Initial Study/Mitigated Negative Declaration

Tuolumne Bioenergy Woody Biomass Pellet Manufacturing Facility

Site Development Permit SDP21-001

Lead Agency:
Tuolumne County
Community Development Department
48 Yaney Avenue
Sonora, California 95370
209-533-5633
www.tuolumnecounty.ca.gov

Owner/Applicant:
PIP, LLC
Tuolumne Bioenergy, Incorporated
15256 Camino Del Parque
Sonora, CA 95370

December 10, 2021

INTRODUCTION AND REGULATORY GUIDANCE

This Initial Study/Proposed Mitigated Negative Declaration (IS/Proposed MND) has been prepared by Tuolumne County to evaluate potential environmental effects resulting the creation of a pellet plant in East Sonora, in Tuolumne County, California.

This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). An initial study is prepared by a lead agency to determine if a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]), and thus to determine the appropriate environmental document. In accordance with State CEQA Guidelines Section 15070, a "public agency shall prepare…a proposed negative declaration or mitigated negative declaration…when: (a) The Initial Study shows that there is no substantial evidence…that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level." In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the project would not have a significant effect on the environment and, therefore, does not require the preparation of an Environmental Impact Report (EIR). By contrast, an EIR is required when the project may have a significant environmental impact that cannot clearly be reduced to a less-than-significant effect by adoption of mitigation or by revisions in the project design.

As described in the environmental checklist (Section 2), the project would not result in any unmitigated significant environmental impacts. Therefore, an IS/Proposed MND is the appropriate document for compliance with the requirements of CEQA. This IS/Proposed MND conforms to these requirements and to the content requirements of State CEQA Guidelines Section 15071.

PUBLIC REVIEW REQUIREMENTS

Under CEQA, the lead agency is the public agency with primary responsibility over approval of the project. Tuolumne County is the CEQA lead agency. The purpose of this document is to present to decision-makers and the public, information about the environmental consequences of implementing the project. This disclosure document is being made available to the public for review and comment. This IS/Proposed MND will be available for a 30-day public review period from December 15, 2021 to January 14, 2022.

Supporting documentation referenced in this document is available for review at:
Tuolumne County Community Development Department
48 Yaney, Sonora, CA 95370

Comments should be addressed to and must be postmarked by January 14, 2022:
Natalie Rizzi, Senior Planner
Tuolumne County Community Development Department
2 South Green Street, CA 95370
nrizzi@co.tuolumne.ca.us

After comments are received from the public and reviewing agencies, the Tuolumne County Planning Commission may (1) certify the MND and approve the project; (2) require additional environmental analysis; or (3) disapprove the project. If the project is approved, the applicant may proceed with the project.

PROJECT INFORMATION

DATE: December 10, 2021

SURFACE/MINERAL RIGHTS OWNERs PIP, LLC

APPLICANT: Tuolumne Bioenergy, Incorporated
15256 Camino Del Parque
Sonora, CA 95370

PROJECT DESCRIPTION: Site Development Permit SDP21-001 to allow the development of a wood pellet facility consisting of a 4,000 square foot building, outdoor equipment, covered storage, outdoor storage, and associated infrastructure. The project site consists of two parcels totaling 3.24± acres zoned M-1 (Light Industrial) and O (Open Space) under Title 17 of the Tuolumne County Ordinance Code.

LOCATION: The project is located along Camage Avenue approximately 1,600 feet southeast of the intersection of Camage Avenue and Microtronics Way in the community of Sonora. Within a portion of Section 10, Township 1 North, Range 15 East, Mount Diablo Baseline and Meridian and within Supervisorial District 4. Assessor's Parcel Numbers 061-150-046 and 061-150-047.

SITE DESCRIPTION: The project site consists of two parcels located along Camage Avenue (Figure 1). The project site is currently undeveloped and is located within the Sierra Industrial Park. The elevation on the project site is approximately 2,220 feet above mean sea level. The riparian area surrounding Curtis Creek encompasses the southern portion of the project site. This area is protected with Open Space zoning which was established by Ordinance 2218 on December 2, 1997. The site has been partially graded in the past during the creation of the Sierra Industrial Park and is therefore fairly level. The site is within the area subject to the East Sonora Design Guidelines. Pacific Gas and Electric (PG&E) provides electrical service to the area. The Tuolumne Utilities District (TUD) will provide public water and sewer service to the site.

DETAILED PROJECT DESCRIPTION:

The proposed project would involve the development and operation of a woody biomass pellet manufacturing facility. Structures would include a 4,000 square foot (sf) manufacturing facility, a 5,000-sf covered outdoor storage area, two 100-foot diameter chip storage silos, outdoor equipment (e.g., dryer, battery, bins, chip receivers, furnace), 10,200 sf of flatwork concrete, 3,300 sf of landscaped area, 3,600 sf of pavement, and a 22,000-sf gravel storage yard. This facility would have access to approximately 44,000 bone dry tons (BDT) of biomass annually to produce 29,000 to 31,000 tons of wood pellets for domestic home heating purposes. Wood pellets are densified wood products produced from raw biomass generated by forest thinning and other forestry activities, commercial milling, orchard removals, and urban/industrial tree services. These ancillary activities (e.g., forest thinning, commercial forestry, commercial milling, orchard removal, and urban/industrial tree service) would occur under other agency authorizations, if required, and are not a part of the proposed

project. The wood pellets produced by this project would be packaged and sold in 40-pound bags for individual use, and one-ton bulk bags for wholesale distribution to regional and national suppliers that sell to the domestic home heating customer.

