Schedule." See Attachment A for calculations.

Off-road Equipment - Consistent with changes in the IS/MND's model.

Grading -

Trips and VMT - Consistent with changes in the IS/MND's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Area."

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

Construction Off-road Equipment Mitigation - Consistent with the IS/MND's model.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	300.00	155.00
tblConstructionPhase	NumDays	30.00	16.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	8/30/2024	12/18/2023
tblConstructionPhase	PhaseEndDate	7/5/2024	11/20/2023
tblConstructionPhase	PhaseEndDate	5/12/2023	4/17/2023
tblConstructionPhase	PhaseEndDate	8/2/2024	12/4/2023
tblConstructionPhase	PhaseEndDate	3/31/2023	3/24/2023
tblConstructionPhase	PhaseStartDate	8/3/2024	12/5/2023
tblConstructionPhase	PhaseStartDate	5/13/2023	4/18/2023
tblConstructionPhase	PhaseStartDate	4/1/2023	3/25/2023
tblConstructionPhase	PhaseStartDate	7/6/2024	11/21/2023
tblLandUse	LotAcreage	1.50	1.56
tblLandUse	LotAcreage	1.50	1.56
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.80
tblOffRoadEquipment	UsageHours	8.00	6.60
tblOffRoadEquipment	UsageHours	8.00	6.60
tblOffRoadEquipment	UsageHours	7.00	5.80
tblOffRoadEquipment	UsageHours	8.00	6.60

tblTripsAndVMT	HaulingTripNumber	0.00	7.00
tblTripsAndVMT	HaulingTripNumber	0.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	36.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	365.7161	34.6913	36.3238	0.0872	19.8294	1.4266	21.0980	10.1484	1.3126	11.3155	0.0000	8,634.9727	8,634.9727	1.9496	0.4185	8,786.8753
Maximum	**365.7161**	**34.6913**	**36.3238**	**0.0872**	**19.8294**	**1.4266**	**21.0980**	**10.1484**	**1.3126**	**11.3155**	**0.0000**	**8,634.9727**	**8,634.9727**	**1.9496**	**0.4185**	**8,786.8753**

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	365.7161	34.6913	36.3238	0.0872	19.8294	1.4266	21.0980	10.1484	1.3126	11.3155	0.0000	8,634.9727	8,634.9727	1.9496	0.4185	8,786.8753
Maximum	**365.7161**	**34.6913**	**36.3238**	**0.0872**	**19.8294**	**1.4266**	**21.0980**	**10.1484**	**1.3126**	**11.3155**	**0.0000**	**8,634.9727**	**8,634.9727**	**1.9496**	**0.4185**	**8,786.8753**

	ROG	**NOx**	**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	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Energy	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Mobile	0.0000	0.0000	0.0000	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	**6.5047**	**0.0103**	**0.0349**	**6.0000e-005**	**0.0000**	**8.6000e-004**	**8.6000e-004**	**0.0000**	**8.6000e-004**	**8.6000e-004**		**12.1439**	**12.1439**	**3.8000e-004**	**2.2000e-004**	**12.2194**

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	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Energy	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Mobile	0.0000	0.0000	0.0000	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	**6.5047**	**0.0103**	**0.0349**	**6.0000e-005**	**0.0000**	**8.6000e-004**	**8.6000e-004**	**0.0000**	**8.6000e-004**	**8.6000e-004**		**12.1439**	**12.1439**	**3.8000e-004**	**2.2000e-004**	**12.2194**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	3/18/2023	3/24/2023	5	5	
2	Grading	Grading	3/25/2023	4/17/2023	5	16	
3	Building Construction	Building Construction	4/18/2023	11/20/2023	5	155	
4	Paving	Paving	11/21/2023	12/4/2023	5	10	
5	Architectural Coating	Architectural Coating	12/5/2023	12/18/2023	5	10	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 48

Acres of Paving: 9.86

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 375,000; Non-Residential Outdoor: 125,000; Striped Parking Area: 25,456 (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
Building Construction	Cranes	2	5.80	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	6	6.60	89	0.20
Building Construction	Generator Sets	2	6.60	84	0.74
Grading	Graders	1	8.00	187	0.41

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	6	5.80	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	2	6.60	46	0.45

<u>Trips and VMT</u>

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	7.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	16.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	283.00	111.00	36.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	57.00	0.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

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					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			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**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**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	2.8400e-003	0.1767	0.0377	8.1000e-004	0.0246	1.6800e-003	0.0262	6.7300e-003	1.6100e-003	8.3400e-003		86.2497	86.2497	1.7000e-004	0.0136	90.2943
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
Worker	0.0634	0.0446	0.4950	1.2600e-003	0.1479	8.6000e-004	0.1487	0.0392	7.9000e-004	0.0400		127.1518	127.1518	4.7000e-003	4.1800e-003	128.5144
Total	**0.0662**	**0.2213**	**0.5326**	**2.0700e-003**	**0.1724**	**2.5400e-003**	**0.1750**	**0.0460**	**2.4000e-003**	**0.0484**		**213.4016**	**213.4016**	**4.8700e-003**	**0.0177**	**218.8087**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			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**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**	**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	2.8400e-003	0.1767	0.0377	8.1000e-004	0.0246	1.6800e-003	0.0262	6.7300e-003	1.6100e-003	8.3400e-003		86.2497	86.2497	1.7000e-004	0.0136	90.2943
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
Worker	0.0634	0.0446	0.4950	1.2600e-003	0.1479	8.6000e-004	0.1487	0.0392	7.9000e-004	0.0400		127.1518	127.1518	4.7000e-003	4.1800e-003	128.5144
Total	**0.0662**	**0.2213**	**0.5326**	**2.0700e-003**	**0.1724**	**2.5400e-003**	**0.1750**	**0.0460**	**2.4000e-003**	**0.0484**		**213.4016**	**213.4016**	**4.8700e-003**	**0.0177**	**218.8087**

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			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**	**9.2036**	**1.4245**	**10.6281**	**3.6538**	**1.3105**	**4.9643**		**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	2.0300e-003	0.1262	0.0269	5.8000e-004	0.0175	1.2000e-003	0.0187	4.8100e-003	1.1500e-003	5.9600e-003		61.6069	61.6069	1.2000e-004	9.6800e-003	64.4959
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
Worker	0.0704	0.0495	0.5500	1.4000e-003	0.1643	9.5000e-004	0.1653	0.0436	8.8000e-004	0.0445		141.2798	141.2798	5.2200e-003	4.6400e-003	142.7938
Total	**0.0725**	**0.1757**	**0.5769**	**1.9800e-003**	**0.1818**	**2.1500e-003**	**0.1840**	**0.0484**	**2.0300e-003**	**0.0504**		**202.8868**	**202.8868**	**5.3400e-003**	**0.0143**	**207.2897**

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.477 7	6,011.477 7	1.9442		6,060.083 6
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**9.2036**	**1.4245**	**10.6281**	**3.6538**	**1.3105**	**4.9643**	**0.0000**	**6,011.477 7**	**6,011.477 7**	**1.9442**		**6,060.083 6**

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	2.0300e-003	0.1262	0.0269	5.8000e-004	0.0175	1.2000e-003	0.0187	4.8100e-003	1.1500e-003	5.9600e-003		61.6069	61.6069	1.2000e-004	9.6800e-003	64.4959
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
Worker	0.0704	0.0495	0.5500	1.4000e-003	0.1643	9.5000e-004	0.1653	0.0436	8.8000e-004	0.0445		141.2798	141.2798	5.2200e-003	4.6400e-003	142.7938
Total	**0.0725**	**0.1757**	**0.5769**	**1.9800e-003**	**0.1818**	**2.1500e-003**	**0.1840**	**0.0484**	**2.0300e-003**	**0.0504**		**202.8868**	**202.8868**	**5.3400e-003**	**0.0143**	**207.2897**

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	2.6001	23.7877	26.8559	0.0446		1.1570	1.1570		1.0886	1.0886		4,225.2436	4,225.2436	1.0059		4,250.3911
Total	**2.6001**	**23.7877**	**26.8559**	**0.0446**		**1.1570**	**1.1570**		**1.0886**	**1.0886**		**4,225.2436**	**4,225.2436**	**1.0059**		**4,250.3911**

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	4.7000e-004	0.0293	6.2500e-003	1.4000e-004	4.0700e-003	2.8000e-004	4.3500e-003	1.1200e-003	2.7000e-004	1.3800e-003		14.3087	14.3087	3.0000e-005	2.2500e-003	14.9797
Vendor	0.1294	5.0213	1.6795	0.0227	0.7527	0.0321	0.7848	0.2168	0.0307	0.2474		2,396.3109	2,396.3109	8.3100e-003	0.3505	2,500.9727
Worker	0.9965	0.7010	7.7821	0.0198	2.3248	0.0135	2.3383	0.6166	0.0124	0.6291		1,999.1095	1,999.1095	0.0738	0.0657	2,020.5318
Total	**1.1263**	**5.7516**	**9.4679**	**0.0426**	**3.0816**	**0.0459**	**3.1274**	**0.8345**	**0.0434**	**0.8779**		**4,409.7291**	**4,409.7291**	**0.0822**	**0.4185**	**4,536.4842**

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	2.6001	23.7877	26.8559	0.0446		1.1570	1.1570		1.0886	1.0886	0.0000	4,225.2436	4,225.2436	1.0059		4,250.3911
Total	**2.6001**	**23.7877**	**26.8559**	**0.0446**		**1.1570**	**1.1570**		**1.0886**	**1.0886**	**0.0000**	**4,225.2436**	**4,225.2436**	**1.0059**		**4,250.3911**

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	4.7000e-004	0.0293	6.2500e-003	1.4000e-004	4.0700e-003	2.8000e-004	4.3500e-003	1.1200e-003	2.7000e-004	1.3800e-003		14.3087	14.3087	3.0000e-005	2.2500e-003	14.9797
Vendor	0.1294	5.0213	1.6795	0.0227	0.7527	0.0321	0.7848	0.2168	0.0307	0.2474		2,396.3109	2,396.3109	8.3100e-003	0.3505	2,500.9727
Worker	0.9965	0.7010	7.7821	0.0198	2.3248	0.0135	2.3383	0.6166	0.0124	0.6291		1,999.1095	1,999.1095	0.0738	0.0657	2,020.5318
Total	**1.1263**	**5.7516**	**9.4679**	**0.0426**	**3.0816**	**0.0459**	**3.1274**	**0.8345**	**0.0434**	**0.8779**		**4,409.7291**	**4,409.7291**	**0.0822**	**0.4185**	**4,536.4842**

3.5 Paving - 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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.1746					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.2073**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

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	2.4300e-003	0.1514	0.0323	7.0000e-004	0.0210	1.4400e-003	0.0225	5.7700e-003	1.3800e-003	7.1500e-003		73.9283	73.9283	1.5000e-004	0.0116	77.3951
Vendor	4.6600e-003	0.1810	0.0605	8.2000e-004	0.0271	1.1600e-003	0.0283	7.8100e-003	1.1100e-003	8.9200e-003		86.3536	86.3536	3.0000e-004	0.0126	90.1251
Worker	0.0528	0.0372	0.4125	1.0500e-003	0.1232	7.2000e-004	0.1239	0.0327	6.6000e-004	0.0333		105.9599	105.9599	3.9100e-003	3.4800e-003	107.0953
Total	**0.0599**	**0.3695**	**0.5053**	**2.5700e-003**	**0.1714**	**3.3200e-003**	**0.1747**	**0.0463**	**3.1500e-003**	**0.0494**		**266.2418**	**266.2418**	**4.3600e-003**	**0.0277**	**274.6156**

3.5 Paving - 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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	2.1746					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.2073**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

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	2.4300e-003	0.1514	0.0323	7.0000e-004	0.0210	1.4400e-003	0.0225	5.7700e-003	1.3800e-003	7.1500e-003		73.9283	73.9283	1.5000e-004	0.0116	77.3951
Vendor	4.6600e-003	0.1810	0.0605	8.2000e-004	0.0271	1.1600e-003	0.0283	7.8100e-003	1.1100e-003	8.9200e-003		86.3536	86.3536	3.0000e-004	0.0126	90.1251
Worker	0.0528	0.0372	0.4125	1.0500e-003	0.1232	7.2000e-004	0.1239	0.0327	6.6000e-004	0.0333		105.9599	105.9599	3.9100e-003	3.4800e-003	107.0953
Total	**0.0599**	**0.3695**	**0.5053**	**2.5700e-003**	**0.1714**	**3.3200e-003**	**0.1747**	**0.0463**	**3.1500e-003**	**0.0494**		**266.2418**	**266.2418**	**4.3600e-003**	**0.0277**	**274.6156**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	365.3233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**365.5149**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.1000e-004	0.0252	5.3800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3214	12.3214	2.0000e-005	1.9400e-003	12.8992
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
Worker	0.2007	0.1412	1.5674	3.9800e-003	0.4682	2.7200e-003	0.4710	0.1242	2.5000e-003	0.1267		402.6475	402.6475	0.0149	0.0132	406.9622
Total	**0.2011**	**0.1664**	**1.5728**	**4.1000e-003**	**0.4718**	**2.9600e-003**	**0.4747**	**0.1252**	**2.7300e-003**	**0.1279**		**414.9689**	**414.9689**	**0.0149**	**0.0152**	**419.8614**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 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					
Archit. Coating	365.3233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**365.5149**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.1000e-004	0.0252	5.3800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3214	12.3214	2.0000e-005	1.9400e-003	12.8992
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
Worker	0.2007	0.1412	1.5674	3.9800e-003	0.4682	2.7200e-003	0.4710	0.1242	2.5000e-003	0.1267		402.6475	402.6475	0.0149	0.0132	406.9622
Total	**0.2011**	**0.1664**	**1.5728**	**4.1000e-003**	**0.4718**	**2.9600e-003**	**0.4747**	**0.1252**	**2.7300e-003**	**0.1279**		**414.9689**	**414.9689**	**0.0149**	**0.0152**	**419.8614**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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
Refrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Other Non-Asphalt Surfaces	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Parking Lot	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Refrigerated Warehouse-No Rail	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700

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	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
NaturalGas Unmitigated	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	102.74	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Total		**1.1100e-003**	**0.0101**	**8.4600e-003**	**6.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.7000e-004**	**7.7000e-004**		**12.0870**	**12.0870**	**2.3000e-004**	**2.2000e-004**	**12.1589**

5.2 Energy by Land Use - NaturalGas

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	0.10274	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Total		**1.1100e-003**	**0.0101**	**8.4600e-003**	**6.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.7000e-004**	**7.7000e-004**		**12.0870**	**12.0870**	**2.3000e-004**	**2.2000e-004**	**12.1589**

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	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Unmitigated	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606

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	1.0009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.4400e-003	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Total	**6.5036**	**2.4000e-004**	**0.0265**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0568**	**0.0568**	**1.5000e-004**		**0.0606**

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	1.0009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.4400e-003	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Total	**6.5036**	**2.4000e-004**	**0.0265**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0568**	**0.0568**	**1.5000e-004**		**0.0606**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Origo Cold Madera - Phase 2 Unmitigated Construction

Madera County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	250.00	1000sqft	5.74	250,000.00	0
Other Asphalt Surfaces	1.50	Acre	1.56	65,340.00	0
Other Non-Asphalt Surfaces	1.50	Acre	1.56	65,340.00	0
Parking Lot	6.74	Acre	6.74	293,594.40	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/MND's model.

Land Use - Consistent with the IS/MND's model.

Construction Phase - See SWAPE comment regarding "Incorrect Construction Schedule." See Attachment A for calculations.

Off-road Equipment - Consistent with changes in the IS/MND's model.

Grading -

Trips and VMT - Consistent with changes in the IS/MND's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors and Area."

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

Construction Off-road Equipment Mitigation - Consistent with the IS/MND's model.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	300.00	155.00
tblConstructionPhase	NumDays	30.00	16.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	8/30/2024	12/18/2023
tblConstructionPhase	PhaseEndDate	7/5/2024	11/20/2023
tblConstructionPhase	PhaseEndDate	5/12/2023	4/17/2023
tblConstructionPhase	PhaseEndDate	8/2/2024	12/4/2023
tblConstructionPhase	PhaseEndDate	3/31/2023	3/24/2023
tblConstructionPhase	PhaseStartDate	8/3/2024	12/5/2023
tblConstructionPhase	PhaseStartDate	5/13/2023	4/18/2023
tblConstructionPhase	PhaseStartDate	4/1/2023	3/25/2023
tblConstructionPhase	PhaseStartDate	7/6/2024	11/21/2023
tblLandUse	LotAcreage	1.50	1.56
tblLandUse	LotAcreage	1.50	1.56
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.80
tblOffRoadEquipment	UsageHours	8.00	6.60
tblOffRoadEquipment	UsageHours	8.00	6.60
tblOffRoadEquipment	UsageHours	7.00	5.80
tblOffRoadEquipment	UsageHours	8.00	6.60

tblTripsAndVMT	HaulingTripNumber	0.00	7.00
tblTripsAndVMT	HaulingTripNumber	0.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	36.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	365.7411	34.6752	37.5846	0.0895	19.8294	1.4266	21.0980	10.1484	1.3126	11.3155	0.0000	8,869.9989	8,869.9989	1.9491	0.4100	9,019.1980
Maximum	**365.7411**	**34.6752**	**37.5846**	**0.0895**	**19.8294**	**1.4266**	**21.0980**	**10.1484**	**1.3126**	**11.3155**	**0.0000**	**8,869.9989**	**8,869.9989**	**1.9491**	**0.4100**	**9,019.1980**

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	365.7411	34.6752	37.5846	0.0895	19.8294	1.4266	21.0980	10.1484	1.3126	11.3155	0.0000	8,869.9989	8,869.9989	1.9491	0.4100	9,019.1980
Maximum	**365.7411**	**34.6752**	**37.5846**	**0.0895**	**19.8294**	**1.4266**	**21.0980**	**10.1484**	**1.3126**	**11.3155**	**0.0000**	**8,869.9989**	**8,869.9989**	**1.9491**	**0.4100**	**9,019.1980**

	ROG	**NOx**	**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	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Energy	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Mobile	0.0000	0.0000	0.0000	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	**6.5047**	**0.0103**	**0.0349**	**6.0000e-005**	**0.0000**	**8.6000e-004**	**8.6000e-004**	**0.0000**	**8.6000e-004**	**8.6000e-004**		**12.1439**	**12.1439**	**3.8000e-004**	**2.2000e-004**	**12.2194**

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	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Energy	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Mobile	0.0000	0.0000	0.0000	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	**6.5047**	**0.0103**	**0.0349**	**6.0000e-005**	**0.0000**	**8.6000e-004**	**8.6000e-004**	**0.0000**	**8.6000e-004**	**8.6000e-004**		**12.1439**	**12.1439**	**3.8000e-004**	**2.2000e-004**	**12.2194**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	3/18/2023	3/24/2023	5	5	
2	Grading	Grading	3/25/2023	4/17/2023	5	16	
3	Building Construction	Building Construction	4/18/2023	11/20/2023	5	155	
4	Paving	Paving	11/21/2023	12/4/2023	5	10	
5	Architectural Coating	Architectural Coating	12/5/2023	12/18/2023	5	10	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 48

Acres of Paving: 9.86

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 375,000; Non-Residential Outdoor: 125,000; Striped Parking Area: 25,456 (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
Building Construction	Cranes	2	5.80	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	6	6.60	89	0.20
Building Construction	Generator Sets	2	6.60	84	0.74
Grading	Graders	1	8.00	187	0.41

Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	6	5.80	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	2	6.60	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	7.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	16.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	283.00	111.00	36.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	57.00	0.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

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					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			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**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**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	3.0700e-003	0.1652	0.0370	8.1000e-004	0.0246	1.6800e-003	0.0262	6.7300e-003	1.6000e-003	8.3400e-003		86.1318	86.1318	1.8000e-004	0.0135	90.1711
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
Worker	0.0713	0.0374	0.5784	1.4100e-003	0.1479	8.6000e-004	0.1487	0.0392	7.9000e-004	0.0400		142.4018	142.4018	4.2400e-003	3.7200e-003	143.6155
Total	**0.0744**	**0.2026**	**0.6154**	**2.2200e-003**	**0.1724**	**2.5400e-003**	**0.1750**	**0.0460**	**2.3900e-003**	**0.0484**		**228.5336**	**228.5336**	**4.4200e-003**	**0.0173**	**233.7866**

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					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**	**0.0000**	**3,687.308 1**	**3,687.308 1**	**1.1926**		**3,717.121 9**