BIOMASS FEEDSTOCK SUPPLY

The primary source of biomass for the project would consist of "slash" generated through forest fuels treatment and thinning activities. Slash refers to the unmarketable limbs and branches of larger trees, as well as small understory trees and shrubs remaining following forest fuels treatments and thinning activities. The low market value of slash results in accumulated piles of this biomass on the forest floor, where it remains until it can be burned or removed. It is expected that in future years forest thinning and fuels reduction activities will be carried out at an accelerated rate on forested lands, both locally and regionally to the project site, to reduce the risk of catastrophic wildfire. With the accelerating pace of such activities, more biomass is expected to be generated, including slash, which will pose a challenge for biomass management and disposal. A secondary biomass source could include agricultural waste trees and biomass from orchards in the San Joaquin Valley.
Under the project, biomass would be collected and chipped from existing and future slash piles generated by forest fuel reduction and other projects from within nearby forested areas identified as high fire hazard severity. Forest fuel reduction projects and other biomass harvesting projects would be planned, conducted, and reviewed per applicable environmental requirements by other agencies and organizations, and would occur regardless of whether this project is approved.

The project would involve accessing and chipping previously generated slash piles with a mobile chipper-forwarder at various sites where thinning activities have occurred. It is assumed that slash piles would be generated under prior-approved projects, and therefore would have undergone prior environmental review. Slash piles would be accessed at landing areas that have been prepared under separate forest fuel management projects. Resource protection measures and best management practices, including pre-implementation surveys and avoidance of sensitive resources and site-specific erosion control measures identified in the individual fuel reduction project environmental documents would address site specific environmental conditions at the landing sites. Generation and storage of slash is not a part of the proposed project. Slash generated in accordance with other discretionary approvals would be chipped and loaded into bins mounted on haul trucks for transport to the project site five days per week, where the material would then be turned into marketable wood pellets. The biomass material utilized by the proposed project would likely not otherwise be profitable for existing biomass facilities due to the high cost of transport and the low market value of the material.

FACILITY DESIGN AND OPERATION

The woody biomass pellet manufacturing facility would be designed to self-generate power and heat by burning a part of the biomass feedstock. An on-site "biomass combined heat and power" (BCHP) unit would use an estimated 9,293 BDT of biomass feedstock annually, sourced from the overall 44,000 BDT used by the project. Heat generated by the BCHP would be used for chip drying, and electrical power generated by the BCHP would be used for pellet manufacturing. Standard electrical power will be used if there is a system failure or emergency. The facility design would meet California Green Building Standards Code (CALGreen Code) (mandatory) standards, including water-efficient fixtures and energy-efficient lighting. The biomass on-site would also be handled via enclosed electrical receivers and conveyers and off-road material handling equipment. The pellet mill would have the

ability to run 24 hours per day (up to 8,000 hours per year), 7 days per week, and 333 days per year.

Haul trucks with mounted bins would bring chipped biomass from regional locations within the feedstock supply area (FSA) to the facility for processing five days per week. Chipped biomass consists of small, uniform fragments of woody debris, and can be found in such commonplace uses as ground cover at children's playgrounds, or organic mulch for gardening, landscaping, and ecosystem restoration. The trucks will dump biomass chips into a large metal container located on a landing area within the project site. A hook truck will lift the collector bin to transport the material to the pellet mill. The hook truck is also capable of pulling a trailer containing a second container of chips. The biomass chips would then be dumped into biomass dryers, using facility-generated heat to dry the chips to the optimal moisture and density range. Dried chips would then be milled through two turnkey pellet mill lines. Overall, the facility would be designed and constructed to process approximately 20 daily biomass chip loads (or 148 wet tons of material). Approximately 700 tons of waste ash would be generated by the project annually and disposed of at a nearby compost facility less than one mile from the project site. Biomass chips, pellets, and ash byproduct are all organically generated, non-toxic substances derived directly from natural forest materials. Chips and pellets are combustible materials by nature, which represents a potential hazard during on-site storage. The project would comply with California Fire Code and Chapter 15.20 of the Tuolumne County Ordinance, "Fire Safety Standards," including requirements for fire hydrant locations, defensible space, fire flow and other water supply standards, building fire safety requirements.

The woody biomass pellet manufacturing facility would be constructed on an existing 3.27-acre lot with minimal grassy cover. The site is in an industrial business park and zoned for industrial use (M-1 industrial), which is consistent with surrounding zoning and land uses. Construction of the proposed project elements would require site preparation and grading activities. The project would construct a 4,000 square foot (sf) manufacturing facility, a 5,000-sf covered outdoor storage area, two 100-foot diameter chip storage silos, outdoor equipment (e.g., dryer, battery, bins, chip receivers, furnace), 10,200 sf of flatwork concrete, 3,300 sf of landscaped area, 3,600 sf of pavement, and a 22,000-sf gravel storage yard (Figure 1-3). Tuolumne Bioenergy, Inc. (TBI), the project proponent, expects the outdoor equipment to come preassembled. It will require cranes to place equipment (TBI 2021). Construction is scheduled to begin in February 2022.

WORKFORCE

The project would create approximately 26 full-time hourly jobs. Most of the new jobs would meet the definition of "targeted income" for low-moderate income people under the Community Development Block Grant National Disaster Resiliency program. Mother Lode Job Training would be engaged to assist with the recruitment and training of employees and documentation of the jobs.

PROJECT CONSTRUCTION

Construction of the woody biomass pellet manufacturing facility would occur over the course of approximately two to three months. Construction would be carried out in two parts, which would first involve connection to existing utilities, grading, and paving; and would later involve construction of a prefabricated building and open storage. Installation of equipment for the pellet mill, BCHP, and manufacturing components of the facility would occur at various stages as appropriate throughout site preparation and building construction. A small crew of two to four people would carry out grading and

preparation of the site, a crew of six to eight people would be required for building construction and storage, and lastly, plant equipment would be installed at various stages by one to three people.

PROJECT PURPOSE

The proposed project would assist in providing an additional market for low-value forest products generated by forest fuels treatments and thinning activities. As discussed, the pace and scale of forest treatments both regionally and statewide are increasing. Multiple initiatives to reduce the risk of catastrophic wildfire and improve forest health and resiliency are in place or are underway and will generate millions of tons of biomass regionally in future years that will necessitate management of this material. Much of the unmarketable material from these forest treatments will be burned in-situ in slash piles, which will contribute to reduced air quality in the short term and an increase in greenhouse gas emissions in the long term. A beneficial use of this biomass material would be to utilize it in industries and products that would otherwise consume raw material from other markets. The proposed project would create a market for otherwise unmarketable biomass, removing it as a source of fuel from vulnerable forests, and offsetting future greenhouse gas emissions generated by the burning of this material.

Other Agency Approvals:

In addition to County review and approval, the project would require permit issuance approvals from other agencies. These agencies would serve as responsible and trustee agencies pursuant to CEQA Guidelines Section 15381 and Section 15386, respectively. This document provides the necessary environmental information for discretionary actions by these agencies.

- California Department of Fish and Wildlife (CDFW) –Reviews/approves project for compliance with applicable rules and regulation, specifically impacts to sensitive plant, animal, and wetland/riparian habitat. Collects CDFW filing fee for review of project environmental document.
- US Fish and Wildlife Service – Reviews/approves applicable rules and regulation, specifically impacts to sensitive plant, animal, and wetland/riparian habitat. The authority to contact regarding buffer protection zones for elderberry shrubs.
- Native American Heritage Commission
- State Water Resources Control Board
- Tuolumne County—for encroachment permits, air pollution emission permits, grading permits, and building permits.

Consultation Pursuant to Public Resources Code Section 21080.3.1:

In accordance with Senate Bill 52, formal consultation letters were sent to the contacts for the Chicken Ranch Rancheria of Me-Wuk Indians and Tuolumne Band of Me-Wuk Indians Tribes. AB 52 consultation letters we sent via certified mail on September 10, 2021. To date, neither Tribe has requested consultation or provided comments on the proposed project.