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	3.0700e-003	0.1652	0.0370	8.1000e-004	0.0246	1.6800e-003	0.0262	6.7300e-003	1.6000e-003	8.3400e-003		86.1318	86.1318	1.8000e-004	0.0135	90.1711
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
Worker	0.0713	0.0374	0.5784	1.4100e-003	0.1479	8.6000e-004	0.1487	0.0392	7.9000e-004	0.0400		142.4018	142.4018	4.2400e-003	3.7200e-003	143.6155
Total	**0.0744**	**0.2026**	**0.6154**	**2.2200e-003**	**0.1724**	**2.5400e-003**	**0.1750**	**0.0460**	**2.3900e-003**	**0.0484**		**228.5336**	**228.5336**	**4.4200e-003**	**0.0173**	**233.7866**

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			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**	**9.2036**	**1.4245**	**10.6281**	**3.6538**	**1.3105**	**4.9643**		**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	2.1900e-003	0.1180	0.0264	5.8000e-004	0.0175	1.2000e-003	0.0187	4.8100e-003	1.1500e-003	5.9600e-003		61.5227	61.5227	1.3000e-004	9.6700e-003	64.4079
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
Worker	0.0792	0.0416	0.6426	1.5700e-003	0.1643	9.5000e-004	0.1653	0.0436	8.8000e-004	0.0445		158.2242	158.2242	4.7100e-003	4.1300e-003	159.5728
Total	**0.0814**	**0.1596**	**0.6691**	**2.1500e-003**	**0.1818**	**2.1500e-003**	**0.1840**	**0.0484**	**2.0300e-003**	**0.0504**		**219.7469**	**219.7469**	**4.8400e-003**	**0.0138**	**223.9807**

3.3 Grading - 2023

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
	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			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**	**9.2036**	**1.4245**	**10.6281**	**3.6538**	**1.3105**	**4.9643**	**0.0000**	**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

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
	lb/day										lb/day					
Hauling	2.1900e-003	0.1180	0.0264	5.8000e-004	0.0175	1.2000e-003	0.0187	4.8100e-003	1.1500e-003	5.9600e-003		61.5227	61.5227	1.3000e-004	9.6700e-003	64.4079
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
Worker	0.0792	0.0416	0.6426	1.5700e-003	0.1643	9.5000e-004	0.1653	0.0436	8.8000e-004	0.0445		158.2242	158.2242	4.7100e-003	4.1300e-003	159.5728
Total	**0.0814**	**0.1596**	**0.6691**	**2.1500e-003**	**0.1818**	**2.1500e-003**	**0.1840**	**0.0484**	**2.0300e-003**	**0.0504**		**219.7469**	**219.7469**	**4.8400e-003**	**0.0138**	**223.9807**

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	2.6001	23.7877	26.8559	0.0446		1.1570	1.1570		1.0886	1.0886		4,225.2436	4,225.2436	1.0059		4,250.3911
Total	**2.6001**	**23.7877**	**26.8559**	**0.0446**		**1.1570**	**1.1570**		**1.0886**	**1.0886**		**4,225.2436**	**4,225.2436**	**1.0059**		**4,250.3911**

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	5.1000e-004	0.0274	6.1300e-003	1.3000e-004	4.0700e-003	2.8000e-004	4.3500e-003	1.1200e-003	2.7000e-004	1.3800e-003		14.2892	14.2892	3.0000e-005	2.2500e-003	14.9593
Vendor	0.1372	4.6925	1.6292	0.0227	0.7527	0.0320	0.7847	0.2168	0.0306	0.2473		2,391.5941	2,391.5941	8.6900e-003	0.3493	2,495.8929
Worker	1.1206	0.5886	9.0934	0.0222	2.3248	0.0135	2.3383	0.6166	0.0124	0.6291		2,238.8721	2,238.8721	0.0666	0.0585	2,257.9548
Total	**1.2583**	**5.3085**	**10.7287**	**0.0450**	**3.0816**	**0.0458**	**3.1273**	**0.8345**	**0.0433**	**0.8778**		**4,644.7553**	**4,644.7553**	**0.0753**	**0.4100**	**4,768.8069**

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	2.6001	23.7877	26.8559	0.0446		1.1570	1.1570		1.0886	1.0886	0.0000	4,225.2436	4,225.2436	1.0059		4,250.3911
Total	**2.6001**	**23.7877**	**26.8559**	**0.0446**		**1.1570**	**1.1570**		**1.0886**	**1.0886**	**0.0000**	**4,225.2436**	**4,225.2436**	**1.0059**		**4,250.3911**

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	5.1000e-004	0.0274	6.1300e-003	1.3000e-004	4.0700e-003	2.8000e-004	4.3500e-003	1.1200e-003	2.7000e-004	1.3800e-003		14.2892	14.2892	3.0000e-005	2.2500e-003	14.9593
Vendor	0.1372	4.6925	1.6292	0.0227	0.7527	0.0320	0.7847	0.2168	0.0306	0.2473		2,391.5941	2,391.5941	8.6900e-003	0.3493	2,495.8929
Worker	1.1206	0.5886	9.0934	0.0222	2.3248	0.0135	2.3383	0.6166	0.0124	0.6291		2,238.8721	2,238.8721	0.0666	0.0585	2,257.9548
Total	**1.2583**	**5.3085**	**10.7287**	**0.0450**	**3.0816**	**0.0458**	**3.1273**	**0.8345**	**0.0433**	**0.8778**		**4,644.7553**	**4,644.7553**	**0.0753**	**0.4100**	**4,768.8069**

3.5 Paving - 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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	2.1746					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.2073**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

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	2.6300e-003	0.1416	0.0317	7.0000e-004	0.0210	1.4400e-003	0.0225	5.7700e-003	1.3800e-003	7.1500e-003		73.8273	73.8273	1.6000e-004	0.0116	77.2895
Vendor	4.9400e-003	0.1691	0.0587	8.2000e-004	0.0271	1.1500e-003	0.0283	7.8100e-003	1.1000e-003	8.9100e-003		86.1836	86.1836	3.1000e-004	0.0126	89.9421
Worker	0.0594	0.0312	0.4820	1.1700e-003	0.1232	7.2000e-004	0.1239	0.0327	6.6000e-004	0.0333		118.6681	118.6681	3.5300e-003	3.1000e-003	119.6796
Total	**0.0670**	**0.3419**	**0.5724**	**2.6900e-003**	**0.1714**	**3.3100e-003**	**0.1747**	**0.0463**	**3.1400e-003**	**0.0494**		**278.6790**	**278.6790**	**4.0000e-003**	**0.0273**	**286.9112**

3.5 Paving - 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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.1746					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.2073**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

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	2.6300e-003	0.1416	0.0317	7.0000e-004	0.0210	1.4400e-003	0.0225	5.7700e-003	1.3800e-003	7.1500e-003		73.8273	73.8273	1.6000e-004	0.0116	77.2895
Vendor	4.9400e-003	0.1691	0.0587	8.2000e-004	0.0271	1.1500e-003	0.0283	7.8100e-003	1.1000e-003	8.9100e-003		86.1836	86.1836	3.1000e-004	0.0126	89.9421
Worker	0.0594	0.0312	0.4820	1.1700e-003	0.1232	7.2000e-004	0.1239	0.0327	6.6000e-004	0.0333		118.6681	118.6681	3.5300e-003	3.1000e-003	119.6796
Total	**0.0670**	**0.3419**	**0.5724**	**2.6900e-003**	**0.1714**	**3.3100e-003**	**0.1747**	**0.0463**	**3.1400e-003**	**0.0494**		**278.6790**	**278.6790**	**4.0000e-003**	**0.0273**	**286.9112**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	365.3233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**365.5149**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.4000e-004	0.0236	5.2800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3046	12.3046	3.0000e-005	1.9300e-003	12.8816
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
Worker	0.2257	0.1186	1.8315	4.4600e-003	0.4682	2.7200e-003	0.4710	0.1242	2.5000e-003	0.1267		450.9389	450.9389	0.0134	0.0118	454.7824
Total	**0.2262**	**0.1421**	**1.8368**	**4.5800e-003**	**0.4718**	**2.9600e-003**	**0.4747**	**0.1252**	**2.7300e-003**	**0.1279**		**463.2435**	**463.2435**	**0.0134**	**0.0137**	**467.6640**

3.6 Architectural Coating - 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					
Archit. Coating	365.3233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**365.5149**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	4.4000e-004	0.0236	5.2800e-003	1.2000e-004	3.5100e-003	2.4000e-004	3.7500e-003	9.6000e-004	2.3000e-004	1.1900e-003		12.3046	12.3046	3.0000e-005	1.9300e-003	12.8816
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
Worker	0.2257	0.1186	1.8315	4.4600e-003	0.4682	2.7200e-003	0.4710	0.1242	2.5000e-003	0.1267		450.9389	450.9389	0.0134	0.0118	454.7824
Total	**0.2262**	**0.1421**	**1.8368**	**4.5800e-003**	**0.4718**	**2.9600e-003**	**0.4747**	**0.1252**	**2.7300e-003**	**0.1279**		**463.2435**	**463.2435**	**0.0134**	**0.0137**	**467.6640**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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
Refrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Other Non-Asphalt Surfaces	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Parking Lot	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700
Refrigerated Warehouse-No Rail	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700

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	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
NaturalGas Unmitigated	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	102.74	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Total		**1.1100e-003**	**0.0101**	**8.4600e-003**	**6.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.7000e-004**	**7.7000e-004**		**12.0870**	**12.0870**	**2.3000e-004**	**2.2000e-004**	**12.1589**

5.2 Energy by Land Use - NaturalGas

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Refrigerated Warehouse-No Rail	0.10274	1.1100e-003	0.0101	8.4600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.0870	12.0870	2.3000e-004	2.2000e-004	12.1589
Total		**1.1100e-003**	**0.0101**	**8.4600e-003**	**6.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.7000e-004**	**7.7000e-004**		**12.0870**	**12.0870**	**2.3000e-004**	**2.2000e-004**	**12.1589**

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	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Unmitigated	6.5036	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606

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	1.0009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.4400e-003	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Total	**6.5036**	**2.4000e-004**	**0.0265**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0568**	**0.0568**	**1.5000e-004**		**0.0606**

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	1.0009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.4400e-003	2.4000e-004	0.0265	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0568	0.0568	1.5000e-004		0.0606
Total	**6.5036**	**2.4000e-004**	**0.0265**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0568**	**0.0568**	**1.5000e-004**		**0.0606**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Construction				
2022 (Phase 1)			**Total**	
Annual Emissions (tons/year)	0.1435		Total DPM (lbs)	526.0021918
Daily Emissions (lbs/day)	0.78630137		Total DPM (g)	238594.5942
Construction Duration (days)	300		Emission Rate (g/s)	0.003721714
Total DPM (lbs)	235.890411		Release Height (meters)	3
Total DPM (g)	106999.8904		Total Acreage	30.16
Start Date	3/7/2022		Max Horizontal (meters)	494.07
End Date	1/1/2023		Min Horizontal (meters)	247.04
Construction Days	300		Initial Vertical Dimension (meters)	1.5
2023 (Phase 1 + Phase 2)			Setting	Urban
Annual Emissions (tons/year)	0.1409		Population	66,224
Daily Emissions (lbs/day)	0.772054795		Start Date	3/7/2022
Construction Duration (days)	365		End Date	3/18/2024
Total DPM (lbs)	281.8		Total Construction Days	742
Total DPM (g)	127824.48		Total Years of Construction	2.03
Start Date	1/1/2023		Total Years of Operation	27.97
End Date	1/1/2024			
Construction Days	365			
2024 (Phase 2)				
Annual Emissions (tons/year)	0.0197			
Daily Emissions (lbs/day)	0.107945205			
Construction Duration (days)	77			
Total DPM (lbs)	8.311780822			
Total DPM (g)	3770.223781			
Start Date	1/1/2024			
End Date	3/18/2024			
Construction Days	77			

```
Start date and time  03/03/22 15:29:08

                                AERSCREEN 21112


ORIGO COLD MADERA - OPERATIONS


            ORIGO COLD MADERA - OPERATIONS



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

                        METRIC              ENGLISH

 ** AREADATA **  ---------------     ----------------


 Emission Rate:    0.372E-02 g/s         0.295E-01 lb/hr

 Area Height:           3.00 meters           9.84 feet

 Area Source Length:  494.07 meters        1620.96 feet

 Area Source Width:   247.04 meters         810.50 feet

 Vertical Dimension:    1.50 meters           4.92 feet

 Model Mode:           URBAN

 Population:           66224

 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:

2022.03.03_AmondWorldColdStorage_AERSCREEN_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 03/03/22 15:34:12
 ********************************************


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


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

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

  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  ***


FLOWSECTOR   ended 03/03/22 15:34:31


REFINE       started 03/03/22 15:34:31


 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0


    ********   WARNING MESSAGES   ********
```

```
               ***  NONE  ***


REFINE       ended 03/03/22 15:34:33


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

 AERSCREEN Finished Successfully

 With no errors or warnings

 Check log file for details

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


 Ending date and time  03/03/22 15:34:35
```

```
 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
   0.12151E+01        1.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.12634E+01       25.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.13102E+01       50.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.13538E+01       75.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.13946E+01      100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.14329E+01      125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.14690E+01      150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.15029E+01      175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.15348E+01      200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.15652E+01      225.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.15920E+01      250.00      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
*  0.15931E+01      251.00      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
   0.15588E+01      275.00      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
   0.11929E+01      300.00      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
   0.10127E+01      325.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.90906E+00      350.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
```

```
 310.0    2.0
   0.83212E+00       375.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.76586E+00       400.00      0.00  20.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.71545E+00       425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.67374E+00       450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.63648E+00       475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.60241E+00       500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.57139E+00       525.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.54309E+00       550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.51698E+00       575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.49300E+00       600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.47077E+00       625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.45044E+00       650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.43109E+00       675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.41342E+00       700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.39676E+00       725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.38140E+00       750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.36694E+00       775.00      0.00   0.0        Winter       0-360   10011001
```

```
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.35323E+00       800.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.34052E+00       825.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.32855E+00       850.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.31721E+00       875.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.30663E+00       900.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.29664E+00       925.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.28704E+00       950.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.27796E+00       975.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.26943E+00      1000.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.26139E+00      1025.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.25378E+00      1050.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.24643E+00      1075.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.23947E+00      1100.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.23280E+00      1125.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.22647E+00      1150.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.22047E+00      1175.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
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   0.21472E+00      1200.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.20916E+00      1225.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.20385E+00      1250.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.19880E+00      1275.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.19398E+00      1300.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.18938E+00      1325.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.18497E+00      1350.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.18073E+00      1375.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.17660E+00      1400.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.17260E+00      1425.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.16876E+00      1450.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.16508E+00      1475.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.16154E+00      1500.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.15814E+00      1525.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.15488E+00      1550.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.15173E+00      1575.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.14870E+00      1600.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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 310.0    2.0
   0.14578E+00      1625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.14296E+00      1650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.14020E+00      1675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.13753E+00      1700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.13495E+00      1725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.13243E+00      1750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.13000E+00      1775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.12764E+00      1800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.12536E+00      1825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.12315E+00      1850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.12101E+00      1875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.11894E+00      1900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.11694E+00      1925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.11499E+00      1950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.11310E+00      1975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.11127E+00      2000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.10948E+00      2025.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.10772E+00      2050.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.10601E+00      2075.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.10435E+00      2100.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.10274E+00      2125.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.10117E+00      2150.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.99641E-01      2175.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.98155E-01      2200.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.96709E-01      2225.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.95301E-01      2250.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.93929E-01      2275.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.92587E-01      2300.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.91271E-01      2325.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.89988E-01      2350.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.88738E-01      2375.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.87518E-01      2400.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.86328E-01      2425.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
```

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   0.85166E-01      2450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.84032E-01      2475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.82925E-01      2500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.81844E-01      2525.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.80788E-01      2550.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.79755E-01      2575.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.78733E-01      2600.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.77734E-01      2625.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.76758E-01      2650.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.75802E-01      2675.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.74868E-01      2700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.73955E-01      2725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.73060E-01      2750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.72185E-01      2775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.71328E-01      2800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.70490E-01      2825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.69668E-01      2850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
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 310.0    2.0
   0.68864E-01      2875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.68076E-01      2900.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.67304E-01      2925.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.66547E-01      2950.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.65805E-01      2975.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.65078E-01      3000.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.64365E-01      3025.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.63666E-01      3050.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.62980E-01      3075.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.62307E-01      3100.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.61648E-01      3125.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.61000E-01      3150.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.60364E-01      3175.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.59740E-01      3200.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.59122E-01      3225.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.58515E-01      3250.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.57919E-01      3275.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.57333E-01      3300.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.56758E-01      3325.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.56193E-01      3350.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.55638E-01      3375.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.55092E-01      3400.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.54556E-01      3425.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.54029E-01      3450.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.53511E-01      3475.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.52998E-01      3500.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.52492E-01      3525.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.51993E-01      3550.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.51503E-01      3575.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.51021E-01      3600.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.50547E-01      3625.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.50081E-01      3650.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.49622E-01      3675.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
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   0.49170E-01      3700.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.48726E-01      3725.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.48288E-01      3750.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.47858E-01      3775.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.47434E-01      3800.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.47017E-01      3825.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.46606E-01      3850.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.46201E-01      3875.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.45803E-01      3900.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.45414E-01      3925.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.45029E-01      3950.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.44648E-01      3975.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.44273E-01      4000.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.43903E-01      4025.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.43539E-01      4050.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.43180E-01      4075.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.42826E-01      4100.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
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 310.0    2.0
   0.42477E-01      4125.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.42133E-01      4150.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.41794E-01      4175.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.41459E-01      4200.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.41128E-01      4225.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.40802E-01      4250.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.40481E-01      4275.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.40164E-01      4300.00      0.00   5.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.39852E-01      4325.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.39545E-01      4350.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.39241E-01      4375.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.38942E-01      4400.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.38647E-01      4425.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.38355E-01      4450.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.38068E-01      4475.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.37784E-01      4500.00      0.00   0.0        Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.37504E-01      4525.00      0.00   0.0        Winter       0-360   10011001
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-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.37227E-01      4550.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.37563E-01      4575.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.37284E-01      4600.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.37009E-01      4625.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.36737E-01      4650.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.36468E-01      4675.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.36203E-01      4700.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.35942E-01      4725.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.35683E-01      4750.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.35428E-01      4775.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.35176E-01      4800.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.34927E-01      4825.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.34681E-01      4850.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.34438E-01      4875.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.34198E-01      4900.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.33960E-01      4925.00      0.00   0.0         Winter       0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.       6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
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   0.33726E-01      4950.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.33494E-01      4975.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
   0.33266E-01      5000.00      0.00   0.0        Winter      0-360   10011001
-1.30  0.043 -9.000  0.020 -999.   21.      6.0 1.000   1.50   0.35    0.50   10.0
 310.0    2.0
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SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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

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

Education:

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

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

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

Positions Matt has held include:

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

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

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 100 industrial facilities.
- Expert witness on numerous cases including, for example, perfluorooctanoic acid (PFOA) contamination of groundwater, MTBE litigation, air toxins at hazards at a school, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

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

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

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

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

Hydrogeology:

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

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

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

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

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted

public hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

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

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

<u>Policy:</u>

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

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

principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

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

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

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

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

Teaching:

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

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

Matt is currently a part time geology instructor at Golden West College in Huntington Beach, California where he taught from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations, 2009-2011.

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

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, industrial, military and agricultural sources, unconventional oil drilling operations, and locomotive and construction engines. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities. Dr. Rosenfeld has also successfully modeled exposure to contaminants distributed by water systems and via vapor intrusion.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, creosote, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at sites and has testified as an expert witness on numerous cases involving exposure to soil, water and air contaminants from industrial, railroad, agricultural, and military sources.

Professional History:

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

Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P**., (2015) Modeling the Effect of Refinery Emission On Residential Property Value. Journal of Real Estate Research. 27(3):321-342

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

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

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

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution,* 123 (17), 319-327.

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

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

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

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

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

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

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme For The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004.* New Orleans, October 2-6, 2004.

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

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

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

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

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

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality.* 29, 1662-1668.

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

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

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

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

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

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

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

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

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

Presentations:

Rosenfeld, P.E., "The science for Perfluorinated Chemicals (PFAS): What makes remediation so hard?" Law Seminars International, (May 9-10, 2018) 800 Fifth Avenue, Suite 101 Seattle, WA.

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 Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 5-14-2021
Trial, October 8-4-2021

In the Circuit Court of Cook County Illinois
Joseph Rafferty, Plaintiff vs. Consolidated Rail Corporation and National Railroad Passenger Corporation d/b/a AMTRAK,
Case No.: No. 18-L-6845
Rosenfeld Deposition, 6-28-2021

In the United States District Court For the Northern District of Illinois
Theresa Romcoe, Plaintiff vs. Northeast Illinois Regional Commuter Railroad Corporation d/b/a METRA Rail, Defendants
Case No.: No. 17-cv-8517
Rosenfeld Deposition, 5-25-2021

In the Superior Court of the State of Arizona In and For the Cunty of Maricopa
Mary Tryon et al., Plaintiff vs. The City of Pheonix v. Cox Cactus Farm, L.L.C., Utah Shelter Systems, Inc.
Case Number CV20127-094749
Rosenfeld Deposition: 5-7-2021

In the United States District Court for the Eastern District of Texas Beaumont Division
Robinson, Jeremy et al *Plaintiffs*, vs. CNA Insurance Company et al.
Case Number 1:17-cv-000508
Rosenfeld Deposition: 3-25-2021

In the Superior Court of the State of California, County of San Bernardino
Gary Garner, Personal Representative for the Estate of Melvin Garner vs. BNSF Railway Company.
Case No. 1720288
Rosenfeld Deposition 2-23-2021

In the Superior Court of the State of California, County of Los Angeles, Spring Street Courthouse
Benny M Rodriguez vs. Union Pacific Railroad, A Corporation, et al.
Case No. 18STCV01162
Rosenfeld Deposition 12-23-2020

In the Circuit Court of Jackson County, Missouri
Karen Cornwell, *Plaintiff,* vs. Marathon Petroleum, LP, *Defendant.*
Case No.: 1716-CV10006
Rosenfeld Deposition. 8-30-2019

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS “Conti Perdido” *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case No.: 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No.: 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In United States District Court For The Southern District of Mississippi
Guy Manuel vs. The BP Exploration et al., Defendants
Case: No 1:19-cv-00315-RHW
Rosenfeld Deposition, 4-22-2020

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

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

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

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

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

In the 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 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 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 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

EXHIBIT B

Shawn Smallwood, PhD
3108 Finch Street
Davis, CA 95616

Robert Smith, Senior Planner
City of Madera
Planning Department
205 W. 4th Street
Madera, CA 93637

24 February 2022

RE: Amond World Cold Storage Warehouse

Dear Mr. Smith,

I write to comment on the Initial Study/Mitigated Negative Declaration (IS/MND) prepared for the Amond World Cold Storage Warehouse project (City of Madera 2022), which would consist of two cold storage warehouses with 504,016 square feet of floor space on 30.16 acres of agricultural land on Assessor Parcel Numbers 013-200-004 and 013-200-005. I write to point out that the project would have significant impacts on biological resources that were not addressed in the IS/MND, and that mitigation is warranted to minimize and compensate for those impacts.

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 worked as a post-graduate researcher in the Department of Agronomy and Range Sciences. My research has been on animal density and distribution, habitat selection, interactions between wildlife and human infrastructure and activities, conservation of rare and endangered species, and on the ecology of invading species. I authored numerous papers on special-status species issues. 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 worked part-time as a 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-six years. My CV is attached.

SITE VISIT

I visited the proposed project site 15:42 to 17:52 hours on 21 February 2022. After having been disked last year, the site was covered by ruderal grassland species (Photos 1 and 2). Eucalyptus and various other trees bordered the site. When I surveyed the site for the site's periphery, the sky was clear and breezy, and temperatures dropped from 59° F to 53° F. I used binoculars to scan for wildlife.

Photos 1 and 2. *Views of the project site from the north toward the southeast (top), and southwest (bottom), 21 February 2022.*

Over 2 hours and 10 minutes, I detected 25 species of vertebrate wildlife at the project site, including 5 special-status species (Table 1). Several of the trees along the site's perimeter were of sufficient stature to support raptor nests (Photo 2), including nests of Swainson's hawk (I could not have seen Swainson's hawks because at this time of year they were at their winter migration destination in Mexico). A pair of red-tailed hawks courted, with one bowing its head to the other while perched on eucalyptus. I saw and photographed a Cooper's hawk just offsite to the west, where it aggressively hunted ground-foraging birds (Photo 3). I saw an American kestrel and mourning doves (Photos 4 and 5), and Lawrence's goldfinches and yellow-rumped warblers (Photos 6 and 7), among other species. An Anna's hummingbird harassed the breeding pair of red-tailed hawks before chasing after an American kestrel, itself having just dove on the pair of red-tailed hawks. Out on the grassland were many American pipits, house finches and mourning doves, along with western meadowlarks. I also saw a white-tailed kite, but it was flying into town and away from the site after sunset, so I could not be certain it actually used the site. If it did not forage on site, it did so nearby. Birds used the site and its periphery the entire time I was there.

Table 1. *Wildlife species I observed on site on 21* February 2022.

Species	**Scientific name**	**Status**[1]	**Note**
Sierran treefrog	*Pseudacris sierra*		edge
Mourning dove	*Zenaida macroura*		Many
Rock pigeon	*Columba livia*	Non-native	
Eurasian collared-dove	*Streptopelia decaocto*	Non-native	
Great blue heron	*Ardea herodius*		Flyover
Killdeer	*Charadrius vociferus*		
White-tailed kite	*Elanus leucurus*	CFP, BOP	South of site
Cooper's hawk	*Accipiter cooperii*	TWL, BOP	adjacent
Red-tailed hawk	*Buteo jamaicensis*	BOP	breeding pair calling and courting (head-bowing)
American kestrel	*Falco sparverius*	BOP	hunted on site
Anna's hummingbird	*Calypte anna*		Harassed raptors
Western kingbird	*Tyrannus verticalis*		
American crow	*Corvus brachyrhynchos*		
American pipit	*Anthus rubescens*		
European starling	*Sturnus vulgaris*	Non-native	
Yellow-rumped warbler	*Setophaga coronata*		adjacent
White-crowned sparrow	*Zonotrichia leucophrys*		adjacent
Great-tailed grackle	*Quiscalus mexicanus*		flock flyover
Western meadowlark	*Sturnella neglecta*		
Red-winged blackbird	*Agelaius phoeniceus*		Flyover
House finch	*Haemorphous mexicanus*		
Lesser goldfinch	*Spinus psaltria*		adjacent
Lawrence’s goldfinch	*Spinus lawrencei*	BCC	Adjacent
House cat	*Felis catus*	Non-native	Entered site from homes
California ground squirrel	*Otospermophilus beecheyi*		burrows along edge

[1] BCC = US Fish and Wildlife Service’s Bird Species of Conservation Concern, CFP = California Fully Protected (CDFG Code 3511), BOP = California Fish and Game Code 3503.5 (Birds of Prey), and TWL = Taxa to Watch List (Shuford and Gardali 2008).

Although the earlier disking of the site undoubtedly suppressed use of the site by wildlife, its suppression was less than thorough. So long as the soil lives, fossorial mammals and their burrows persist and the soil’s seed bank sprout new growth of grassland species. The site is inherently rich in wildlife species, and it offers wildlife opportunities for forage, refugia, and breeding that are otherwise rapidly disappearing from the region.

Photo 3. *Cooper's hawk hunting birds just off the west end of the project site, 21 February 2022.*

Photos 4 and 5. *American kestrel (top) and mourning dove (bottom) at the project site, 21 February 2022.*

Photos 6 and 7. *Lawrence's goldfinch (left) and yellow-rumped warbler (right) at the project site, 21 February 2022.*

CURRENT ENVIRONMENTAL SETTING

The first step in analysis of potential project impacts to biological resources is to accurately characterize the existing environmental setting, including the species that use the site, their relative abundances, how they use the site, key ecological relationships, and known and ongoing threats to those species with special status. A reasonably accurate characterization of the environmental setting can provide the baseline against which to analyze project impacts. Methods to achieve this first step typically include surveys of the site for biological resources and reviews of literature, databases and local experts for documented occurrences of special-status species. In the case of this project, these essential steps remain grossly incomplete. Herein I provide some characterization of the wildlife community as a component of the current environmental setting, including the identification of special-status species likely to use the site at one time or another.

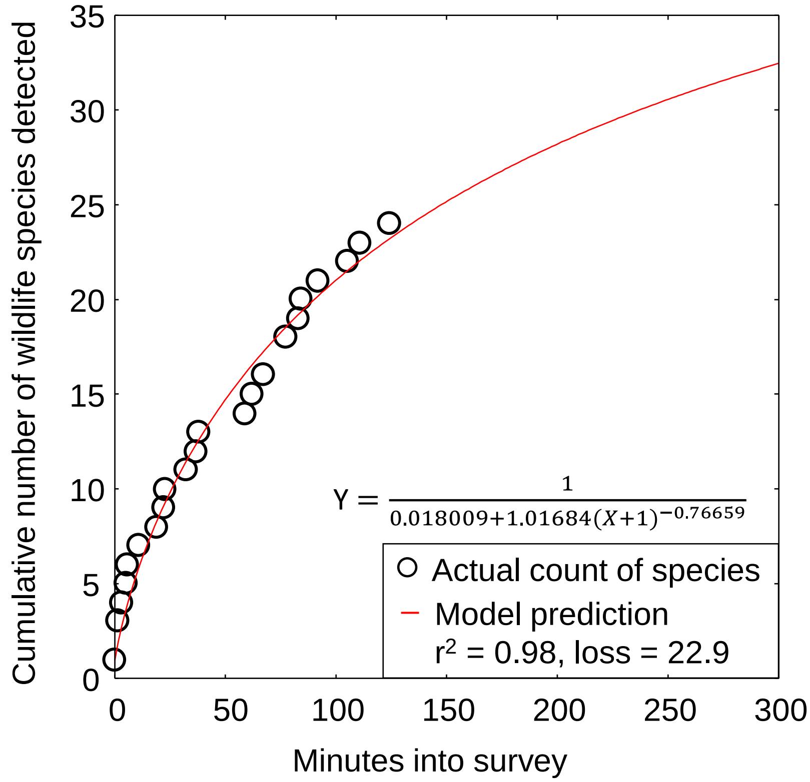
A biologist from Precision Civil Engineering performed a reconnaissance-level survey of the site of the proposed project on 8 February 2022 in an effort "to search for special status species, and to determine the potential presence of suitable habitat for these species." Weather and temperature were reported, but not the most important methodological elements of the survey, which were time of day when the survey began and how long the biologist surveyed the site. These unreported elements of the survey were essential for interpretation of the reported findings.

The biologist with Precision Civil Engineering reportedly detected 5 species of vertebrate wildlife, including killdeer, red-tailed hawk, turkey vulture, mourning dove, and American crow. However, the report also included detection of California ground squirrel, which brings the count of wildlife species to 6. More importantly, two weeks before I surveyed the site from the site's periphery, the biologist from Precision Civil Engineering detected only 24% of the species I did. In my experience, the most likely reason(s) for the discrepancy in survey outcomes was that the consulting biologist visited the site very briefly or during a time of day least likely to detect wildlife. Considering that I detected 6 species – the same number that was detected by the consulting biologist – within 6 minutes of the start of my survey, time of day was likely a factor that suppressed the consulting biologist's findings.

Even with the addition of my survey outcome to that of Precision Civil Engineering, that portion of the current environmental setting composed of wildlife remains incompletely characterized. My detections of 26 species of vertebrate wildlife need to be interpreted within the context of the survey effort. As would be the case for any reconnaissance-level survey, the time I could commit to my survey was grossly short of the time needed to inventory all of the species that use the site. Observers are imperfect at detecting all species that occur within their surveyed space, and not all of the species that would occur in the surveyed space would occur there during the period of the observer's survey. One should not expect that the biologist who just completed a reconnaissance-level survey actually detected more than a fraction of the species that use the site, and neither should a biologist claim to have detected more than a fraction of the species composing the wildlife community.

A reconnaissance-level survey can be useful for confirming presence of the species that were detected, but it can also be useful for estimating the number of species that were not detected. One can model the pattern in species detections during a survey as a means to estimate the number of species that used the site but were undetected during the survey. To support such a modeling effort, the observer needs to record the times into the survey when each species was first detected. The cumulative number of species' detections increases with increasing survey time, but eventually with diminishing returns (Figure 1). If survey time is represented by minutes into the survey, as it is in Figure 1, then minutes into the survey can also represent person-minutes. Person-minutes implies that >1 person can simultaneously survey a site, which is true, thereby allowing for the model to predict survey outcomes with more observers contributing more survey-minutes during the same survey period. This allowance can constrain model predictions to the environmental conditions experienced during the time period of the survey, thereby minimizing risk of model over-extension. In the case of my survey, the pattern in the data (Figure 1) predicts that had I more biologists to commit to my survey, we would have detected 56 species of vertebrate wildlife on the evening of 21 February 2022. This modeling approach is useful for more realistically representing the species richness of the site at the time of a survey, but it cannot represent the species richness throughout the year or across multiple years because many species are seasonal or even multi-annual in their movement patterns and in their occupancy of habitat.

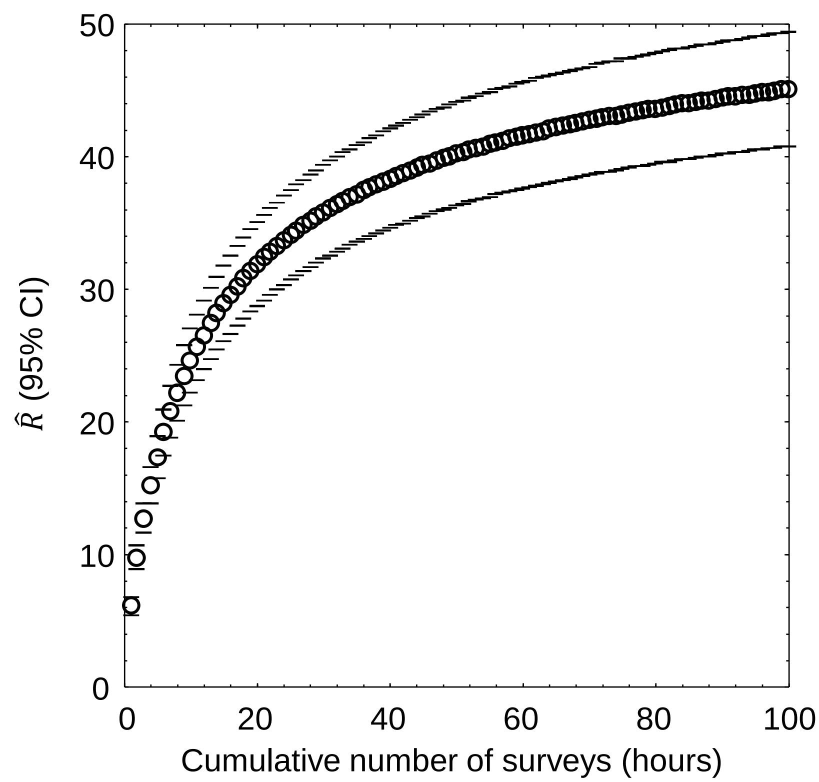
__Figure 1.__ Actual and predicted relationships between the number of vertebrate wildlife species detected and the elapsed survey time based on my visual-scan survey on 21 February 2022. Note that the relationship would differ if the survey was based on another method or during another season. Also note that the cumulative number of vertebrate species across all methods, times of day, and seasons would increase substantially.



I could have detected many more species than predicted had I also performed surveys at night to detect nocturnal and crepuscular species with appropriate methods and technology, or and conducting surveys in different seasons and years to detect migrants and species with multi-annual cycles of abundance. Nevertheless, based on the substantial evidence gathered during my reconnaissance-level survey, I conclude that the site is richer in wildlife than the 26 species documented there so far between the surveys of Precision Civil Engineering and my own, but also that the environmental setting of the project remains insufficiently characterized as foundation for analysis of impacts to special-status species. There is no question that a larger survey effort would result in a longer list of species documented to use the project site, thereby improving our understanding of the current environmental setting. A more realistic representation of species richness at the site could be obtained by simply repeating visual-scan surveys on various dates through the year.

As part of my research, I completed a much larger survey effort across 167 km² of annual grasslands of the Altamont Pass Wind Resource Area, where from 2015 through 2019 I performed 721 1-hour visual-scan surveys, or 721 hours of surveys, at 46 stations. I used binoculars and otherwise the methods were the same as the methods I use for surveys at proposed project sites. At each of the 46 survey stations, I tallied new species detected with each sequential survey at that station, and then related the cumulative species detected to the hours (number of surveys, as each survey lasted 1 hour) used to accumulate my counts of species detected. I used combined quadratic and simplex methods of estimation in Statistica to estimate least-squares, best-fit nonlinear models of cumulative species detected regressed on hours of survey (number of surveys) at the station: $\hat{R} = \frac{1}{1/a + b \times (Hours)^c}$, where $\hat{R}$ represented cumulative species richness detected. The coefficients of determination, r^2, of the models ranged 0.88 to 1.00, with a mean of 0.97 (95% CI: 0.96, 0.98); or in other words, the models were excellent fits to the data. I projected the predictions of each model to thousands of hours to find predicted asymptotes of wildlife species richness. The mean model-predicted asymptote of species richness was 57 after 11,857 hours of visual-scan surveys among the 46 stations. I also averaged model predictions of species richness at each incremental increase of number of surveys, i.e., number of hours (Figure 2). On average I detected 10 species over the first 2.17 hours of surveys in the Altamont Pass (2.17 hours to match the number of hours I surveyed at the project site), which composed 17.5 % of the total predicted species I would detect with a much larger survey effort. Given the example illustrated in Figure 2, the 26 species I detected after my 2.17 hours of survey at the project site likely represented 17.5% of the species to be detected after many more visual-scan surveys over another year or longer. With many more repeat surveys through the year, I would likely detect $^{26}/_{0.175} = 149$ species of vertebrate wildlife at the site.

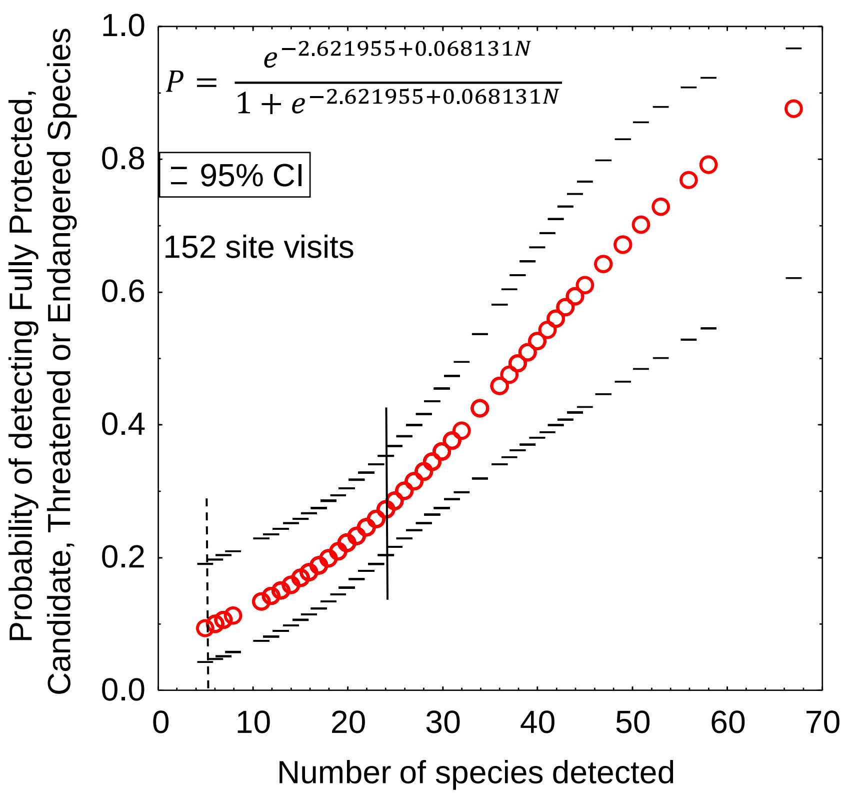
Figure 2. *Mean (95% CI) predicted wildlife species richness, $\hat{R}$, as a nonlinear function of hour-long survey increments across 46 visual-scan survey stations across the Altamont Pass Wind Resource Area, Alameda and Contra Costa Counties, 2015–2019.*



Again, however, my prediction of 149 species of vertebrate wildlife is derived from visual-scan surveys during the daytime, and would not detect nocturnal mammals. The true number of species composing the wildlife community of the site must be larger. A reconnaissance-level survey should serve only as a starting point toward characterization of a site's wildlife community, but it certainly cannot alone inform of the inventory of species that use the site. Without careful interpretation, the survey outcome of Precision Civil Engineering should not serve as the foundation for characterizing baseline conditions, because there were truly many more species that used the site at the time of the survey than were detected by Precision Civil Engineering.