SDP21-001

FIGURE 1 – PROJECT MAP

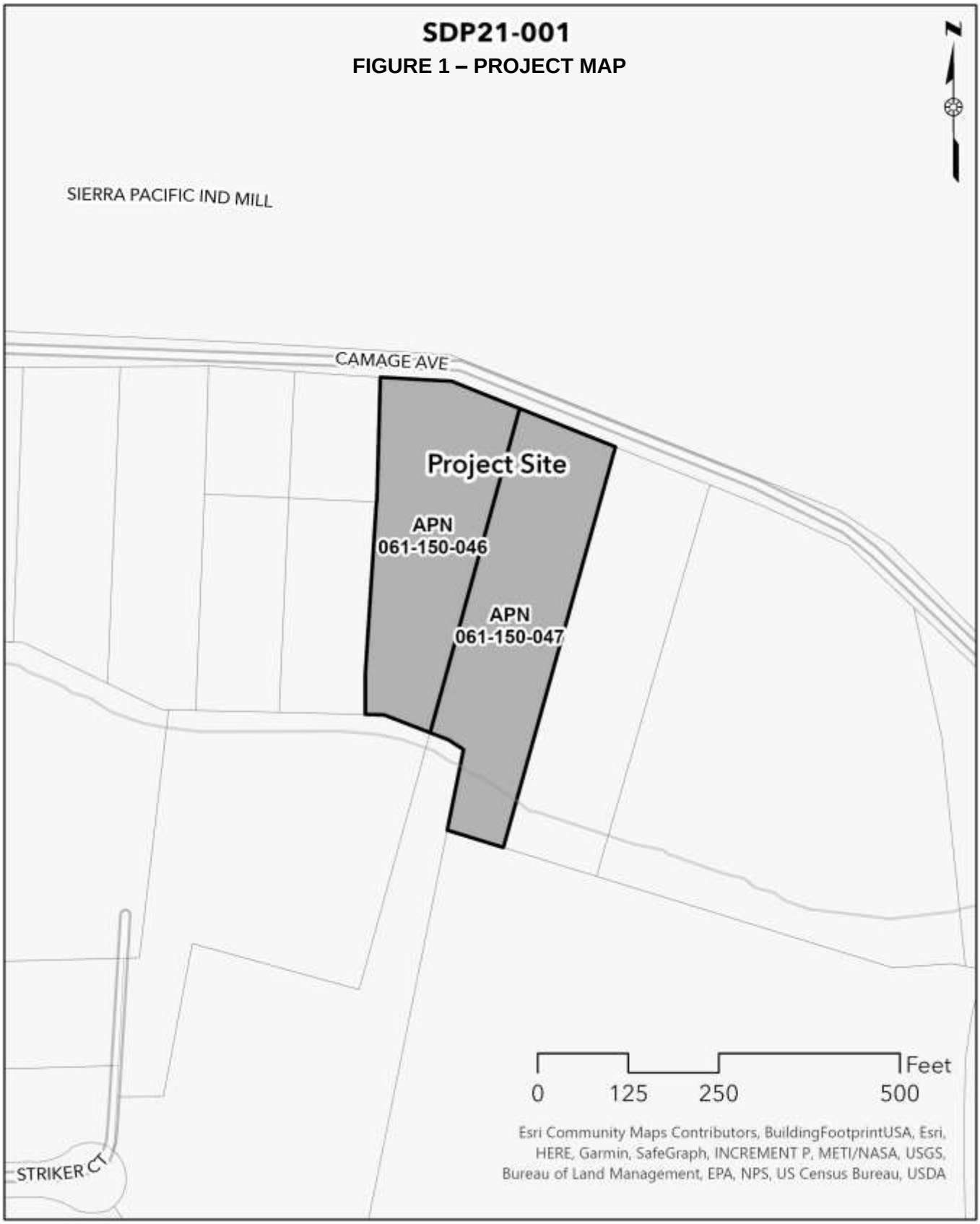
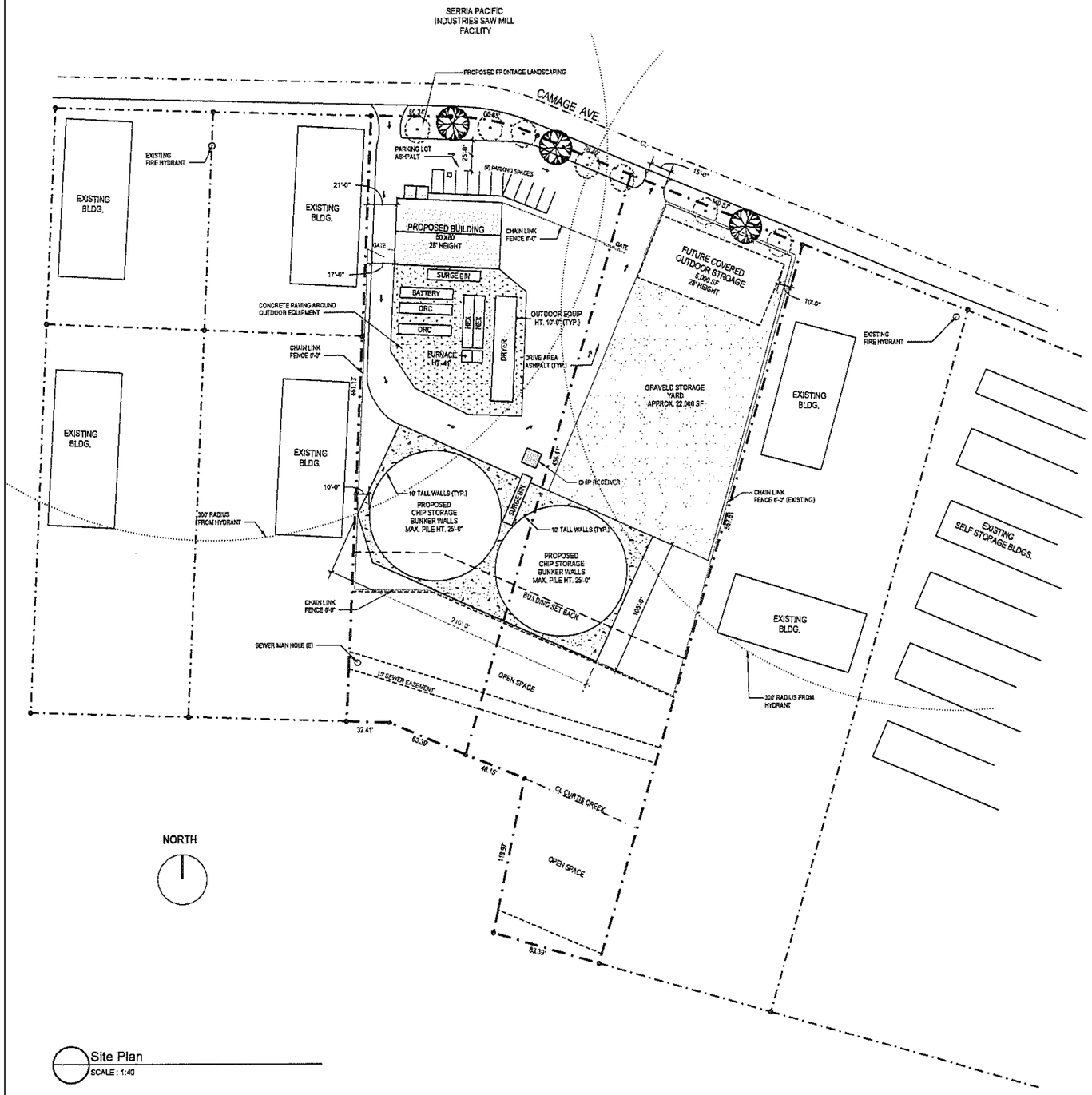