Additionally, the likelihood of detecting special-status species is typically lower than that of more common species. This difference can be explained by the fact that special-status species tend to be rarer and thus less detectable than common species. Special-status species also tend to be more cryptic, fossorial, or active during nocturnal periods when reconnaissance surveys are not performed. Another useful relationship from careful recording of species detections and subsequent comparative analysis is the probability of detection of listed species as a function of an increasing number of vertebrate wildlife species detected (Figure 3). (Note that listed species number fewer than special-status species, which are inclusive of listed species. Also note that I include California Fully Protected species and federal Candidate species as "listed" species.)

Figure 3. *Probability of detecting ≥1 Candidate, Threatened or Endangered Species of wildlife listed under California or federal Endangered Species Acts, based on survey outcomes logit-regressed on the number of wildlife species I detected during 152 site visits in California. The vertical line represents the number of species I detected.*



As demonstrated in Figures 1 and 2, the number of species detected is largely a function of survey effort. Greater survey effort also increases the likelihood that listed species will be detected (which is the first tenet of detection surveys for special-status species). Based on the outcomes of 152 previous surveys I completed at sites of proposed projects, my survey effort at the project site carried an 28% chance of detecting a listed species, whereas the survey effort of Precision Civil Engineering carried a 10% chance. Precision Civil Engineering did not detect a listed species, but I detected a California Fully Protected white-tailed kite heading away from the project site after sunset. Additional listed species likely use the site, but documenting their use would take more survey effort to achieve a reasonable likelihood of detecting them. No reconnaissance-level survey is capable of detecting enough of the wildlife species that occur at a site to realistically characterize the site's wildlife community. This context bears on my comments to follow regarding potential project impacts to biological resources.

As I noted earlier, the other first step toward characterization of the wildlife community as part of the current environmental setting is to review literature, databases and local experts for documented occurrences of special-status species around the site. In support of the IS/MND, Precision Civil Engineering reviewed U.S. Fish and Wildlife's Information for Planning and Consultation (IPaC) and the California Natural Diversity Data Base (CNDDB) to identify species for which to determine occurrence likelihoods. Had eBird and iNaturalist also been reviewed, determinations of occurrence likelihood would have been made for many additional species (Table 2). In my assessment based on data base reviews and my site visit, 74 special-status species of wildlife potentially use the site at one time or another. Of these, 5 (6.8%) were confirmed on or next to the site by my visit, 9 (12%) have been documented within 1.5 miles of the site ('Very close'), 15 (20%) within 1.5 and 3 miles ('Nearby'), and another 35 (47%) within 30 to 50 miles ('In region'). The site holds much more potential for supporting special-status species of wildlife than has been determined by City of Madera.

Furthermore, City of Madera (2022) misapplied CNDDB to screen out special-status species not reported within 5 miles of the site. Whereas CNDDB can be helpful for confirming occurrences of special-status species where they have been reported, it cannot be relied upon for determining absences of species. Absence determinations can only be defended by the outcomes of protocol-level detection surveys. This is because CNDDB relies on volunteer reporting, and it is limited in its spatial coverage by the access of biologists to private properties. The findings reported to CNDDB are not from any sort of randomized or systematic sampling across California, nor does CNDDB collect reports of negative findings. Many survey findings are not reported to CNDDB because consulting biologists signed non-disclosure agreements with developers. In the absence of scientific sampling, absence determinations based on CNDDB reporting are vulnerable to multiple biases.

Another limitation of CNDDB is its focus on special-status species. Most wildlife species in California are not reported to CNDDB, because CNDDB is uninterested in them and Scientific Collecting Permits do not require their reporting. Species recently assigned special status will be under-represented in CNDDB. The limitations of CNDDB are well-known, and summarized by CDFW in a warning presented on its CNDDB web site, https://wildlife.ca.gov/Data/CNDDB/About: "*We work very hard to keep the CNDDB and the Spotted Owl Database as current and up-to-date as possible given our capabilities and resources. However, we cannot and do not portray the CNDDB as an exhaustive and comprehensive inventory of all rare species and natural communities statewide. Field verification for the presence or absence of sensitive species will always be an important obligation of our customers. Likewise, your contribution of data to the CNDDB is equally important to the maintenance of the CNDDB. …*"

Table 2. Occurrence likelihoods of special-status species at the project site, based on records of sightings in eBird and iNaturalist and on my site visit.

Species	**Scientific name**	**Status**[1]	**Occurrence likelihood**	
			IS/MND	**Data bases, site visits**
Aleutian cackling goose	*Branta hutchinsonii leucopareia*	WL		In region
Redhead	*Aythya americana*	SSC2		In region
American white pelican	*Pelecanus erythrorhynchos*	SSC1		In region
Double-crested cormorant	*Phalacrocorax auritus*	WL		Very close
White-faced ibis	*Plegadis chihi*	WL		Nearby
Greater sandhill crane	*Grus c. canadensis*	CT, CFP, SSC3		In region
Long-billed curlew	*Numenius americanus*	BCC, WL		In region
Whimbrel	*Numenius phaeopus*	BCC		In region
Marbled godwit	*Limosa fedua*	BCC		In region
Caspian tern	*Hydroprogne caspia*	BCC		In region
California gull	*Larus californicus*	BCC, WL		Nearby
Turkey vulture	*Cathartes aura*	BOP		Very close
Osprey	*Pandion haliaetus*	WL, BOP		In region
Bald eagle	*Haliaeetus leucocephalus*	BGEPA, BCC, CFP		Nearby
Golden eagle	*Aquila chrysaetos*	BGEPA, BCC, CFP		In region
Red-tailed hawk	*Buteo jamaicensis*	BOP		On site
Ferruginous hawk	*Buteo regalis*	BCC, WL, BOP		In region
Swainson's hawk	*Buteo swainsoni*	BCC, CT	Unlikely	Very close
Rough-legged hawk	*Buteo regalis*	BOP		In region
Red-shouldered hawk	*Buteo lineatus*	BOP		Very close
Sharp-shinned hawk	*Accipiter striatus*	WL, BOP		Nearby
Cooper's hawk	*Accipiter cooperi*	WL, BOP		On site
Northern harrier	*Circus cyaneus*	SSC3, BOP		Nearby
White-tailed kite	*Elanus leucurus*	CFP, BOP		Adjacent
American kestrel	*Falco sparverius*	BOP		On site
Merlin	*Falco columbarius*	WL, BOP		Very close
Prairie falcon	*Falco mexicanus*	BCC, WL, BOP		Nearby
Peregrine falcon	*Falco peregrinus*	BCC, CFP, BOP		Very close

Species	Scientific name	Status[1]	Occurrence likelihood	
			IS/MND	Data bases, site visits
Burrowing owl	*Athene cunicularia*	BCC, SSC2, BOP	Unlikely	In region
Great-horned owl	*Bubo virginianus*	BOP		Nearby
Short-eared owl	*Asio flammeus*	SSC3, BOP		In region
Barn owl	*Tyto alba*	BOP		In region
Western screech-owl	*Megascops kennicotti*	BOP		In region
Rufous hummingbird	*Selasphorus rufus*	BCC		Nearby
Costa's hummingbird	*Calypte costae*	BCC		In region
Nuttall's woodpecker	*Picoides nuttallii*	BCC		Nearby
Lewis's woodpecker	*Melanerpes lewis*	BCC		In region
Vaux's swift	*Chaetura vauxi*	SSC2		Nearby
Willow flycatcher	*Epidomax trailii*	CE, BCC		Nearby
Olive-sided flycatcher	*Contopus cooperi*	BCC, SSC2		In region
Oak titmouse	*Baeolophus inornatus*	BCC		Nearby
Horned lark	*Eremophila alpestris*	WL		Very close
Purple martin	*Progne subis*	SSC2		In region
Bank swallow	*Riparia riparia*	CT		In region
Loggerhead shrike	*Lanius ludovicianus*	BCC, SSC2		Nearby
California thrasher	*Toxostoma redivivum*	BCC		In region
Yellow-billed magpie	*Pica nuttalli*	BCC		Very close
Yellow warbler	*Setophaga petechia*	BCC, SSC2		Nearby
Yellow-breasted chat	*Icteria virens*	SSC3		In region
Oregon vesper sparrow	*Pooecetes gramineus affinis*	BCC, SSC2		In region
Modesto song sparrow	*Melospiza melodia*	SSC3		Nearby
Grasshopper sparrow	*Ammodramus savannarum*	SSC2		In region
Bullock's oriole	*Icterus bullockii*	BCC		Very close
Tricolored blackbird	*Agelaius tricolor*	CT, BCC		In region
Yellow-headed blackbird	*X. xanthocephalus*	SSC3		In region
Lawrence's goldfinch	*Spinus lawrencei*	BCC		Adjacent
Pallid bat	*Antrozous pallidus*	SSC, WBWG H		In region
Townsend's big-eared bat	*Plecotus t. townsendii*	SSC, WBWG H		In range

Species	Scientific name	Status[1]	Occurrence likelihood	
			IS/MND	Data bases, site visits
Western mastiff bat	*Eumops perotis*	SSC, WBWG H		In range
Silver-haired bat	*Lasionycteris noctivagans*	WBWG:M		In range
Western red bat	*Lasiurus blossevillii*	SSC, WBWG H		In region
Little brown bat	*Myotis lucifugus*	WBWG:M		In range
Big brown bat	*Episticus fuscus*	WBWG:L		In region
California myotis	*Myotis californicus*	WBWG:L		In region
Canyon bat	*Parastrellus hesperus*	WBWG:M		In range
Small-footed myotis	*Myotis cililabrum*	WBWG M		In range
Miller’s myotis	*Myotis evotis*	WBWG M		In range
Fringed myotis	*Myotis thysanodes*	WBWG H		In range
Long-legged myotis	*Myotis volans*	WBWG H		In range
Yuma myotis	*Myotis yumanensis*	WBWG LM		In range
Hoary bat	*Lasiurus cinereus*	WBWG LM	Unlikely	In region
American badger	*Taxidea taxus*	SSC		In region
Western spadefoot	*Speas hmmondii*	SSC	Unlikely	In region
Western pond turtle	*Actinemys marmorata*	SSC		In region

[1] Listed as FT or FE = federally Threatened or Endangered, BGEPA = Bald and Golden Eagle Protection Act, BCC = US Fish and Wildlife Service’s Bird Species of Conservation Concern, CT or CE = California Threatened or Endangered, CFP = California Fully Protected (CDFG Code 3511), BOP = 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), WL = Taxa to Watch List (Shuford and Gardali 2008), WBWG = Western Bat Working Group with low, medium and high conservation priorities.

BIOLOGICAL IMPACTS ASSESSMENT

Nearly the entirety of the IS/MND's analysis of potential impacts to wildlife consists of the following: "The Project site and surrounding properties have historically been designated and *operated as agricultural land. The site is currently vacant and undeveloped and has been highly disturbed as a result of periodic discing and agricultural activity*." However, in the face of rapidly diminishing habitat, wildlife must make use of whatever opportunities remain available to them. Environmental conditions at the site might indeed be less than ideal for many of the species of wildlife that made use of the site for thousands of years prior to its conversion to agricultural use, but as my site visit proved, the City's analysis is in error. Many species of wildlife continue to use the site. Below I address several types of project impacts to wildlife that need to be analyzed in an EIR.

HABITAT LOSS

The IS/MND does not address potential impacts of habitat loss to breeding birds. Habitat loss has been recognized as the most likely leading cause of a documented 29% decline in overall bird abundance across North America over the last 48 years (Rosenberg et al. 2019). Habitat loss not only results in the immediate numerical decline of wildlife, but it also results in permanent loss of productive capacity. For example, a complex of grassland, wetland, and woodland at one study site had a total bird nesting density of 32.8 nests per acre (Young 1948). In another study on a similar complex of vegetation cover, the average annual nest density was 35.8 nests per acre (Yahner 1982). These densities averaged 34.3 nests per acre. Given that the project site was occupied by many grassland birds when I visited it, but also considering that it lacks the wetland elements of the study sites of Young (1048) and Yahner (1982), I assume the nest density of the site is about a fourth of that documented by Young (1948) and Yahner (1982). An average nest density of 34.3 multiplied against 0.25 and the project's 30.16 acres would estimate a capacity of 259 bird nests annually.

The loss of 259 nest sites of birds would qualify as a significant project impact that has not been addressed in the IS/MND. But the impact does not end with the immediate loss of nest sites as the site is graded in preparation for impervious surfaces. The reproductive capacity of the site would be lost. The average number of fledglings per nest in Young's (1948) study was 2.9. Assuming Young's (1948) study site typifies bird productivity, the project would prevent the production of 751 fledglings per year. After 100 years and further assuming an average bird generation time of 5 years, the lost capacity of both breeders and annual fledgling production would total 85,460 birds {(nests/year × chicks/nest × number of years) + (2 adults/nest × nests/year) × (number of years ÷ years/generation)}. The project's denial to California of 855 birds per year is not been analyzed as a potential impact in the IS/MND, nor does the IS/MND provide any compensatory mitigation for this impact. A fair argument can be made for the need to prepare an EIR to appropriately analyze the project's impacts to wildlife caused by habitat loss and habitat fragmentation.

WILDLIFE MOVEMENT

The IS/MND focuses its analysis on whether the site occurs within a wildlife movement corridor. The implied premise is that only disruption of the function of a wildlife movement corridor can interfere with wildlife movement in the region. This premise, however, represents a false CEQA standard, and is therefore inappropriate to the analysis. 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 area of open space within a growing expanse of anthropogenic uses, forcing more species of volant wildlife to use the site for stopover and staging 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 opportunities, forcing volant wildlife to travel even farther between remaining stopover sites. The project would interfere with wildlife movement in the region. A fair argument can be made for the need to prepare an EIR to appropriately analyze the project's impacts to wildlife caused by the project's interference with wildlife movement in the region.

WILDLIFE MORTALITY CAUSED BY THE FENCE

The project would be surrounded by a 6-foot-tall chain-link fence. Such fences are not without impacts to wildlife. Fences interfere with wildlife movement. Fences also entangle wildlife (Photo 8) and are barriers into which volant animals collide with lethal force. Recent fatality monitoring along fences of utility-scale solar projects in California provides the basis for predicting avian mortality that would be caused by the project's fence. Based on a weighted mean 14.435 (95% CI: 10.880–20.339) birds/km/year along fences of California's solar projects, the project's approximately 1.9-km-long fence would likely kill 27.4 (95% CI: 20.7–38.7) birds per year. After 100 years of this level of mortality, the project's fencing would have killed 2,740 (95% CI: 2,070–3,870) birds. Because the IS/MND does not even raise the issue of wildlife impacts caused by the fence, my predicted mortality would easily qualify as an unmitigated significant impact. The annual wildlife death toll caused by the fence would persist for as long as the fence remains. A fair argument can be made for the need to prepare an EIR to appropriately analyze the project's impacts to wildlife caused by proposed security fence.

Photo 8. *A great-horned owl died after becoming entangled on the razor wire placed on top of this cyclone fence surrounding a substation in Alameda County. Photo by Joanne Mount.*

TRAFFIC IMPACTS TO WILDLIFE

10-15 trucks per day, but this was misleading. The Appendix on air quality explains that this value applies only to initial startup in Phase I. At full build-out, it predicts 70 truck trips per day and 998.5 passenger car trips per day for a total 1,068.5 vehicle trips per day. Assumed 50 miles per truck trip. Annual VMT = 2,915,196

The IS/MND neglects to address one of the project's most obvious, substantial impacts to wildlife, and that is wildlife mortality and injuries caused by project-generated traffic. Project-generated traffic would endanger wildlife that must, for various reasons, cross roads used by the project's traffic (Photos 9-12). Vehicle collisions have accounted for the deaths of many thousands of amphibian, reptile, mammal, bird, and arthropod fauna, and the impacts have often been found to be significant at the population level (Forman et al. 2003). 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.

The nearest study of traffic-caused wildlife mortality was performed along a 2.5 mile stretch of Vasco Road in Contra Costa County, California. Fatality searches in this study found 1,275 carcasses of 49 species of mammals, birds, amphibians and reptiles over 15 months of searches (Mendelsohn et al. 2009). This fatality number needs to be adjusted for the proportion of fatalities that were not found due to scavenger removal and searcher error. This adjustment is typically made by placing carcasses for searchers to find (or not find) during their routine periodic fatality searches. This step was not taken at Vasco Road (Mendelsohn et al. 2009), but it was taken as part of another study right next to Vasco Road (Brown et al. 2016). The Brown et al. (2016) adjustment factors were similar to those for carcass persistence of road fatalities (Santos et al. 2011). Applying searcher detection rates estimated from carcass detection trials performed at a wind energy project immediately adjacent to this same stretch of road (Brown et al. 2016), the adjusted total number of fatalities was estimated at 12,187 animals killed by traffic on the road. This fatality number translates to a rate of 3,900 wild animals per mile per year killed along 2.5 miles of road in 1.25 years. 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. An analysis is needed of whether increased traffic generated by the project site would similarly result in local impacts on wildlife.

Photo 9. *A Gambel's quail dashes across a road* on *3 April 2021. Such road crossings are usually successful, but too often prove fatal to the animal. Photo by Noriko Smallwood.*

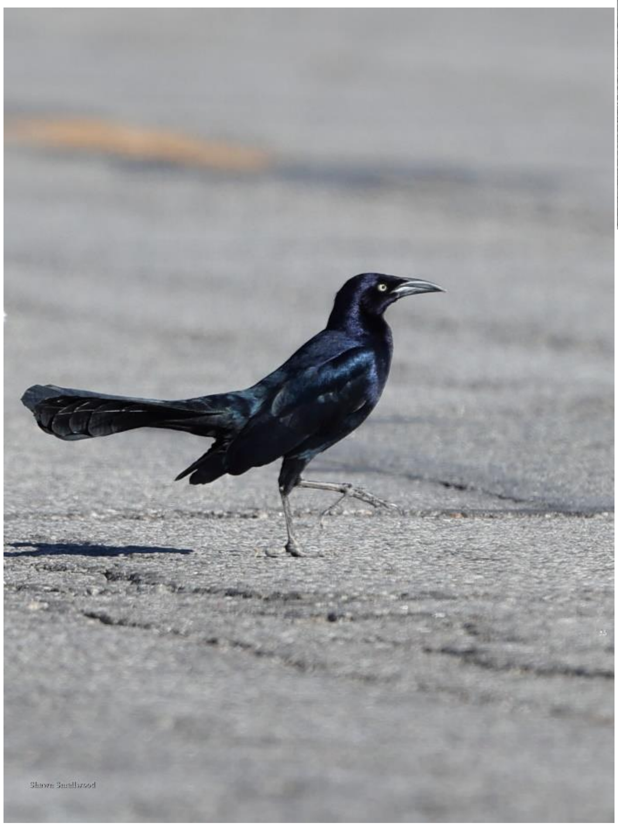


Photo 10. *Great-tailed grackle walks onto a rural road in Imperial County, 4 February 2022.*

Photo 11. *A mourning dove killed by vehicle traffic on a California road. Photo by Noriko Smallwood, 21 June 2020.*

Photo 12. *Raccoon killed on Road 31 just east of Highway 505 in Solano County. Photo taken on 10 November 2018.*

<u>Predicting project-generated traffic impacts to wildlife</u>

For wildlife vulnerable to front-end collisions and crushing under tires, road mortality can be predicted from the study of Mendelsohn et al. (2009) as a basis, although it would be helpful to have the availability of more studies like that of Mendelsohn et al. (2009) at additional locations. My analysis of the Mendelsohn et al. (2009) data resulted in an estimated 3,900 animals killed per mile along a county road in Contra Costa County. Two percent of the estimated number of fatalities were birds, and the balance was composed of 34% mammals (many mice and pocket mice, but also ground squirrels, desert cottontails, striped skunks, American badgers, raccoons, and others), 52.3% amphibians (large numbers of California tiger salamanders and California red-legged frogs, but also Sierran treefrogs, western toads, arboreal salamanders, slender salamanders and others), and 11.7% reptiles (many western fence lizards, but also skinks, alligator lizards, and snakes of various species).

During the Mendelsohn et al. (2009) study, 19,500 cars traveled Vasco Road daily, so the vehicle miles that contributed to my estimate of non-volant fatalities was 19,500 cars and trucks × 2.5 miles × 365 days/year × 1.25 years = 22,242,187.5 vehicle miles per 12,187 wildlife fatalities, or 1,825 vehicle miles per fatality. This rate divided into the IS/MND's prediction of 2,915,196 annual vehicle miles traveled (VMT) due to the project, predicts 1,597 vertebrate wildlife fatalities per year. **Operations over 50 years would accumulate 79,850 wildlife fatalities**. It remains unknown whether and to what degree vehicle tires contribute to carcass removals from the roadway, thereby contributing a negative bias to the fatality estimates I made from the Mendelsohn et al. (2009) fatality counts.

Based on my assumptions and simple calculations, the project-generated traffic would cause substantial, significant impacts to wildlife. There is at least a fair argument that can be made for the need to prepare an EIR to analyze this impact. Mitigation measures to improve wildlife safety along roads are available and are feasible, and they need exploration for their suitability with the proposed project.

CUMULATIVE IMPACTS

The IS/MND adopts a flawed approach to analysis of cumulative impacts. The IS/MND implies that cumulative impacts are really just residual impacts of incomplete mitigation. If this was CEQA's standard, then cumulative effects analysis would be merely an analysis of mitigation efficacy. The IS/MND's implied standard is not the standard of analysis of cumulative effects. CEQA defines cumulative impacts, and it outlines two general approaches for performing the analysis. Given that North America has lost nearly a third of its birds over the past half century (Rosenberg et al. 2019), and given that simple calculations reveal the project's impacts would deny Californians of many birds, an appropriate cumulative effects analysis is warranted. A fair argument can be made for the need to prepare an EIR to appropriately analyze cumulative effects.

MITIGATION MEASURES

MM BIO-1.1 Preconstruction survey for burrowing owls

Surveys for burrowing owls should be performed in accordance to the survey guidelines for burrowing owls (CDFW 2012). Ground squirrels occur at the site. Burrowing owls rely on ground squirrels for construction of their nest sites and for the mutual predator alarm-calling provided by both the squirrels and the owls. To meet the standards of these guidelines, a series of breeding-season detection surveys are needed prior to preconstruction take-avoidance surveys. The IS/MND skips this important step of performing detection surveys. The mitigation proposed in the IS/MND would be inconsistent with the CDFW (2012) guidelines.

MM BIO-1.2 Preconstruction survey for breeding birds

The IS/MND proposes preconstruction, take-avoidance surveys to minimize impacts to breeding birds. Whereas I agree that preconstruction surveys would be appropriate, it must be understood by decision-makers and the public that such surveys typically detect small fractions of the animals targeted. Nesting birds are highly adept at concealment to avoid predation. Over such a large area, the notion that more than a few animals would be detected would be fantasy. Furthermore, preconstruction, take-avoidance surveys ultimately fail to prevent the impacts of habitat loss, resulting in the loss of productive capacity of the site.

Preconstruction surveys should not be performed without first having performed detection surveys. Preconstruction surveys are no substitute for detection surveys. Species detection surveys are needed to (1) support negative findings of species when appropriate, (2) inform preconstruction surveys to improve their efficacy, (3) estimate project impacts, and (4) inform compensatory mitigation and other forms of mitigation. Detection survey protocols and guidelines are available from resource agencies for most special-status species. Otherwise, professional standards can be learned from the scientific literature and species' experts.

MM BIO-1.1 Preconstruction survey for Swainson's hawks

The project would eliminate 30.16 acres of Swainson's hawk habitat. The loss of this much habitat would be substantial for Swainson's hawk. A greater commitment to mitigation is warranted. Detection surveys should precede preconstruction surveys so that the public and decision-makers understand the magnitude of project impacts to Swainson's hawk.

RECOMMENDED MEASURES

The IS/MND proposes only preconstruction surveys, and no compensatory mitigation for project impacts such as habitat loss. A fair argument can be made for the need to prepare an EIR to formulate appropriate measures to mitigate project impacts to wildlife. Below are few suggestions of measures that ought to be considered in an EIR.

Detection Surveys: Protocol-level detection surveys should be implemented for special-status species, and most especially for burrowing owl and Swainson's hawk.

Construction Timing: No construction activities should take place during the avian nesting season of 1 February through 31 August.

Habitat Loss: If the project goes forward, compensatory mitigation would be warranted for habitat loss. An equal area of open space should be protected in perpetuity as close to the project site as possible.

Fence Mortality: Compensatory mitigation is needed for the increased wildlife mortality that would be caused by the project's security fence.

Road Mortality: Compensatory mitigation is needed for the increased wildlife mortality that would be caused by the project-generated road traffic in the region. I suggest that this mitigation can be directed toward funding research to identify fatality patterns and effective impact reduction measures such as reduced speed limits and wildlife under-crossings or overcrossings of particularly dangerous road segments. Compensatory mitigation can also be provided in the form of donations to wildlife rehabilitation facilities (see below).

Fund Wildlife Rehabilitation Facilities: 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. Many animals would likely be injured by collisions with automobiles.

Thank you for your attention,

Shawn Smallwood

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Shawn Smallwood, Ph.D.

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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

- 668 professional publications, including:
- 88 peer reviewed publications
- 24 in non-reviewed proceedings
- 554 reports, declarations, posters and book reviews
- 8 in mass media outlets
- 87 public presentations of research results

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.

Part-time Lecturer, 1998-2005, California State University, Sacramento. Instructed Mammalogy, Behavioral Ecology, and Ornithology Lab, Contemporary Environmental Issues, Natural Resources Conservation.

Senior Ecologist, 1999-2005, BioResource Consultants. Designed and implemented research and monitoring studies related to avian fatalities at wind turbines, avian electrocutions on electric distribution poles across California, and avian fatalities at transmission lines.

Chairman, Conservation Affairs Committee, The Wildlife Society--Western Section, 1999-2001. Prepared position statements and led efforts directed toward conservation issues, including travel to Washington, D.C. to lobby Congress for more wildlife conservation funding.

Systems Ecologist, 1995-2000, Institute for Sustainable Development. Headed ISD’s program on integrated resources management. Developed indicators of ecological integrity for large areas, using remotely sensed data, local community involvement and GIS.

Associate, 1997-1998, Department of Agronomy and Range Science, University of California, Davis. Worked with Shu Geng and Mingua Zhang on several studies related to wildlife interactions with agriculture and patterns of fertilizer and pesticide residues in groundwater across a large landscape.

Lead Scientist, 1996-1999, National Endangered Species Network. Informed academic scientists and environmental activists about emerging issues regarding the Endangered Species Act and other environmental laws. Testified at public hearings on endangered species issues.

Ecologist, 1997-1998, Western Foundation of Vertebrate Zoology. Conducted field research to determine the impact of past mercury mining on the status of California red-legged frogs in Santa Clara County, California.

Senior Systems Ecologist, 1994-1995, EIP Associates, Sacramento, California. Provided consulting services in environmental planning, and quantitative assessment of land units for their conservation and restoration opportunities basedon ecological resource requirements of 29 special-status species. Developed ecological indicators for prioritizing areas within Yolo County to receive mitigation funds for habitat easements and restoration.

Post-Graduate Researcher, 1990-1994, Department of Agronomy and Range Science*, U.C. Davis*. Under Dr. Shu Geng's mentorship, studied landscape and management effects on temporal and spatial patterns of abundance among pocket gophers and species of Falconiformes and Carnivora in the Sacramento Valley. Managed and analyzed a data base of energy use in California agriculture. Assisted with landscape (GIS) study of groundwater contamination across Tulare County, California.

Work experience in graduate school: Co-taught Conservation Biology with Dr. Christine Schonewald, 1991 & 1993, UC Davis Graduate Group in Ecology; Reader for Dr. Richard Coss's course on Psychobiology in 1990, UC Davis Department of Psychology; Research Assistant to Dr. Walter E. Howard, 1988-1990, UC Davis Department of Wildlife and Fisheries Biology, testing durable baits for pocket gopher management in forest clearcuts; Research Assistant to Dr. Terrell P. Salmon, 1987-1988, UC Wildlife Extension, Department of Wildlife and Fisheries Biology, developing empirical models of mammal and bird invasions in North America, and a rating system for priority research and control of exotic species based on economic, environmental and human health hazards in California. Student Assistant to Dr. E. Lee Fitzhugh, 1985-1987, UC Cooperative Extension, Department of Wildlife and Fisheries Biology, developing and implementing statewide mountain lion track count for long-term monitoring.

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.

Projects

Repowering wind energy projects through careful siting of new wind turbines using map-based collision hazard models to minimize impacts to volant wildlife. Funded by wind companies (principally NextEra Renewable Energy, Inc.), California Energy Commission and East Bay Regional Park District, I have collaborated with a GIS analyst and managed a crew of five field biologists performing golden eagle behavior surveys and nocturnal surveys on bats and owls. The goal is to quantify flight patterns for development of predictive models to more carefully site new wind turbines in repowering projects. Focused behavior surveys began May 2012 and continue. Collision hazard models have been prepared for seven wind projects, three of which were built. Planning for additional repowering projects is underway.

Test avian safety of new mixer-ejector wind turbine (MEWT). Designed and implemented a before-after, control-impact experimental design to test the avian safety of a new, shrouded wind turbine developed by Ogin Inc. (formerly known as FloDesign Wind Turbine Corporation). Supported by a $718,000 grant from the California Energy Commission's Public Interest Energy Research program and a 20% match share contribution from Ogin, I managed a crew of seven field biologists who performed periodic fatality searches and behavior surveys, carcass detection trials, nocturnal behavior surveys using a thermal camera, and spatial analyses with the collaboration of a GIS analyst. Field work began 1 April 2012 and ended 30 March 2015 without Ogin installing its MEWTs, but we still achieved multiple important scientific advances.

Reduce avian mortality due to wind turbines at Altamont Pass. Studied wildlife impacts caused by 5,400 wind turbines at the world's most notorious wind resource area. Studied how impacts are perceived by monitoring and how they are affected by terrain, wind patterns, food resources, range management practices, wind turbine operations, seasonal patterns, population cycles, infrastructure management such as electric distribution, animal behavior and social interactions.

Reduce avian mortality on electric distribution poles. Directed research toward reducing bird electrocutions on electric distribution poles, 2000-2007. Oversaw 5 founds of fatality searches at 10,000 poles from Orange County to Glenn County, California, and produced two large reports.

Cook *et al*. v. Rockwell International *et al*., No. 90-K-181 (D. Colorado). Provided expert testimony on the role of burrowing animals in affecting the fate of buried and surface-deposited radioactive and hazardous chemical wastes at the Rocky Flats Plant, Colorado. Provided expert reports based on four site visits and an extensive document review of burrowing animals. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals. I testified in federal court in November 2005, and my clients were subsequently awarded a $553,000,000 judgment by a jury. After appeals the award was increased to two billion dollars.

Hanford Nuclear Reservation Litigation. Provided expert testimony on the role of burrowing animals in affecting the fate of buried radioactive wastes at the Hanford Nuclear Reservation, Washington. Provided three expert reports based on three site visits and extensive document review. Predicted and verified a certain population density of pocket gophers on buried waste structures, as well as incidence of radionuclide contamination in body tissue. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals.

Expert testimony and declarations on proposed residential and commercial developments, gas-fired power plants, wind, solar and geothermal projects, water transfers and water transfer delivery systems, endangered species recovery plans, Habitat Conservation Plans and Natural Communities Conservation Programs. Testified before multiple government agencies, Tribunals, Boards of Supervisors and City Councils, and participated with press conferences and depositions. Prepared expert witness reports and court declarations, which are summarized under Reports (below).

Protocol-level surveys for special-status species. Used California Department of Fish and Wildlife and US Fish and Wildlife Service protocols to search for California red-legged frog, California tiger salamander, arroyo southwestern toad, blunt-nosed leopard lizard, western pond turtle, giant kangaroo rat, San Joaquin kangaroo rat, San Joaquin kit fox, western burrowing owl, Swainson's hawk, Valley elderberry longhorn beetle and other special-status species.

Conservation of San Joaquin kangaroo rat. Performed research to identify factors responsible for the decline of this endangered species at Lemoore Naval Air Station, 2000-2013, and implemented habitat enhancements designed to reverse the trend and expand the population.

Impact of West Nile Virus on yellow-billed magpies. Funded by Sacramento-Yolo Mosquito and Vector Control District, 2005-2008, compared survey results pre- and post-West Nile Virus epidemic for multiple bird species in the Sacramento Valley, particularly on yellow-billed magpie and American crow due to susceptibility to WNV.

Workshops on HCPs. Assisted Dr. Michael Morrison with organizing and conducting a 2-day workshop on Habitat Conservation Plans, sponsored by Southern California Edison, and another 1-day workshop sponsored by PG&E. These Workshops were attended by academics, attorneys, and consultants with HCP experience. We guest-edited a Proceedings published in Environmental Management.

Mapping of biological resources along Highways 101, 46 and 41. Used GPS and GIS to delineate vegetation complexes and locations of special-status species along 26 miles of highway in San Luis Obispo County, 14 miles of highway and roadway in Monterey County, and in a large area north of Fresno, including within reclaimed gravel mining pits.

GPS mapping and monitoring at restoration sites and at Caltrans mitigation sites. Monitored the success of elderberry shrubs at one location, the success of willows at another location, and the response of wildlife to the succession of vegetation at both sites. Also used GPS to monitor the response of fossorial animals to yellow star-thistle eradication and natural grassland restoration efforts at Bear Valley in Colusa County and at the decommissioned Mather Air Force Base in Sacramento County.

Mercury effects on Red-legged Frog. Assisted Dr. Michael Morrison and US Fish and Wildlife Service in assessing the possible impacts of historical mercury mining on the federally listed California red-legged frog in Santa Clara County. Also measured habitat variables in streams.

Opposition to proposed No Surprises rule. Wrote a white paper and summary letter explaining scientific grounds for opposing the incidental take permit (ITP) rules providing ITP applicants and holders with general assurances they will be free of compliance with the Endangered Species Act once they adhere to the terms of a "properly functioning HCP." Submitted 188 signatures of scientists and environmental professionals concerned about No Surprises rule US Fish and Wildlife Service, National Marine Fisheries Service, all US Senators.

Natomas Basin Habitat Conservation Plan alternative. Designed narrow channel marsh to increase the likelihood of survival and recovery in the wild of giant garter snake, Swainson's hawk and Valley Elderberry Longhorn Beetle. The design included replication and interspersion of treatments for experimental testing of critical habitat elements. I provided a report to Northern Territories, Inc.

Assessments of agricultural production system and environmental technology transfer to China. Twice visited China and interviewed scientists, industrialists, agriculturalists, and the Directors of the Chinese Environmental Protection Agency and the Department of Agriculture to assess the need and possible pathways for environmental clean-up technologies and trade opportunities between the US and China.

Yolo County Habitat Conservation Plan. Conducted landscape ecology study of Yolo County to spatially prioritize allocation of mitigation efforts to improve ecosystem functionality within the County from the perspective of 29 special-status species of wildlife and plants. Used a hierarchically structured indicators approach to apply principles of landscape and ecosystem ecology, conservation biology, and local values in rating land units. Derived GIS maps to help guide the conservation area design, and then developed implementation strategies.

Mountain lion track count. Developed and conducted a carnivore monitoring program throughout California since 1985. Species counted include mountain lion, bobcat, black bear, coyote, red and gray fox, raccoon, striped skunk, badger, and black-tailed deer. Vegetation and land use are also monitored. Track survey transect was established on dusty, dirt roads within randomly selected quadrats.

Sumatran tiger and other felids. Upon award of Fulbright Research Fellowship, I designed and initiated track counts for seven species of wild cats in Sumatra, including Sumatran tiger, fishing cat, and golden cat. Spent four months on Sumatra and Java in 1988, and learned Bahasa Indonesia, the official Indonesian language.

Wildlife in agriculture. Beginning as post-graduate research, I studied pocket gophers and other wildlife in 40 alfalfa fields throughout the Sacramento Valley, and I surveyed for wildlife along a 200 mile road transect since 1989 with a hiatus of 1996-2004. The data are analyzed using GIS and methods from landscape ecology, and the results published and presented orally to farming groups in California and elsewhere. I also conducted the first study of wildlife in cover crops used on vineyards and orchards.

Agricultural energy use and Tulare County groundwater study. Developed and analyzed a data base of energy use in California agriculture, and collaborated on a landscape (GIS) study of groundwater contamination across Tulare County, California.

Pocket gopher damage in forest clear-cuts. Developed gopher sampling methods and tested various poison baits and baiting regimes in the largest-ever field study of pocket gopher management in forest plantations, involving 68 research plots in 55 clear-cuts among 6 National Forests in northern California.

Risk assessment of exotic species in North America. Developed empirical models of mammal and bird species invasions in North America, as well as a rating system for assigning priority research and control to exotic species in California, based on economic, environmental, and human health hazards.

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Comments on Environmental Documents (Year; pages)

I was retained or commissioned to comment on environmental planning and review documents, including:

- Replies on UCSF Comprehensive Parnassus Heights Plan EIR (2021; 13);
- 14 Charles Hill Circle Design Review (2021; 11);
- SDG Commerce 217 Warehouse IS, American Canyon (2021; 26);
- Mulqueeney Ranch Wind Repowering Project DSEIR (2021; 98);
- Clawiter Road Industrial Project IS/MND, Hayward (2021; 18);
- Garnet Energy Center Stipulations, New York (2020);
- Heritage Wind Energy Project, New York (2020: 71);
- Ameresco Keller Canyon RNG Project IS/MND, Martinez (2020; 11);

- Cambria Hotel Project Staff Report, Dublin (2020; 19);
- Central Pointe Mixed-Use Staff Report, Santa Ana (2020; 20);
- Oak Valley Town Center EIR Addendum, Calimesa (2020; 23);
- Coachillin Specific Plan MND Amendment, Desert Hot Springs (2020; 26);
- Stockton Avenue Hotel and Condominiums Project Tiering to EIR, San Jose (2020; 19);
- Cityline Sub-block 3 South Staff Report, Sunyvale (2020; 22);
- Station East Residential/Mixed Use EIR, Union City (2020; 21);
- Multi-Sport Complex & Southeast Industrial Annexation Suppl. EIR, Elk Grove (2020; 24);
- Sun Lakes Village North EIR Amendment 5, Banning, Riverside County (2020; 27);
- 2nd comments on 1296 Lawrence Station Road, Sunnyvale (2020; 4);
- 1296 Lawrence Station Road, Sunnyvale (2020; 16);
- Mesa Wind Project EA, Desert Hot Springs (2020; 31);
- 11th Street Development Project IS/MND, City of Upland (2020; 17);
- Vista Mar Project IS/MND, Pacifica (2020; 17);
- Emerson Creek Wind Project Application, Ohio (2020; 64);
- Replies on Wister Solar Energy Facility EIR, Imperial County (2020; 12);
- Wister Solar Energy Facility EIR, Imperial County (2020; 28);
- Crimson Solar EIS/EIR, Mojave Desert (2020, 35) not submitted;
- Sakioka Farms EIR tiering, Oxnard (2020; 14);
- 3440 Wilshire Project IS/MND, Los Angeles (2020; 19);
- Replies on 2400 Barranca Office Development Project EIR, Irvine (2020; 8);
- 2400 Barranca Office Development Project EIR, Irvine (2020; 25);
- Replies on Heber 2 Geothermal Repower Project IS/MND, El Centro (2020; 4);
- 2nd comments on Heber 2 Geothermal Repower Project IS/MND, El Centro (2020; 8);
- Heber 2 Geothermal Repower Project IS/MND, El Centro (2020; 3);
- Lots 4-12 Oddstad Way Project IS/MND, Pacifica (2020; 16);
- Declaration on DDG Visalia Warehouse project (2020; 5);
- Terraces of Lafayette EIR Addendum (2020; 24);
- AMG Industrial Annex IS/MND, Los Banos (2020; 15);
- Replies to responses on Casmalia and Linden Warehouse (2020; 15);
- Clover Project MND, Petaluma (2020; 27);
- Ruby Street Apartments Project Env. Checklist, Hayward (2020; 20);
- Replies to responses on 3721 Mt. Diablo Boulevard Staff Report (2020; 5);
- 3721 Mt. Diablo Boulevard Staff Report (2020; 9);
- Steeno Warehouse IS/MND, Hesperia (2020; 19);
- UCSF Comprehensive Parnassus Heights Plan EIR (2020; 24);
- North Pointe Business Center MND, Fresno (2020; 14);
- Casmalia and Linden Warehouse IS, Fontana (2020; 15);
- Rubidoux Commerce Center Project IS/MND, Jurupa Valley (2020; 27);
- Haun and Holland Mixed Use Center MND, Menifee (2020; 23);
- First Industrial Logistics Center II, Moreno Valley IS/MND (2020; 23);
- GLP Store Warehouse Project Staff Report (2020; 15);
- Replies on Beale WAPA Interconnection Project EA & CEQA checklist (2020; 29);
- 2nd comments on Beale WAPA Interconnection Project EA & CEQA checklist (2020; 34);