FIGURE 2 – SITE PLAN



PROJECT DATA

SCOPE:
PROPOSED PROJECT IS A WOOD PELLET PROCESSING FACILITY CONSISTING OF A 4,000 SF BUILDING, OUTDOOR EQUIPMENT, COVERED STORAGE, AND OUTDOOR STORAGE OF WOOD CHIPS AND FINISHED PRODUCTS.

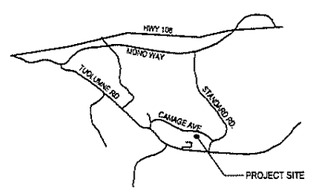
PROPERTY OWNER:	PIP SM, LLC 15256 CAMINO DEL PARQUE, SONORA, CA JOEL PLUIM 209.533.8982
END USER:	FORCE ENERGY CORPORATION CONTACT: ETIENNE PATENAUDE 403.830.1472

SITE INFORMATION:

APN:	061-150-46 & 061-150-47
ADDRESS:	TBD
PARCEL SIZE:	1.57 AC. & 1.70 AC. : TOTAL 3.24 ACRES
ZONING:	M-1 LIGHT INDUSTRIAL, O OPEN SPACE
WATER:	TUD
FIRE FLOW	TUD, (2) FIRE HYDRANTS, SEE PLAN
SEWER:	TUD
POWER:	PG&E
JURISDICTION:	TUOLUMNE COUNTY COMMUNITY DEVELOPMENT DEPT. TEL 209.533.5633

LAND USE COMPLIANCE:

PROPOSED USE:	LIGHT INDUSTRIAL - WOOD PELLET MANUFACTURING FACILITY
CURRENT USE:	OUTDOOR STORAGE YARD
GRADING:	EXISTING GRADE IS FLAT (LESS THEN 4 %) WITH GRAVEL SURFACE MINOR GRADING WILL BE REQUIRED FOR BUILDING AND EQUIPMENT PADS AND DRAINGAGE
LANDSCAPING:	PROPOSED FRONTAGE LANDSCAPING = 3,300 SF EXISTING OPEN SPACE NATURAL LANDSCPAING= 35,345 SF TOTAL 38,645 SF PROPOSED 38,645 SF /141,134 SF = 27.3% > 10% REQUIRED
PROPOSED TRUCK TRAFFIC:	10-12 SEMI TRUCK LOADS PER DAY
PROPOSED EMPOLYEES:	3 OFFICE EMPOLYEES (8AM- 5PM) AND 3 PLANT EMPOLYEES (24 HOURS/ 7 DAYS) MAX. 6 EMPOLYEES PER SHIFT
PROPOSED PARKING:	LIGHT INDUSTRIAL 1.5 PER EMPLOYEE X 6 = 9 SPACES PROVIDE 1 ACCESSIBLE AND 8 STANARD STALLS



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FORCE ENERGY
WOOD PELLET FACILITY
PIP CC,LLC.
ADDRESS: TBD
APN: 061-150-46,47

Document Date:
3/24/21

Document Phase:
SITE DEVELOPMENT PERMIT

rev.	date	remark
1		

SITE PLAN

C1.0

ENVIRONMENTAL EVALUATION

TERMINOLOGY DEFINITIONS: The following terminology from Appendix G of the *State CEQA Guidelines* is used in this environmental analysis to describe the level of significance of potential impacts to each resource area:

- ***Potentially Significant Impact*.** This term applies to adverse environmental consequences that have the potential to be significant according to the threshold criteria identified for the resource, even after mitigation strategies are applied and/or an adverse effect that could be significant and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared consistent with CEQA.
- ***Less-than-Significant Impact with Mitigation*.** This item applies to adverse environmental consequences that have the potential to be significant but can be reduced to less-than-significant levels through the application of identified mitigation strategies that have not already been incorporated into the proposed project.
- ***Less-than-Significant Impact*.** This term applies to potentially adverse environmental consequences that do not meet the significance threshold criteria for that resource. Therefore, no mitigation measures are required.
- ***No Impact.*** This term means no adverse environmental consequences have been identified for the resource or the consequences are negligible or undetectable. Therefore, no mitigation measures are required.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance
☒ None with Mitigation Implemented		

DETERMINATION (To be completed by the Lead Agency) on the basis on the initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent, and a MITIGATED NEGATIVE DECLATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on the attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION, pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARTION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Quincy Yaley

Quincy Yaley, AICP
Environmental Coordinator

12-17-21

Date

OFFICE OF ENVIRONMENTAL COORDINATOR

Quincy Yaley, AICP
Environmental Coordinator

48 Yaney Avenue, Sonora
Mailing: 2 S. Green Street
Sonora, CA 95370
209 533-5633
209 533-5616 (fax)
209 533-5909 (fax – EHD)
www.tuolumnecounty.ca.gov

MITIGATED NEGATIVE DECLARATION

PROJECT PROPONENT: Tuolumne Bioenergy, Incorporated

PROJECT NUMBER: Site Development Permit SDP21-001

PROJECT DESCRIPTION: Site Development Permit SDP21-00 to allow the development of a wood pellet facility consisting of a 4,000 square foot building, outdoor equipment, covered storage, outdoor storage, and associated infrastructure. The project site consists of two parcels totaling 3.24± acres zoned M-1 (Light Industrial) and O (Open Space) under Title 17 of the Tuolumne County Ordinance Code.

LOCATION: The project is located along Camage Avenue approximately 1,600 feet southeast of the intersection of Camage Avenue and Microtronics Way in the community of Sonora. Within a portion of Section 10, Township 1 North, Range 15 East, Mount Diablo Baseline and Meridian and within Supervisorial District 4. Assessor's Parcel Numbers 061-150-046 and 061-150-047.

ASSESSOR'S PARCEL NO: 061-150-046 and 061-150-047

COUNTY: County of Tuolumne

LEAD AGENCY: Tuolumne County

DETERMINATION

In accordance with the California Environmental Quality Act (CEQA), the Environmental Coordinator for the County has conducted an Initial Study to determine whether the proposed project may have a significant effect on the environment. On the basis of that study and the following findings, the Environmental Coordinator makes the following determination:

[ ] The proposed project **will not** have a significant effect on the environment and a Negative Declaration has been prepared.

[X] Although the project, as originally proposed, had a potential to have a significant effect on the environment, the project has been modified by incorporating measures to mitigate the potential impacts into the conditions of approval; therefore, a Mitigated Negative Declaration has been prepared.

The attached Initial Study incorporates all relevant information regarding the potential environmental effects of the project, includes project mitigation measures, and confirms the determination that an Environmental Impact Report (EIR) is not required for the project.

FINDINGS

A. The proposed project will not result in significant adverse impacts to the environment.

B. The Mitigated Negative Declaration was prepared in accordance with the California Environmental Quality Act (CEQA) and State and County Guidelines for the implementation of CEQA.

C. The Mitigated Negative Declaration reflects the independent judgment of the County of Tuolumne.

D. Pursuant to Section 21081.6(a)(1) of the Public Resources Code, a reporting and/or monitoring plan has been prepared, as incorporated into the conditions of project approval, in order to avoid significant effects to the environment.

E. The conditions of project approval are roughly proportional to the respective potential environmental impacts associated with the proposed project.

F. Pursuant to Section 21081.6(a)(2) of the Public Resources Code, the custodian and location of the documents and materials which constitute the record of proceedings upon which this decision to adopt the Mitigated Negative Declaration had been made are as follows:

Environmental Coordinator/Community Development Department Director, Tuolumne County Community Development Department, 48 Yaney, Sonora, California.

Fire Protection, Tuolumne County Fire Department, 48 Yaney, Sonora, California.

Quincy Yaley, AICP
Environmental Coordinator

12-17-21
Date

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

AESTHETICS:

Issues and Supporting Information Sources		*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:					
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experiences from publicly assessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

Environmental Setting:

Visual or aesthetic resources are generally defined as the natural and built features of the landscape that can be seen. The combination of landform, water, and vegetation patterns represents the natural landscape that defines an area's visual character, whereas built features such as buildings, roads, and other structures reflect human or cultural modifications to the landscape. These natural and built landscape features or visual resources contribute to the public's experience and appreciation of the environment. Depending on the extent to which a project's presence would alter the perceived visual character and quality of the environment, visual or aesthetic impact may occur. It should be noted that visual change in and of itself does not necessarily represent an adverse impact, and in some cases may result in a beneficial visual effect.

The aesthetic analysis is based on field observations and the review of information including site maps, drawings, technical data, and aerial and ground level photographs of the area. In addition, as part of this study, planning documents pertinent to visual quality including the Tuolumne County General Plan were reviewed. The analysis also responds to the California Environmental Quality Act (CEQA) guidelines for visual impact analysis as well as the goals, programs, and implementation programs outlined in the Tuolumne County General Plan and the Tuolumne County Ordinance Code.