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- Levine-Fricke Softball Field Improvement Addendum, UC Berkeley (2020; 16);
- Greenlaw Partners Warehouse and Distribution Center Staff Report, Palmdale (2020; 14);
- Humboldt Wind Energy Project DEIR (2019; 25);
- Sand Hill Supplemental EIR, Altamont Pass (2019; 17);
- 1700 Dell Avenue Office Project, Campbell (2019, 28);
- 1180 Main Street Office Project MND, Redwood City (2019; 19:
- Summit Ridge Wind Farm Request for Amendment 4, Oregon (2019; 46);
- Shafter Warehouse Staff Report (2019; 4);
- Park & Broadway Design Review, San Diego (2019; 19);
- Pinnacle Pacific Heights Design Review, San Diego (2019; 19);
- Pinnacle Park & C Design Review, San Diego (2019; 19);
- Preserve at Torrey Highlands EIR, San Diego (2019; 24);
- Santana West Project EIR Addendum, San Jose (2019; 18);
- The Ranch at Eastvale EIR Addendum, Riverside County (2020; 19);
- Hageman Warehouse IS/MND, Bakersfield (2019; 13);
- Oakley Logistics Center EIR, Antioch (2019; 22);
- 27 South First Street IS, San Jose (2019; 23);
- 2nd replies on Times Mirror Square Project EIR, Los Angeles (2020; 11);
- Replies on Times Mirror Square Project EIR, Los Angeles (2020; 13);
- Times Mirror Square Project EIR, Los Angeles (2019; 18);
- East Monte Vista & Aviator General Plan Amend EIR Addendum, Vacaville (2019; 22);
- Hillcrest LRDP EIR, La Jolla (2019; 36);
- 555 Portola Road CUP, Portola Valley (2019; 11);
- Johnson Drive Economic Development Zone SEIR, Pleasanton (2019; 27);
- 1750 Broadway Project CEQA Exemption, Oakland (2019; 19);
- Mor Furniture Project MND, Murietta Hot Springs (2019; 27);
- Harbor View Project EIR, Redwood City (2019; 26);
- Visalia Logistics Center (2019; 13);
- Cordelia Industrial Buildings MND (2019; 14);
- Scheu Distribution Center IS/ND, Rancho Cucamonga (2019; 13);
- Mills Park Center Staff Report, San Bruno (2019; 22);
- Site visit to Desert Highway Farms IS/MND, Imperial County (2019; 9);
- Desert Highway Farms IS/MND, Imperial County (2019; 12);
- ExxonMobil Interim Trucking for Santa Ynez Unit Restart SEIR, Santa Barbara (2019; 9);
- Olympic Holdings Inland Center Warehouse Project MND, Rancho Cucamonga (2019; 14);
- Replies to responses on Lawrence Equipment Industrial Warehouse, Banning (2019; 19);
- PARS Global Storage MND, Murietta (2019; 13);
- Slover Warehouse EIR Addendum, Fontana (2019; 16);
- Seefried Warehouse Project IS/MND, Lathrop (2019; 19)
- World Logistics Center Site Visit, Moreno Valley (2019; 19);
- Merced Landfill Gas-To-Energy Project IS/MND (2019; 12);
- West Village Expansion FEIR, UC Davis (2019; 11);
- Site visit, Doheny Ocean Desalination EIR, Dana Point (2019; 11);

- Replies to responses on Avalon West Valley Expansion EIR, San Jose (2019; 10);
- Avalon West Valley Expansion EIR, San Jose (2019; 22);
- Sunroad – Otay 50 EIR Addendum, San Diego (2019; 26);
- Del Rey Pointe Residential Project IS/MND, Los Angeles (2019; 34);
- 1 AMD Redevelopment EIR, Sunnyvale (2019; 22);
- Lawrence Equipment Industrial Warehouse IS/MND, Banning (2019; 14);
- SDG Commerce 330 Warehouse IS, American Canyon (2019; 21);
- PAMA Business Center IS/MND, Moreno Valley (2019; 23);
- Cupertino Village Hotel IS (2019; 24);
- Lake House IS/ND, Lodi (2019; 33);
- Campo Wind Project DEIS, San Diego County (DEIS, (2019; 14);
- Stirling Warehouse MND site visit, Victorville (2019; 7);
- Green Valley II Mixed-Use Project EIR, Fairfield (2019; 36);
- We Be Jammin rezone MND, Fresno (2019; 14);
- Gray Whale Cove Pedestrian Crossing IS/ND, Pacifica (2019; 7);
- Visalia Logistics Center & DDG 697V Staff Report (2019; 9);
- Mather South Community Masterplan Project EIR (2019; 35);
- Del Hombre Apartments EIR, Walnut Creek (2019; 23);
- Otay Ranch Planning Area 12 EIR Addendum, Chula Vista (2019; 21);
- The Retreat at Sacramento IS/MND (2019; 26);
- Site visit to Sunroad – Centrum 6 EIR Addendum, San Diego (2019; 9);
- Sunroad – Centrum 6 EIR Addendum, San Diego (2018; 22);
- North First and Brokaw Corporate Campus Buildings EIR Addendum, San Jose (2018; 30);
- South Lake Solar IS, Fresno County (2018; 18);
- Galloo Island Wind Project Application, New York (not submitted) (2018; 44);
- Doheny Ocean Desalination EIR, Dana Point (2018; 15);
- Stirling Warehouse MND, Victorville (2018; 18);
- LDK Warehouse MND, Vacaville (2018; 30);
- Gateway Crossings FEIR, Santa Clara (2018; 23);
- South Hayward Development IS/MND (2018; 9);
- CBU Specific Plan Amendment, Riverside (2018; 27);
- 2nd replies to responses on Dove Hill Road Assisted Living Project MND (2018; 11);
- Replies to responses on Dove Hill Road Assisted Living Project MND (2018; 7);
- Dove Hill Road Assisted Living Project MND (2018; 12);
- Deer Ridge/Shadow Lakes Golf Course EIR, Brentwood (2018; 21);
- Pyramid Asphalt BLM Finding of No Significance, Imperial County (2018; 22);
- Amáre Apartments IS/MND, Martinez (2018; 15);
- Petaluma Hill Road Cannabis MND, Santa Rosa (2018; 21);
- 2nd comments on Zeiss Innovation Center IS/MND, Dublin (2018: 12);
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- City of Hope Campus Plan EIR, Duarte (2018; 21);
- Palo Verde Center IS/MND, Blythe (2018; 14);
- Logisticenter at Vacaville MND (2018; 24);
- IKEA Retail Center SEIR, Dublin (2018; 17);

- Merge 56 EIR, San Diego (2018; 15);
- Natomas Crossroads Quad B Office Project P18-014 EIR, Sacramento (2018; 12);
- 2900 Harbor Bay Parkway Staff Report, Alameda (2018; 30);
- At Dublin EIR, Dublin (2018; 25);
- Fresno Industrial Rezone Amendment Application No. 3807 IS (2018; 10);
- Nova Business Park IS/MND, Napa (2018; 18);
- Updated Collision Risk Model Priors for Estimating Eagle Fatalities, USFWS (2018; 57);
- 750 Marlborough Avenue Warehouse MND, Riverside (2018; 14);
- Replies to responses on San Bernardino Logistics Center IS (2018; 12);
- San Bernardino Logistics Center IS (2018; 19);
- CUP2017-16, Costco IS/MND, Clovis (2018; 11);
- Desert Land Ventures Specific Plan EIR, Desert Hot Springs (2018; 18);
- Ventura Hilton IS/MND (2018; 30);
- North of California Street Master Plan Project IS, Mountain View (2018: 11);
- Tamarind Warehouse MND, Fontana (2018; 16);
- Lathrop Gateway Business Park EIR Addendum (2018; 23);
- Centerpointe Commerce Center IS, Moreno Valley (2019; 18);
- Amazon Warehouse Notice of Exemption, Bakersfield (2018; 13);
- CenterPoint Building 3 project Staff Report, Manteca (2018; 23);
- Cessna & Aviator Warehouse IS/MND, Vacaville (2018; 24);
- Napa Airport Corporate Center EIR, American Canyon (2018, 15);
- 800 Opal Warehouse Initial Study, Mentone, San Bernardino County (2018; 18);
- 2695 W. Winton Ave Industrial Project IS, Hayward (2018; 22);
- Trinity Cannabis Cultivation and Manufacturing Facility DEIR, Calexico (2018; 15);
- Shoe Palace Expansion IS/MND, Morgan Hill (2018; 21);
- Newark Warehouse at Morton Salt Plant Staff Report (2018; 15);
- Northlake Specific Plan FEIR “Peer Review”, Los Angeles County (2018; 9);
- Replies to responses on Northlake Specific Plan SEIR, Los Angeles County (2018; 13);
- Northlake Specific Plan SEIR, Los Angeles County (2017; 27);
- Bogle Wind Turbine DEIR, east Yolo County (2017; 48);
- Ferrante Apartments IS/MND, Los Angeles (2017; 14);
- The Villages of Lakeview EIR, Riverside (2017; 28);
- Data Needed for Assessing Trail Management Impacts on Northern Spotted Owl, Marin County (2017; 5);
- Notes on Proposed Study Options for Trail Impacts on Northern Spotted Owl (2017; 4);
- Pyramid Asphalt IS, Imperial County (Declaration) (2017; 5);
- San Gorgonio Crossings EIR, Riverside County (2017; 22);
- Replies to responses on Jupiter Project IS and MND, Apple Valley (2017; 12);
- Proposed World Logistics Center Mitigation Measures, Moreno Valley (2017, 2019; 12);
- MacArthur Transit Village Project Modified 2016 CEQA Analysis (2017; 12);
- PG&E Company Bay Area Operations and Maintenance HCP (2017; 45);
- Central SoMa Plan DEIR (2017; 14);
- Suggested mitigation for trail impacts on northern spotted owl, Marin County (2016; 5);
- Colony Commerce Center Specific Plan DEIR, Ontario (2016; 16);

- Fairway Trails Improvements MND, Marin County (2016; 13);
- Review of Avian-Solar Science Plan (2016; 28);
- Replies on Pyramid Asphalt IS, Imperial County (2016; 5);
- Pyramid Asphalt IS, Imperial County (2016; 4);
- Agua Mansa Distribution Warehouse Project Initial Study (2016; 14);
- Santa Anita Warehouse MND, Rancho Cucamonga (2016; 12);
- CapRock Distribution Center III DEIR, Rialto (2016: 12);
- Orange Show Logistics Center IS/MND, San Bernardino (2016; 9);
- City of Palmdale Oasis Medical Village Project IS/MND (2016; 7);
- Comments on proposed rule for incidental eagle take, USFWS (2016, 49);
- Replies on Grapevine Specific and Community Plan FEIR, Kern County (2016; 25);
- Grapevine Specific and Community Plan DEIR, Kern County (2016; 15);
- Clinton County Zoning Ordinance for Wind Turbine siting (2016);
- Hallmark at Shenandoah Warehouse Project Initial Study, San Bernardino (2016; 6);
- Tri-City Industrial Complex Initial Study, San Bernardino (2016; 5);
- Hidden Canyon Industrial Park Plot Plan 16-PP-02, Beaumont (2016; 12);
- Kimball Business Park DEIR (2016; 10);
- Jupiter Project IS and MND, Apple Valley, San Bernardino County (2016; 9);
- Revised Draft Giant Garter Snake Recovery Plan of 2015 (2016, 18);
- Palo Verde Mesa Solar Project EIR, Blythe (2016; 27);
- Reply on Fairview Wind Project Natural Heritage Assessment, Ontario, Canada (2016; 14);
- Fairview Wind Project Natural Heritage Assessment, Ontario, Canada (2016; 41);
- Reply on Amherst Island Wind Farm Natural Heritage Assessment, Ontario (2015, 38);
- Amherst Island Wind Farm Natural Heritage Assessment, Ontario (2015, 31);
- Second Reply on White Pines Wind Farm, Ontario (2015, 6);
- Reply on White Pines Wind Farm Natural Heritage Assessment, Ontario (2015, 10);
- White Pines Wind Farm Natural Heritage Assessment, Ontario (2015, 9);
- Proposed Section 24 Specific Plan Agua Caliente Band of Cahuilla Indians DEIS (2015, 9);
- Replies on 24 Specific Plan Agua Caliente Band of Cahuilla Indians FEIS (2015, 6);
- Willow Springs Solar Photovoltaic Project DEIR, Rosamond (2015; 28);
- Sierra Lakes Commerce Center Project DEIR, Fontana (2015, 9);
- Columbia Business Center MND, Riverside (2015; 8);
- West Valley Logistics Center Specific Plan DEIR, Fontana (2015, 10);
- Willow Springs Solar Photovoltaic Project DEIR (2015, 28);
- Alameda Creek Bridge Replacement Project DEIR (2015, 10);
- World Logistic Center Specific Plan FEIR, Moreno Valley (2015, 12);
- Elkhorn Valley Wind Power Project Impacts, Oregon (2015; 143);
- Bay Delta Conservation Plan EIR/EIS, Sacramento (2014, 21);
- Addison Wind Energy Project DEIR, Mojave (2014, 32);
- Replies on the Addison Wind Energy Project DEIR, Mojave (2014, 15);
- Addison and Rising Tree Wind Energy Project FEIR, Mojave (2014, 12);
- Palen Solar Electric Generating System FSA (CEC), Blythe (2014, 20);
- Rebuttal testimony on Palen Solar Energy Generating System (2014, 9);
- Seven Mile Hill and Glenrock/Rolling Hills impacts + Addendum, Wyoming (2014; 105);

- Rising Tree Wind Energy Project DEIR, Mojave (2014, 32);
- Replies on the Rising Tree Wind Energy Project DEIR, Mojave (2014, 15);
- Soitec Solar Development Project PEIR, Boulevard, San Diego County (2014, 18);
- Oakland Zoo expansion on Alameda whipsnake and California red-legged frog (2014; 3);
- Alta East Wind Energy Project FEIS, Tehachapi Pass (2013, 23);
- Blythe Solar Power Project Staff Assessment, California Energy Commission (2013, 16);
- Clearwater and Yakima Solar Projects DEIR, Kern County (2013, 9);
- West Antelope Solar Energy Project IS/MND, Antelope Valley (2013, 18);
- Cuyama Solar Project DEIR, Carrizo Plain (2014, 19);
- Desert Renewable Energy Conservation Plan (DRECP) EIR/EIS (2015, 49);
- Kingbird Solar Photovoltaic Project EIR, Kern County (2013, 19);
- Lucerne Valley Solar Project IS/MND, San Bernardino County (2013, 12);
- Tule Wind project FEIR/FEIS (Declaration) (2013; 31);
- Sunlight Partners LANDPRO Solar Project MND (2013; 11);
- Declaration in opposition to BLM fracking (2013; 5);
- Blythe Energy Project (solar) CEC Staff Assessment (2013;16);
- Rosamond Solar Project EIR Addendum, Kern County (2013; 13);
- Pioneer Green Solar Project EIR, Bakersfield (2013; 13);
- Replies on Soccer Center Solar Project MND (2013; 6);
- Soccer Center Solar Project MND, Lancaster (2013; 10);
- Plainview Solar Works MND, Lancaster (2013; 10);
- Alamo Solar Project MND, Mojave Desert (2013; 15);
- Replies on Imperial Valley Solar Company 2 Project (2013; 10);
- Imperial Valley Solar Company 2 Project (2013; 13);
- FRV Orion Solar Project DEIR, Kern County (PP12232) (2013; 9);
- Casa Diablo IV Geothermal Development Project (2013; 6);
- Reply on Casa Diablo IV Geothermal Development Project (2013; 8);
- Alta East Wind Project FEIS, Tehachapi Pass (2013; 23);
- Metropolitan Air Park DEIR, City of San Diego (2013;);
- Davidon Homes Tentative Subdivision Rezoning Project DEIR, Petaluma (2013; 9);
- Oakland Zoo Expansion Impacts on Alameda Whipsnake (2013; 10);
- Campo Verde Solar project FEIR, Imperial Valley (2013; 11pp);
- Neg Dec comments on Davis Sewer Trunk Rehabilitation (2013; 8);
- North Steens Transmission Line FEIS, Oregon (Declaration) (2012; 62);
- Summer Solar and Springtime Solar Projects Ism Lancaster (2012; 8);
- J&J Ranch, 24 Adobe Lane Environmental Review, Orinda (2012; 14);
- Replies on Hudson Ranch Power II Geothermal Project and Simbol Calipatria Plant II (2012; 8);
- Hudson Ranch Power II Geothermal Project and Simbol Calipatria Plant II (2012; 9);
- Desert Harvest Solar Project EIS, near Joshua Tree (2012; 15);
- Solar Gen 2 Array Project DEIR, El Centro (2012; 16);
- Ocotillo Sol Project EIS, Imperial Valley (2012; 4);
- Beacon Photovoltaic Project DEIR, Kern County (2012; 5);
- Butte Water District 2012 Water Transfer Program IS/MND (2012; 11);

- Mount Signal and Calexico Solar Farm Projects DEIR (2011; 16);
- City of Elk Grove Sphere of Influence EIR (2011; 28);
- Sutter Landing Park Solar Photovoltaic Project MND, Sacramento (2011; 9);
- Rabik/Gudath Project, 22611 Coleman Valley Road, Bodega Bay (CPN 10-0002) (2011; 4);
- Ivanpah Solar Electric Generating System (ISEGS) (Declaration) (2011; 9);
- Draft Eagle Conservation Plan Guidance, USFWS (2011; 13);
- Niles Canyon Safety Improvement Project EIR/EA (2011; 16);
- Route 84 Safety Improvement Project (Declaration) (2011; 7);
- Rebuttal on Whistling Ridge Wind Energy Power DEIS, Skamania County, (2010; 6);
- Whistling Ridge Wind Energy Power DEIS, Skamania County, Washington (2010; 41);
- Klickitat County's Decisions on Windy Flats West Wind Energy Project (2010; 17);
- St. John's Church Project DEIR, Orinda (2010; 14);
- Results Radio Zone File #2009-001 IS/MND, Conaway site, Davis (2010; 20);
- Rio del Oro Specific Plan Project FEIR, Rancho Cordova (2010;12);
- Results Radio Zone File #2009-001, Mace Blvd site, Davis (2009; 10);
- Answers to Questions on 33% RPS Implementation Analysis Preliminary Results Report (2009; 9);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington (Second Declaration) (2008; 17);
- Draft 1A Summary Report to CAISO (2008; 10);
- Hilton Manor Project Categorical Exemption, County of Placer (2009; 9);
- Protest of CARE to Amendment to the Power Purchase and Sale Agreement for Procurement of Eligible Renewable Energy Resources Between Hatchet Ridge Wind LLC and PG&E (2009; 3);
- Tehachapi Renewable Transmission Project EIR/EIS (2009; 142);
- Delta Shores Project EIR, south Sacramento (2009; 11 + addendum 2);
- Declaration in Support of Care's Petition to Modify D.07-09-040 (2008; 3);
- The Public Utility Commission's Implementation Analysis December 16 Workshop for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 9);
- The Public Utility Commission's Implementation Analysis Draft Work Plan for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 11);
- Draft 1A Summary Report to California Independent System Operator for Planning Reserve Margins (PRM) Study (2008; 7.);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington (Declaration) (2008; 16);
- Colusa Generating Station, California Energy Commission PSA (2007; 24);
- Rio del Oro Specific Plan Project Recirculated DEIR, Mather (2008: 66);
- Replies on Regional University Specific Plan EIR, Roseville (2008; 20);
- Regional University Specific Plan EIR, Roseville (2008: 33);
- Clark Precast, LLC's "Sugarland" project, ND, Woodland (2008: 15);
- Cape Wind Project DEIS, Nantucket (2008; 157);
- Yuba Highlands Specific Plan EIR, Spenceville, Yuba County (2006; 37);
- Replies to responses on North Table Mountain MND, Butte County (2006; 5);