The Tuolumne County General Plan recognizes agricultural and timberlands as having historically defined the rural character and scenic beauty of the County. There are no scenic vistas within the project vicinity at the project site, and the project does not contain agricultural or timberlands. There are existing light sources on the site associated with the surrounding commercial/industrial land uses.

Policy ES-B.7 of the East Sonora Community plan directs the County to "Encourage landscaping and public art highlighting the aesthetics of East Sonora". The project is proposing landscaping along the Camage Avenue frontage.

The project site is located within a developed industrial area and is vacant and flat. Commercial and Industrial development is located to the north, east, and west, with Curtis Creek to the south. Vegetation on the site includes riparian habitat along Curtis Creek.

Potentially affected viewers in the area includes motorists and other viewers along Camage Avenue. Motorists would represent the largest of the affected viewer groups and include the public views of the project site.

Analysis:

a) A scenic vista is considered a view of an area that has remarkable scenery or a natural or cultural resource that is indigenous to the area. There are three vista points within Tuolumne County that have been officially designated by the California Department of Transportation (Caltrans) as a scenic vista point. Two of these are found at Lake Don Pedro and the third one is the "Rim of the World" which is along State Highway 120 east of the community of Groveland. The project site is currently a vacant property and does not offer long-distance or unique scenic views. The project consists of developing of a wood pellet facility consisting of a building, outdoor equipment, covered storage, outdoor storage, and associated infrastructure, on a property zoned M-1 and O. Therefore, the project site is not considered to have qualities that would require preservation or mitigation. There would be less than-significant impacts to a scenic vista.

b) Tuolumne County does not currently have any officially designated state scenic highways, although portions of State highways 49, 108, 120 are eligible for designation. These portions have been identified as locally designated scenic routes. State Highway 49 has been recognized as a locally designated scenic route from the Mariposa County Line to Route 120 near Moccasin Creek and from Route 120 at Chinese Camp to the Calaveras County line, exclusive of the City of Sonora. State Highway 108 from the intersection with State Highway 49 easterly to the Mono County line has also been recognized as a locally designated scenic highway. The project site is not visible from any officially designated or locally designated state scenic highway. Therefore, there is no impact.

c) The visual character of a project can result in potential impacts from project construction and operation. Impacts are discussed for construction and operation separately, below.

Construction

Construction activities may take place on the project site in the future for development of the processing facility. Temporary construction activities would be consistent in visual character with small-scale building and landscaping projects.

Operation

The project site is located within an industrial area that consists of the SPI Mill and other indoor and outdoor commercial and industrial businesses. The project is located within the area that is subject to the East Sonora Community Plan and East Sonora Design Guidelines.

The East Sonora Design Guidelines provide information as to how future development should be constructed. Some of the applicable guidelines are listed below:

- Locate new development near or adjacent to existing developed areas in order to preserve corridors of natural undisturbed areas.
- Locate structures within previously disturbed areas when possible.
- Incorporate and protect environmentally sensitive resources in the site design.
- Preserve significant natural features, particularly trees, water bodies, and rock formations.

The commercial and industrial development is located to the north, west and east of the project site. The site is flat and has been used in the past as a staging yard for a utility company, and is therefore disturbed and devoid of vegetation outside of the riparian corridor. There is Open Space zoning on the property along the riparian area, and this area will serve not only as protection for biological resources, but due to the development restrictions in the Open Space zoning, will also retain the only scenic features on the site. There would be a less than significant impact.

d) New sources of light and glare will be introduced as a part of the project. Sources of light and glare would be industrial in nature. Exterior lighting would be used around the project site. Mitigation Measure AES-1 has been incorporated into the project to reduce this impact to a less than significant level by implementing Dark Sky lighting, such fixtures that minimize glare while reducing light trespass and skyglow. Mitigation Measure AES-1 will require any exterior lighting to incorporate the following: direct the light downward to the area to be illuminated, install shields to direct light and reduce glare, utilize low rise light standards or fixtures attached to the buildings, and utilize low or high pressure sodium lamps instead of halogen type lights. The project proponent will be required to submit a lighting plan to show consistency with the above provisions. Consistency with Mitigation Measure AES-1 will be reviewed by Community Development Department (CDD) staff upon receipt of a building permit for any structure on site. The lighting plan will be required to be reviewed and approved by CDD Staff prior to the issuance of a building permit. There would be a less than significant impact with mitigation.

Mitigation Measures:

AES-1: A lighting plan shall be submitted and approved by the Land Use and Natural Resources Division prior to the issuance of a building permit by the Building and Safety Division. Any exterior lighting shall incorporate the following features: direct the light downward to the area to be illuminated, install shields to direct light and reduce glare, utilize low rise light standards or fixtures attached to the buildings, and utilize low or high pressure sodium lamps instead of halogen type lights.

Mitigation Monitoring:

Mitigation Measures AES-1 will be required to be met prior to the issuance of a building permit by the Building and Safety Division. Consistency will be verified by the Land Use and Natural Resources Division upon review of a building permit application. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.

AGRICULTURAL AND FORESTRY RESOURCES:

In determining whether the impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997), prepared by the California Department of Conservation, as an optional model to use in assessing impacts on farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forest land. This includes: Forest and Range Assessment Project, the Forestry Assessment Project and Forest Carbon Measurement methodology provided in Forest Protocols, adopted by the California Air Resources Board.