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- Windy Point Wind Farm EIS (2006; 14 and Powerpoint slide replies);
- Shiloh I Wind Power Project EIR, Rio Vista (2005; 18);
- Buena Vista Wind Energy Project NOP, Byron (2004; 15);
- Callahan Estates Subdivision ND, Winters (2004; 11);
- Winters Highlands Subdivision IS/ND (2004; 9);
- Winters Highlands Subdivision IS/ND (2004; 13);
- Creekside Highlands Project, Tract 7270 ND (2004; 21);
- Petition to California Fish and Game Commission to list Burrowing Owl (2003; 10);
- Altamont Pass Wind Resource Area CUP renewals, Alameda County (2003; 41);
- UC Davis Long Range Development Plan: Neighborhood Master Plan (2003; 23);
- Anderson Marketplace Draft Environmental Impact Report (2003; 18);
- Negative Declaration of the proposed expansion of Temple B'nai Tikyah (2003; 6);
- Antonio Mountain Ranch Specific Plan Public Draft EIR (2002; 23);
- Replies on East Altamont Energy Center evidentiary hearing (2002; 9);
- Revised Draft Environmental Impact Report, The Promenade (2002; 7);
- Recirculated Initial Study for Calpine's proposed Pajaro Valley Energy Center (2002; 3);
- UC Merced -- Declaration (2002; 5);
- Replies on Atwood Ranch Unit III Subdivision FEIR (2003; 22);
- Atwood Ranch Unit III Subdivision EIR (2002; 19);
- California Energy Commission Staff Report on GWF Tracy Peaker Project (2002; 20);
- Silver Bend Apartments IS/MND, Placer County (2002; 13);
- UC Merced Long-range Development Plan DEIR and UC Merced Community Plan DEIR (2001; 26);
- Colusa County Power Plant IS, Maxwell (2001; 6);
- Dog Park at Catlin Park, Folsom, California (2001; 5);
- Calpine and Bechtel Corporations' Biological Resources Implementation and Monitoring Program (BRMIMP) for the Metcalf Energy Center (2000; 10);
- Metcalf Energy Center, California Energy Commission FSA (2000);
- US Fish and Wildlife Service Section 7 consultation with the California Energy Commission regarding Calpine and Bechtel Corporations' Metcalf Energy Center (2000; 4);
- California Energy Commission's Preliminary Staff Assessment of the proposed Metcalf Energy Center (2000: 11);
- Site-specific management plans for the Natomas Basin Conservancy's mitigation lands, prepared by Wildlands, Inc. (2000: 7);
- Affidavit of K. Shawn Smallwood in Spirit of the Sage Council, et al. (Plaintiffs) vs. Bruce Babbitt, Secretary, U.S. Department of the Interior, et al. (Defendants), Injuries caused by the No Surprises policy and final rule which codifies that policy (1999: 9).
- California Board of Forestry's proposed amended Forest Practices Rules (1999);
- Sunset Skyranch Airport Use Permit IS/MND (1999);
- Ballona West Bluffs Project Environmental Impact Report (1999; oral presentation);
- Draft Recovery Plan for Giant Garter Snake (Fed. Reg. 64(176): 49497-49498) (1999; 8);
- Draft Recovery Plan for Arroyo Southwestern Toad (1998);
- Pacific Lumber Co. (Headwaters) HCP & EIR, Fortuna (1998; 28);
- Natomas Basin HCP Permit Amendment, Sacramento (1998);

- San Diego Multi-Species Conservation Program FEIS/FEIR (1997; 10);

Comments on other Environmental Review Documents:

- Proposed Regulation for California Fish and Game Code Section 3503.5 (2015: 12);
- Statement of Overriding Considerations related to extending Altamont Winds, Inc.'s Conditional Use Permit PLN2014-00028 (2015; 8);
- Covell Village PEIR, Davis (2005; 19);
- Bureau of Land Management Wind Energy Programmatic EIS Scoping (2003; 7.);
- NEPA Environmental Analysis for Biosafety Level 4 National Biocontainment Laboratory (NBL) at UC Davis (2003: 7);
- Notice of Preparation of UC Merced Community and Area Plan EIR, on behalf of The Wildlife Society—Western Section (2001: 8.);
- Preliminary Draft Yolo County Habitat Conservation Plan (2001; 2 letters totaling 35.);
- Merced County General Plan Revision, notice of Negative Declaration (2001: 2.);
- Notice of Preparation of Campus Parkway EIR/EIS (2001: 7.);
- Draft Recovery Plan for the bighorn sheep in the Peninsular Range (*Ovis candensis*) (2000);
- Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*), on behalf of The Wildlife Society—Western Section (2000: 10.);
- Sierra Nevada Forest Plan Amendment Draft Environmental Impact Statement, on behalf of The Wildlife Society—Western Section (2000: 7.);
- State Water Project Supplemental Water Purchase Program, Draft Program EIR (1997);
- Davis General Plan Update EIR (2000);
- Turn of the Century EIR (1999: 10);
- Proposed termination of Critical Habitat Designation under the Endangered Species Act (Fed. Reg. 64(113): 31871-31874) (1999);
- NOA Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, termed the HCP 5-Point Policy Plan (Fed. Reg. 64(45): 11485 - 11490) (1999; 2 + attachments);
- Covell Center Project EIR and EIR Supplement (1997).

Position Statements I prepared the following position statements for the Western Section of The Wildlife Society, and one for nearly 200 scientists:

- Recommended that the California Department of Fish and Game prioritize the extermination of the introduced southern water snake in northern California. The Wildlife Society--Western Section (2001);
- Recommended that The Wildlife Society—Western Section appoint or recommend members of the independent scientific review panel for the UC Merced environmental review process (2001);
- Opposed the siting of the University of California's 10th campus on a sensitive vernal pool/grassland complex east of Merced. The Wildlife Society--Western Section (2000);
- Opposed the legalization of ferret ownership in California. The Wildlife Society--Western Section (2000);
- Opposed the Proposed "No Surprises," "Safe Harbor," and "Candidate Conservation Agreement" rules, including permit-shield protection provisions (Fed. Reg. Vol. 62, No.

103, pp. 29091-29098 and No. 113, pp. 32189-32194). This statement was signed by 188 scientists and went to the responsible federal agencies, as well as to the U.S. Senate and House of Representatives.

Posters at Professional Meetings

Leyvas, E. and K. S. Smallwood. 2015. Rehabilitating injured animals to offset and rectify wind project impacts. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S., J. Mount, S. Standish, E. Leyvas, D. Bell, E. Walther, B. Karas. 2015. Integrated detection trials to improve the accuracy of fatality rate estimates at wind projects. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S. and C. G. Thelander. 2005. Lessons learned from five years of avian mortality research in the Altamont Pass WRA. AWEA conference, Denver, May 2005.

Neher, L., L. Wilder, J. Woo, L. Spiegel, D. Yen-Nakafugi, and K.S. Smallwood. 2005. Bird's eye view on California wind. AWEA conference, Denver, May 2005.

Smallwood, K. S., C. G. Thelander and L. Spiegel. 2003. Toward a predictive model of avian fatalities in the Altamont Pass Wind Resource Area. Windpower 2003 Conference and Convention, Austin, Texas.

Smallwood, K.S. and Eva Butler. 2002. Pocket Gopher Response to Yellow Star-thistle Eradication as part of Grassland Restoration at Decommissioned Mather Air Force Base, Sacramento County, California. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and Michael L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Third Mountain Lion Workshop, Prescott, AZ.

Smith, T. R. and K. S. Smallwood. 2000. Effects of study area size, location, season, and allometry on reported *Sorex* shrew densities. Annual Meeting of the Western Section of The Wildlife Society.

Presentations at Professional Meetings and Seminars

Dog detections of bat and bird fatalities at wind farms in the Altamont Pass Wind Resource Area. East Bay Regional Park District 2019 Stewardship Seminar, Oakland, California, 13 November 2019.

Repowering the Altamont Pass. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area, 1999-

2007. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Conservation and recovery of burrowing owls in Santa Clara Valley. Santa Clara Valley Habitat Agency, Newark, California, 3 February 2017.

Mitigation of Raptor Fatalities in the Altamont Pass Wind Resource Area. Raptor Research Foundation Meeting, Sacramento, California, 6 November 2015.

From burrows to behavior: Research and management for burrowing owls in a diverse landscape. California Burrowing Owl Consortium meeting, 24 October 2015, San Jose, California.

The Challenges of repowering. Keynote presentation at Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 10 March 2015.

Research Highlights Altamont Pass 2011-2015. Scientific Review Committee, Oakland, California, 8 July 2015.

Siting wind turbines to minimize raptor collisions: Altamont Pass Wind Resource Area. US Fish and Wildlife Service Golden Eagle Working Group, Sacramento, California, 8 January 2015.

Evaluation of nest boxes as a burrowing owl conservation strategy. Sacramento Chapter of the Western Section, The Wildlife Society. Sacramento, California, 26 August 2013.

Predicting collision hazard zones to guide repowering of the Altamont Pass. Conference on wind power and environmental impacts. Stockholm, Sweden, 5-7 February 2013.

Impacts of Wind Turbines on Wildlife. California Council for Wildlife Rehabilitators, Yosemite, California, 12 November 2012.

Impacts of Wind Turbines on Birds and Bats. Madrone Audubon Society, Santa Rosa, California, 20 February 2012.

Comparing Wind Turbine Impacts across North America. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Alameda County Scientific Review Committee meeting, 17 February 2011

Comparing Wind Turbine Impacts across North America. Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 3 May 2011.

Update on Wildlife Impacts in the Altamont Pass Wind Resource Area. Raptor Symposium, The Wildlife Society—Western Section, Riverside, California, February 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Raptor Symposium, The Wildlife

Society - Western Section, Riverside, California, February 2011.

Wildlife mortality caused by wind turbine collisions. Ecological Society of America, Pittsburgh, Pennsylvania, 6 August 2010.

Map-based repowering and reorganization of a wind farm to minimize burrowing owl fatalities. California burrowing Owl Consortium Meeting, Livermore, California, 6 February 2010.

Environmental barriers to wind power. Getting Real About Renewables: Economic and Environmental Barriers to Biofuels and Wind Energy. A symposium sponsored by the Environmental & Energy Law & Policy Journal, University of Houston Law Center, Houston, 23 February 2007.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Meeting with Japan Ministry of the Environment and Japan Ministry of the Economy, Wild Bird Society of Japan, and other NGOs Tokyo, Japan, 9 November 2006.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Symposium on bird collisions with wind turbines. Wild Bird Society of Japan, Tokyo, Japan, 4 November 2006.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. California Society for Ecological Restoration (SERCAL) 13th Annual Conference, UC Santa Barbara, 27 October 2006.

Fatality associations as the basis for predictive models of fatalities in the Altamont Pass Wind Resource Area. EEI/APLIC/PIER Workshop, 2006 Biologist Task Force and Avian Interaction with Electric Facilities Meeting, Pleasanton, California, 28 April 2006.

Burrowing owl burrows and wind turbine collisions in the Altamont Pass Wind Resource Area. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, February 8, 2006.

Mitigation at wind farms. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Incorporating data from the California Wildlife Habitat Relationships (CWHR) system into an impact assessment tool for birds near wind farms. Shawn Smallwood, Kevin Hunting, Marcus Yee, Linda Spiegel, Monica Parisi. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Toward indicating threats to birds by California's new wind farms. California Energy Commission, Sacramento, May 26, 2005.

Avian collisions in the Altamont Pass. California Energy Commission, Sacramento, May 26, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. EPRI Environmental Sector Council, Monterey, California, February 17, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. The Wildlife Society—Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Associations between avian fatalities and attributes of electric distribution poles in California. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Minimizing avian mortality in the Altamont Pass Wind Resources Area. UC Davis Wind Energy Collaborative Forum, Palm Springs, California, December 14, 2004.

Selecting electric distribution poles for priority retrofitting to reduce raptor mortality. Raptor Research Foundation Meeting, Bakersfield, California, November 10, 2004.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. Annual Meeting of the Society for Ecological Restoration, South Lake Tahoe, California, October 16, 2004.

Lessons learned from five years of avian mortality research at the Altamont Pass Wind Resources Area in California. The Wildlife Society Annual Meeting, Calgary, Canada, September 2004.

The ecology and impacts of power generation at Altamont Pass. Sacramento Petroleum Association, Sacramento, California, August 18, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Consortium meeting, Hayward, California, February 7, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Symposium, Sacramento, November 2, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. National Wind Coordinating Committee, Washington, D.C., November 17, 2003.

Raptor Behavior at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

California mountain lions. Ecological & Environmental Issues Seminar, Department of Biology, California State University, Sacramento, November, 2000.

Intra- and inter-turbine string comparison of fatalities to animal burrow densities at Altamont Pass. National Wind Coordinating Committee, Carmel, California, May, 2000.

Using a Geographic Positioning System (GPS) to map wildlife and habitat. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Suggested standards for science applied to conservation issues. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

The indicators framework applied to ecological restoration in Yolo County, California. Society for Ecological Restoration, September 25, 1999.

Ecological restoration in the context of animal social units and their habitat areas. Society for Ecological Restoration, September 24, 1999.

Relating Indicators of Ecological Health and Integrity to Assess Risks to Sustainable Agriculture and Native Biota. International Conference on Ecosystem Health, August 16, 1999.

A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Southern California Edison, Co. and California Energy Commission, March 4-5, 1999.

Mountain lion track counts in California: Implications for Management. Ecological & Environmental Issues Seminar, Department of Biological Sciences, California State University, Sacramento, November 4, 1998.

"No Surprises" -- Lack of science in the HCP process. California Native Plant Society Annual Conservation Conference, The Presidio, San Francisco, September 7, 1997.

In Your Interest. A half hour weekly show aired on Channel 10 Television, Sacramento. In this episode, I served on a panel of experts discussing problems with the implementation of the Endangered Species Act. Aired August 31, 1997.

Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Estimating prairie dog and pocket gopher burrow volume. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Ten years of mountain lion track survey. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Study and interpretive design effects on mountain lion density estimates. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Small animal control. Session moderator and speaker at the California Farm Conference, Sacramento, California, Feb. 28, 1995.

Small animal control. Ecological Farming Conference, Asylomar, California, Jan. 28, 1995.

Habitat associations of the Swainson's Hawk in the Sacramento Valley's agricultural landscape. 1994 Raptor Research Foundation Meeting, Flagstaff, Arizona.

Alfalfa as wildlife habitat. Seed Industry Conference, Woodland, California, May 4, 1994.

Habitats and vertebrate pests: impacts and management. Managing Farmland to Bring Back Game Birds and Wildlife to the Central Valley. Yolo County Resource Conservation District, U.C. Davis, February 19, 1994.

Management of gophers and alfalfa as wildlife habitat. Orland Alfalfa Production Meeting and Sacramento Valley Alfalfa Production Meeting, February 1 and 2, 1994.

Patterns of wildlife movement in a farming landscape. Wildlife and Fisheries Biology Seminar Series: Recent Advances in Wildlife, Fish, and Conservation Biology, U.C. Davis, Dec. 6, 1993.

Alfalfa as wildlife habitat. California Alfalfa Symposium, Fresno, California, Dec. 9, 1993.

Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium, Fresno, California, Dec. 8, 1993.

Association analysis of raptors in a farming landscape. Plenary speaker at Raptor Research Foundation Meeting, Charlotte, North Carolina, Nov. 6, 1993.

Landscape strategies for biological control and IPM. Plenary speaker, International Conference on Integrated Resource Management and Sustainable Agriculture, Beijing, China, Sept. 11, 1993.

Landscape Ecology Study of Pocket Gophers in Alfalfa. Alfalfa Field Day, U.C. Davis, July 1993.

Patterns of wildlife movement in a farming landscape. Spatial Data Analysis Colloquium, U.C. Davis, August 6, 1993.

Sound stewardship of wildlife. Veterinary Medicine Seminar: Ethics of Animal Use, U.C. Davis. May 1993.

Landscape ecology study of pocket gophers in alfalfa. Five County Grower's Meeting, Tracy, California. February 1993.

Turbulence and the community organizers: The role of invading species in ordering a turbulent system, and the factors for invasion success. Ecology Graduate Student Association Colloquium, U.C. Davis. May 1990.

Evaluation of exotic vertebrate pests. Fourteenth Vertebrate Pest Conference, Sacramento, California. March 1990.

Analytical methods for predicting success of mammal introductions to North America. The Western Section of the Wildlife Society, Hilo, Hawaii. February 1988.

A state-wide mountain lion track survey. Sacramento County Dept Parks and Recreation. April 1986.

The mountain lion in California. Davis Chapter of the Audubon Society. October 1985.

Ecology Graduate Student Seminars, U.C. Davis, 1985-1990: Social behavior of the mountain lion;

Mountain lion control; Political status of the mountain lion in California.

Other forms of Participation at Professional Meetings

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Berlin, Germany, March 2015.
- Scientific Committee, Conference on Wind energy and Wildlife impacts, Stockholm, Sweden, February 2013.
- Workshop co-presenter at Birds & Wind Energy Specialist Group (BAWESG) Information sharing week, Bird specialist studies for proposed wind energy facilities in South Africa, Endangered Wildlife Trust, Darling, South Africa, 3-7 October 2011.
- Scientific Committee, Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 2-5 May 2011.
- Chair of Animal Damage Management Session, The Wildlife Society, Annual Meeting, Reno, Nevada, September 26, 2001.
- Chair of Technical Session: Human communities and ecosystem health: Comparing perspectives and making connection. Managing for Ecosystem Health, International Congress on Ecosystem Health, Sacramento, CA August 15-20, 1999.
- Student Awards Committee, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.
- Student Mentor, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Printed Mass Media

Smallwood, K.S., D. Mooney, and M. McGuinness. 2003. We must stop the UCD biolab now. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2002. Spring Lake threatens Davis. Op-Ed to the Davis Enterprise.

Smallwood, K.S. Summer, 2001. Mitigation of habitation. The Flatlander, Davis, California.

Entrikan, R.K. and K.S. Smallwood. 2000. Measure O: Flawed law would lock in new taxes. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2000. Davis delegation lobbies Congress for Wildlife conservation. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 1998. Davis Visions. The Flatlander, Davis, California.

Smallwood, K.S. 1997. Last grab for Yolo's land and water. The Flatlander, Davis, California.

Smallwood, K.S. 1997. The Yolo County HCP. Op-Ed to the Davis Enterprise.

Radio/Television

PBS News Hour,

FOX News, Energy in America: Dead Birds Unintended Consequence of Wind Power Development, August 2011.

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Mountain lion attacks (with guest Professor Richard Coss). 23 April 2009;

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Wind farm Rio Vista Renewable Power. 4 September 2008;

KQED QUEST Episode #111. Bird collisions with wind turbines. 2007;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. December 27, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. May 3, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. February 8, 2001;

KDVS Speaking in Tongues (host Ron Glick & Shawn Smallwood), California Energy Crisis: 1 hour. Jan. 25, 2001;

KDVS Speaking in Tongues (host Ron Glick), Headwaters Forest HCP: 1 hour. 1998;

Davis Cable Channel (host Gerald Heffernon), Burrowing owls in Davis: half hour. June, 2000;

Davis Cable Channel (hosted by Davis League of Women Voters), Measure O debate: 1 hour. October, 2000;

KXTV 10, In Your Interest, The Endangered Species Act: half hour. 1997.

Reviews of Journal Papers (Scientific journals for whom I've provided peer review)

Journal	Journal
American Naturalist	Journal of Animal Ecology
Journal of Wildlife Management	Western North American Naturalist
Auk	Journal of Raptor Research
Biological Conservation	National Renewable Energy Lab reports
Canadian Journal of Zoology	Oikos
Ecosystem Health	The Prairie Naturalist
Environmental Conservation	Restoration Ecology

Journal	Journal
Environmental Management	Southwestern Naturalist
Functional Ecology	The Wildlife Society--Western Section Trans.
Journal of Zoology (London)	Proc. Int. Congress on Managing for Ecosystem Health
Journal of Applied Ecology	Transactions in GIS
Ecology	Tropical Ecology
Wildlife Society Bulletin	Peer J
Biological Control	The Condor

Committees

- Scientific Review Committee, Alameda County, Altamont Pass Wind Resource Area
- Ph.D. Thesis Committee, Steve Anderson, University of California, Davis
- MS Thesis Committee, Marcus Yee, California State University, Sacramento

Other Professional Activities or Products

Testified in Federal Court in Denver during 2005 over the fate of radio-nuclides in the soil at Rocky Flats Plant after exposure to burrowing animals. My clients won a judgment of $553,000,000. I have also testified in many other cases of litigation under CEQA, NEPA, the Warren-Alquist Act, and other environmental laws. My clients won most of the cases for which I testified.

Testified before Environmental Review Tribunals in Ontario, Canada regarding proposed White Pines, Amherst Island, and Fairview Wind Energy projects.

Testified in Skamania County Hearing in 2009 on the potential impacts of zoning the County for development of wind farms and hazardous waste facilities.

Testified in deposition in 2007 in the case of O'Dell et al. vs. FPL Energy in Houston, Texas.

Testified in Klickitat County Hearing in 2006 on the potential impacts of the Windy Point Wind Farm.

Memberships in Professional Societies

The Wildlife Society
Raptor Research Foundation

Honors and Awards

Fulbright Research Fellowship to Indonesia, 1987
J.G. Boswell Full Academic Scholarship, 1981 college of choice
Certificate of Appreciation, The Wildlife Society—Western Section, 2000, 2001
Northern California Athletic Association Most Valuable Cross Country Runner, 1984
American Legion Award, Corcoran High School, 1981, and John Muir Junior High, 1977
CIF Section Champion, Cross Country in 1978
CIF Section Champion, Track & Field 2 mile run in 1981
National Junior Record, 20 kilometer run, 1982
National Age Group Record, 1500 meter run, 1978

Community Activities

District 64 Little League Umpire, 2003-2007
Dixon Little League Umpire, 2006-07
Davis Little League Chief Umpire and Board member, 2004-2005
Davis Little League Safety Officer, 2004-2005
Davis Little League Certified Umpire, 2002-2004
Davis Little League Scorekeeper, 2002
Davis Visioning Group member
Petitioner for Writ of Mandate under the California Environmental Quality Act against City of Woodland decision to approve the Spring Lake Specific Plan, 2002
Served on campaign committees for City Council candidates

Representative Clients/Funders

Law Offices of Stephan C. Volker
Blum Collins, LLP
Eric K. Gillespie Professional Corporation
Law Offices of Berger & Montague
Lozeau | Drury LLP
Law Offices of Roy Haber
Law Offices of Edward MacDonald
Law Office of John Gabrielli
Law Office of Bill Kopper
Law Office of Donald B. Mooney
Law Office of Veneruso & Moncharsh
Law Office of Steven Thompson
Law Office of Brian Gaffney
California Wildlife Federation
Defenders of Wildlife
Sierra Club
National Endangered Species Network
Spirit of the Sage Council
The Humane Society
Hagens Berman LLP
Environmental Protection Information Center
Goldberg, Kamin & Garvin, Attorneys at Law
Californians for Renewable Energy (CARE)
Seatuck Environmental Association
Friends of the Columbia Gorge, Inc.
Save Our Scenic Area
Alliance to Protect Nantucket Sound
Friends of the Swainson's Hawk
Alameda Creek Alliance
Center for Biological Diversity
California Native Plant Society
Endangered Wildlife Trust
and BirdLife South Africa
AquAlliance
Oregon Natural Desert Association
Save Our Sound
G3 Energy and Pattern Energy
Emerald Farms
Pacific Gas & Electric Co.
Southern California Edison Co.
Georgia-Pacific Timber Co.
Northern Territories Inc.
David Magney Environmental Consulting
Wildlife History Foundation
NextEra Energy Resources, LLC
Ogin, Inc.
EDF Renewables
National Renewable Energy Lab
Altamont Winds LLC
Salka Energy
Comstocks Business (magazine)
BioResource Consultants
Tierra Data
Black and Veatch
Terry Preston, Wildlife Ecology Research Center
EcoStat, Inc.
US Navy
US Department of Agriculture
US Forest Service
US Fish & Wildlife Service
US Department of Justice
California Energy Commission
California Office of the Attorney General
California Department of Fish & Wildlife
California Department of Transportation
California Department of Forestry
California Department of Food & Agriculture
Ventura County Counsel
County of Yolo
Tahoe Regional Planning Agency
Sustainable Agriculture Research & Education Program
Sacramento-Yolo Mosquito and Vector Control District
East Bay Regional Park District
County of Alameda
Don & LaNelle Silverstien
Seventh Day Adventist Church
Escuela de la Raza Unida
Susan Pelican and Howard Beeman
Residents Against Inconsistent Development, Inc.
Bob Sarvey
Mike Boyd
Hillcroft Neighborhood Fund
Joint Labor Management Committee, Retail Food Industry
Lisa Rocca
Kevin Jackson
Dawn Stover and Jay Letto
Nancy Havassy
Catherine Portman (for Brenda Cedarblade)
Ventus Environmental Solutions, Inc.
Panorama Environmental, Inc.
Adams Broadwell Professional Corporation

Representative special-status species experience

Common name	Species name	Description
Field experience		
California red-legged frog	*Rana aurora draytonii*	Protocol searches; Many detections
Foothill yellow-legged frog	*Rana boylii*	Presence surveys; Many detections
Western spadefoot	*Spea hammondii*	Presence surveys; Few detections
California tiger salamander	*Ambystoma californiense*	Protocol searches; Many detections
Coast range newt	*Taricha torosa torosa*	Searches and multiple detections
Blunt-nosed leopard lizard	*Gambelia sila*	Detected in San Luis Obispo County
California horned lizard	*Phrynosoma coronatum frontale*	Searches; Many detections
Western pond turtle	*Clemmys marmorata*	Searches; Many detections
San Joaquin kit fox	*Vulpes macrotis mutica*	Protocol searches; detections
Sumatran tiger	*Panthera tigris*	Track surveys in Sumatra
Mountain lion	*Puma concolor californicus*	Research and publications
Point Arena mountain beaver	*Aplodontia rufa nigra*	Remote camera operation
Giant kangaroo rat	*Dipodomys ingens*	Detected in Cholame Valley
San Joaquin kangaroo rat	*Dipodomys nitratoides*	Monitoring & habitat restoration
Monterey dusky-footed woodrat	*Neotoma fuscipes luciana*	Non-target captures and mapping of dens
Salt marsh harvest mouse	*Reithrodontomys raviventris*	Habitat assessment, monitoring
Salinas harvest mouse	*Reithrodontomys megalotus distichlus*	Captures; habitat assessment
Bats		Thermal imaging surveys
California clapper rail	*Rallus longirostris*	Surveys and detections
Golden eagle	*Aquila chrysaetos*	Numerical & behavioral surveys
Swainson's hawk	*Buteo swainsoni*	Numerical & behavioral surveys
Northern harrier	*Circus cyaeneus*	Numerical & behavioral surveys
White-tailed kite	*Elanus leucurus*	Numerical & behavioral surveys
Loggerhead shrike	*Lanius ludovicianus*	Large area surveys
Least Bell's vireo	*Vireo bellii pusillus*	Detected in Monterey County
Willow flycatcher	*Empidonax traillii extimus*	Research at Sierra Nevada breeding sites
Burrowing owl	*Athene cunicularia hypugia*	Numerical & behavioral surveys
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Monitored success of relocation and habitat restoration
Analytical		
Arroyo southwestern toad	*Bufo microscaphus californicus*	Research and report.
Giant garter snake	*Thamnophis gigas*	Research and publication
Northern goshawk	*Accipiter gentilis*	Research and publication
Northern spotted owl	*Strix occidentalis*	Research and reports
Alameda whipsnake	*Masticophis lateralis euryxanthus*	Expert testimony

EXHIBIT C

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

CALIFORNIA
WASHINGTON
NEW YORK

WI #22-004.06

March 3, 2022

Ms. Amalia Bowley Fuentes
Legal Fellow
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
Oakland, California 94612

SUBJECT: Administrative Draft Amond World Initial Study/Mitigated Negative Declaration, Comments on the Noise Analysis

Dear Ms. Fuentes,

Per your request, I have reviewed the subject matter document Administrative Draft Initial Study / Mitigated Negative Declaration (ISMND). The proposed Project would construct a cold storage warehouse for agricultural products. The Project would consist of two (2) phases to occupy two (2) parcels that total over 30 acres located on the westside of Golden State Boulevard between Avenue 16 and Avenue 17 in Madera, CA. The project involves the construction of two refrigerated warehouse and storage facilities, one on each parcel, with each providing over 250,000 sq ft. Phase I would construct one such facility, and Phase II would construct the other and include a ground mount solar PV array.

Errors in the ISMND

We identified a few errors in the ISMND. In addition to corrupted graphics in the Project Description (e.g., Figure 2-3, 2-4 and various "error! Reference not found" broken links) in Section 4.13 there are references to figures that are in Appendix C. For example, p. 4-81, in the last two paragraphs, Figure 3 and Figure 4 are referenced; since these figures are presumably in Appendix C (Environmental Noise Assessment), these references should be corrected.

In its discussion of the Madera Municipal Code, the ISMND on page 4-80 appears to have omitted Section 3-11.01 of the Code. The relevant portion of that section[1] is as follows (emphasis mine):

> § 3-11.01 UNLAWFUL NOISE.
>
> (A) No person shall make, or cause or permit to be made or caused, upon any premises owned, occupied, possessed, or controlled by them or upon any public street, alley, or thoroughfare any **unnecessary noise or sound which is physically annoying to persons of ordinary and normal**

[1] As viewed online: https://codelibrary.amlegal.com/codes/madera/latest/madera_ca/0-0-0-1614

sensitivity or which is so harsh or so prolonged unnatural or unusual in its use, time, and place as to cause physical discomfort, or which is injurious to the lives health, peace, and comfort of the inhabitants of the city.

Thresholds of Significance are Not Properly Developed

Per CEQA[2], the ISMND must clearly show that the mitigation would eliminate significant effects:

(b) The initial study identifies potentially significant effects, but:

(1) Revisions in the project plans or proposals made by or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

Figure 1 CEQA Section 15070(b)

The ISMND does not clearly define several thresholds of significance, including a) annoyance per the Madera Municipal Code and b) sleep disruption. Thus, the ISMND needs to identify these thresholds clearly to provide evidence that the mitigation measure(s) would be sufficient to eliminate (potentially) significant impacts.

Annoyance

The Madera Municipal Code Section 3-11.01(A) prohibits the Project from generating “unnecessary noise or sound which is physically annoying to persons of ordinary and normal sensitivity.” Annoyance is a complex issue, which can depend on the parameters such as the character of the noise, the absolute level, the relative noise increase, and the time of day just to name a few. A new sound can annoy people just because it is different. Two approaches that can be used to determine the potential for annoyance include:

Absolute noise level

The World Health Organization[3] identifies a guidance of 55 dBA Leq (outdoors) to determine serious annoyance concerns. ISMND documents a typical daytime level of about 58 dBA hourly Leq at LT-1 near the R/V park (59 Ldn), and about 63 dBA hourly Leq at LT-2 near the residences on Boles which reached 66 Ldn (see Appendix, Figure 3 and Figure 4, respectively.) The noise environment near LT-2 lies in the Tentatively Acceptable Category, and the ISMND identifies several policies in the General Plan which intend to maintain or improve existing conditions to be Completely Acceptable (Ldn 60 or less). For these reasons, to minimize the potential for the Project to increase the noise at the surrounding residences it could be determined that Project noise should be limited to an hourly Leq of 55 dBA at the R/V park and 60 dBA hourly Leq near the Boles residences.

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[2] https://govt.westlaw.com/calregs/Document/IA1DEFD80D48811DEBC02831C6D6C108E?
[3] WHO Guidelines for Community Noise, accessed online https://apps.who.int/iris/handle/10665/66217, Table 4.1

Relative noise increase

- The General Plan, policy N-13 considers a 5 dB increase in the Ldn to be significant. For daytime-only activities, such as construction noise, does the ISMND also consider a 5 dBA increase significant[4] from on-going construction noise?
- For nighttime sources, such as the refrigeration pods which would generally operate 24/7, it may be more appropriate to consider how the background noise level could change. People are trying to sleep, and are potentially more sensitive to smaller increases than during the daytime hours. The ISMND provides background noise data (L90) measured at LT-1 and LT-2 as listed on page 4-81 and graphed in Figures 3 and 4 of the Appendix, respectively. Refrigeration equipment often contains tonal components from the compressors and fans, and it may be appropriate to consider a 0 to 5 dBA increase significant.

Sleep Disruption

The ISMND provides no threshold to determine whether construction activities could cause sleep disruption. On page 4-84 the potential for significant impact is identified, along with mitigation measure NOISE-2 which would prohibit construction activities before 6 AM and after 8 PM based on the Madera Code prohibitions. However, since the noise standards presented in the ISMND identify the nighttime hours to end at 7 AM, noisy construction activities occurring between 6 AM and 7 AM could cause sleep disruption and would be potentially significant.

To evaluate the potential significance of construction activities between 6 AM and 7 AM and any Project operations between 10 PM and 7 AM, it is necessary to define significance thresholds. WHO also identifies a guidance of 45 dBA Leq (outdoors) to avoid sleep disturbance from a continuous source, and a limit of 60 dBA Lmax for intermittent sources for conventional homes[5]. At the R/V park, a lower limit could be warranted due to the thinner wall construction, perhaps 40 dBA Leq and 55 dBA Lmax.

Impact Analyses are Incomplete

The impact assessment discussion would benefit from improved clarity in the presentation of the results. For example, in the concluding paragraph for the refrigerator pod analysis on page 4-83 (3rd complete paragraph), the ISMND states, "Such levels do not exceed any City of Madera noise level standards. Additionally, such levels do not exceed existing (without project) ambient noise levels measured near sensitive receptor locations." It would be very helpful to restate the "City of Madera noise level standards" and the "ambient noise levels" that are being referenced at this juncture of the analysis. A table would be helpful to illustrate these limits and the impact analyses, for example:

[4] For example, the City of San Francisco considers the relative increase and the time duration. A recent project under review is the PG&E Power Asset Acquisition Preliminary PMND, public draft, page 89, available via https://sfplanning.org/environmental-review-documents

[5] These outdoor levels assume that the residence reduces noise by 15 dBA with windows open; for a thin-walled recreational vehicle or mobile home, a more realistic value might be 10 dBA.

Table 1 Summary of Noise from Amond World Operations

Receptor	Ambient Conditions	Madera noise level standards	Refrigerator Pod Noise	Truck Noise	Parking Lot	Total Project Noise	Significant or Potentially Significant Noise Impact
LT-2 (Boles Residences)	66 Ldn 54-63 Hourly Leq 45-59 Hourly L90	• 5 dB Ldn increase • 50 dBA Lmax night[1] • 60 dBA Lmax daytime[1] • Less than 60 Ldn "completely compatible" **Daytime Annoyance** • **60 dBA Leq** **Nighttime Annoyance** • **50-55 dBA Leq** **Sleep disruption** • **45 dBA Leq** • **60 dBA Lmax**	32 dBA hourly Leq and L90[2]	South side: **26-39 Lmax** North side: 38-51 Lmax	34-39 dBA Lmax	**Potentially <51 dBA Leq with trucks on the north side at night**	Yes if trucks on north side at night per local code.
LT-1 (R/V park)	59 Ldn 45-58 Hourly Leq 32-54 Hourly L90	• 5 dB Ldn increase • 50 dBA Lmax night[1] • 60 dBA Lmax daytime[1] • Less than 60 Ldn "completely compatible" **Daytime Annoyance** • **55 dBA Leq** **Nighttime Annoyance** • **32-37 dBA Leq** **Sleep disruption** • **40 dBA Leq** • **55 dBA Lmax**	39 dBA hourly Leq and L90[2]	45-51 Lmax	**<<34 dBA Lmax**	**Undetermined, potentially <51 dBA Leq**	**Pod noise is potentially significant**

Note 1: night is 10 PM to 7 AM; day is 7 AM to 10 PM
Note 2: if the equipment is operating continuously, it will dominate the background and the L90 if it is higher than the existing L90
Items in **bold red** indicate information developed in this letter.

The on-going construction noise has not been calculated. Table VIII in Appendix C does not indicate which FHWA reference was used. One way to derive the hourly Leq from construction is to combine the top 2 or 3 noisy pieces of equipment. For example, during the site preparation phase it is conceivable that a scraper and a grader could be operated continuously for several days. Assuming that these two pieces might contribute to the total construction noise for 100% of any given hour, the combined noise at 100 ft distance (closest receptors) could be 83 dBA. This noise level could exceed 68 dBA would be a substantial increase at homes on Boles Street.

The potential for annoyance and sleep disruption from construction noise could be presented in this way:

Table 2 Summary of Noise from Amond World Construction

Receptor	Ambient Conditions	Significance Thresholds	Construction Noise	Significant or Potentially Significant Noise Impact
LT-2 (Boles Residences)	66 Ldn 54-63 Hourly Leq 45-59 Hourly L90	**Annoyance** • **68 dBA Leq (Ambient + 5)** **Sleep disruption** • **45 dBA Leq** • **60 dBA Lmax**	Grading: **83 dBA hourly Leq**	Daytime annoyance: Yes Sleep disruption: Yes (6 to 7 AM)
LT-1 (R/V park)	59 Ldn 45-58 Hourly Leq 32-54 Hourly L90	**Annoyance** • **63 dBA Leq (Ambient + 5)** **Sleep disruption** • **40 dBA Leq** • **55 dBA Lmax**	Grading: **62 dBA hourly Leq**	Daytime annoyance: No Sleep disruption: Yes (6 to 7 AM)
Items in **bold red** indicated information developed in this letter				

Mitigation Measures are Insufficient

Mitigation measure NOISE-1 is insufficient

As outlined in Table 1 above, noise from the refrigeration pods is potentially significant at the R/V park, and the mitigation measure must include a provision to reduce the pod noise at these homes.

Mitigation measure NOISE-2 lacks evidence

As noted above, there is no clear threshold to establish daytime annoyance impact or sleep disruption impact. The ISMND provides no evidence to show that most of the NOISE-2 provisions would mitigate these impacts. For example:

- Who defines whether construction is “properly maintained” and whether equipment is “adequately muffled”? What evidence can be presented to ensure these provide meaningful noise reduction from construction equipment? Who will enforce this? Will the contractor be required to have a maintenance log available for review?

- How is “immediate use” defined in terms of equipment idling, and how is that balanced with the logistics of getting the work done and the noise and emissions from re-starting equipment. Would a time limit be useful (e.g., no greater than 5 minutes idling or choose a value consistent with air quality requirements).

- When locating equipment and staging areas to the “greatest possible distance” and “to the extent feasible”, who determines what is feasible? Will the contractor be required to submit a staging and noisy equipment layout plan for approval? How much detail will be required? Will noise calculations be required?

In the absence of clear thresholds to evaluate annoyance and sleep disruption, these best practices cannot be meaningfully evaluated to confirm that the potential impacts would be mitigated.

Mitigation measures have inconsistent time limits

Furthermore, in limiting truck noise along the north side of the building (mitigation measure NOISE-1) those hours were set between 10 PM and 7AM. However, mitigation measure NOISE-2 relies only the Municipal Code time limits to restrict construction activities before 6 AM. Noisy construction activities occurring between 6 AM and 7 AM could cause sleep disruption and would be potentially significant, and some clear guidance must be provided to identify what activities or equipment should be prohibited between 6 AM and 7 AM.

Conclusions

The ISMND identifies potentially significant impacts from operations and construction of the project, but it lacks quantitative thresholds to evaluate the suitability of its proposed mitigation measures. Recommended thresholds have been provided, based on the ambient environment and different methods to determine the potential for annoyance and sleep disturbance.

Mitigation measure NOISE-1 and NOISE-2 require additional details and evidence to show that the significant and potentially significant impacts would be clearly and fully mitigated.

Please feel free to contact me with any questions on this information.

Very truly yours,

WILSON IHRIG

Deborah A. Jue, INCE-USA
Principal

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DEBORAH JUE

Principal

Since joining Wilson Ihrig in 1990, Ms. Jue has been involved in with many projects from environmental assessments and entitlements, through design development, construction documents and construction administration support. As an acoustical consultant, she has provided noise measurement, analysis and recommendations to control noise and vibration both at the interior of the project and at the neighboring properties. She has authored many reports concerning compliance with the requirements of California Noise Insulation Standards, Title 24, local Noise Elements, environmental assessments and Federal noise criteria, and is well aware of the additional design and construction technique requirements to achieve industry standards. Ms. Jue has authored or provided input for many environmental documents and technical studies in accordance with NEPA and California's CEQA regulations, most of them related to surface transportation, and she gives presentations to public officials when necessary to explain construction noise problems, noise mitigation goals, and noise control methods. She can develop construction noise and vibration criteria to address vibration damage potential to nearby buildings and sensitive structures, and vibration annoyance or disruption potential for occupants of nearby buildings.

Education

- M.S. in Mechanical Engineering, University of California, Berkeley, 1998
- B.S. in General Engineering: Acoustics, Stanford University, 1988

Professional Associations (Member)

- American Society of Mechanical Engineers
- Acoustical Society of America
- National Council of Acoustical Consultants
- Institute of Noise Control Engineering
- WTS
- Transportation Research Board, AEP80 Standing Committee Member (2021-2024)

Research and Published Papers

- ACRP Report 175, ACRP 07-14, *Improving Intelligibility of Airport Terminal Public Address Systems*
- NCHRP 25-25, *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects*
- *Transportation Research Record*, V. 2502, "Considerations to Establish Ground-Borne Noise Criteria to Define Mitigation for Noise-Sensitive Spaces"

Relevant Experience

- California High Speed Rail Caltrain Corridor EIR/EIS, San Francisco to San Jose
- UC Berkeley Northgate Hall A/V Renovations, Berkeley
- MacArthur Station, *long-term construction noise and vibration monitoring*, Oakland
- Safeway @ Claremont & College, *HVAC noise and construction noise monitoring*, Oakland
- ACTC I-80/Ashby, *interchange traffic noise analysis*, Berkeley and Emeryville
- ACTC I-680 Express Lanes, *traffic noise analysis*, Contra Costa County, CA
- Chase Arena, *construction noise and vibration monitoring*, San Francisco