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐[1]	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land, or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Environmental Setting:

Lands of agricultural importance in Tuolumne County are designated AG (Agricultural), TPZ (Timber Production), or O (Open Space) by the General Plan land use diagrams. Exclusive agricultural properties contain the AE-160 (Exclusive Agricultural, One Hundred Sixty Acre Minimum), AE-80 (Exclusive Agricultural, Eighty Acre Minimum), and AE-37 (Exclusive Agricultural, Thirty-Seven Acre Minimum) Zoning. Parcels within the Williamson Act must contain the Agricultural Preserve Combining (:AP) zoning, as required by Tuolumne County Resolution 106-04. Chapter 8 of the 2018 Tuolumne County General Plan contains the Goals, Policies, and Implementation Programs related to agriculture in Tuolumne County. The project was reviewed for consistency with the Agricultural Element of the General Plan. The project site is currently zoned M-1 and contains the LI General Plan land use designation.

California Land Conservation Act

The California Land Conservation Act of 1965 (Williamson Act) enables local governments to enter into contracts with private landowners for preserving agricultural land or related open space uses. Land under agricultural production can have its annual assessed valuation for property tax calculation reduced if the owner agrees to place the land under a Williamson Act contract for 10 years, renewable annually. Tuolumne County Resolution 106-04, approved by the Board of Supervisors on June 15, 2004, contains the County's rules and regulations to govern land within Agricultural Preserves and land within the Williamson Act Land Conservation Program.

Z'berg-Nejedly Forest Practice Act of 1973

The project site is located on private property and as such for actions related specifically to potential impacts from forest resources could be subject to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (FPA) that have been promulgated as the California Forest Practice Rules. Land within Tuolumne County that is subject to the Z'berg-Nejedly Forest Practice Act of 1973 is demonstrated by the TPZ (Timberland Preserve) zoning district and the TPZ General Plan land use designation.

Analysis:

a-d) The project site is not located on agricultural land or forest land. It is not adjacent to any agricultural land or forest land. The development of the project will not result in the conversion of agricultural land, conflict with agricultural, Williamson Act, or forest land zoning or result in the loss of forest land, or conversion of forest land to non-forest use, or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use. There will be no impact.

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Mitigation Measures: None Required

Mitigation Monitoring: Not Applicable

AIR QUALITY:

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Where available, the significance criteria established by the Tuolumne County Air Pollution Control District has been relied upon to make the following determinations. Would the Proposed Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Environmental Setting:

This section describes the impacts of the proposed project on local and regional air quality. It describes existing air quality in the foothills; project related direct and indirect emissions; health effects; and the impacts of these emissions on both the project and cumulative/regional scale.

The U.S. Environmental Protection Agency (EPA) designated Tuolumne County as "attainment/unclassified" for the 2008 eight-hour federal ozone standard on July 20, 2012. Tuolumne County is "attainment/unclassified" for all other federal ambient air quality standards. With respect to State ambient air quality standards, Tuolumne County is classified as "nonattainment" for ozone and "attainment/unclassified" for all other State standards. The State ozone "nonattainment" status is due to overwhelming transport of ozone precursors from upwind, urban areas.

Air pollution is directly related to a region's topographic features, and the California Air Resources Board (CARB) has divided California into regional air basins according to topographic air drainage features. The Mountain Counties Air Basin (MCAB) includes Plumas, Sierra, Nevada, Placer (middle portion), El Dorado (western portion), Amador, Calaveras, Tuolumne, and Mariposa Counties. While the MCAB encompasses such an expansive territory, the population of the entire air basin is less than 500,000 (472,991 in 2010). The basin lies along the northern Sierra Nevada Mountain Range, close to or contiguous with the Nevada border, and covers an area of roughly 11,000 square miles.

Elevations range from over 10,000 feet at the Sierra crest down to several hundred feet above sea level at the Stanislaus County boundary. Throughout the MCAB basin, the topography is highly variable, and includes rugged mountain peaks and valleys with extreme slopes and differences in elevation in the Sierras, as well as rolling foothills to the west.

The general climate of the MCAB varies considerably with elevation and proximity to the Sierra ridge. The terrain features of the basin make it possible for various climates to exist in a relatively close proximity. The Sierra Nevada receives large amounts of precipitation in the winter, with lighter amounts in the summer. Precipitation levels are high in the highest mountain elevations but decline rapidly toward the western portion of the basin. Winter temperatures in the mountains can be below freezing for weeks at a time, and substantial depths of snow can accumulate, but in the western foothills, winter temperatures usually dip below freezing only

at night and precipitation is mixed as rain or light snow. In the summer, temperatures in the mountains are mild, with daytime peaks in the 70s to low 80s, but the western end of the basin can routinely exceed 100 degrees.

Local Climate and Sources of Air Pollution

The climate in Tuolumne County can be considered Mediterranean with moist and cold winters and warm and dry summers. The mean annual precipitation is 33 to 49 inches (838 to 1,245 millimeters). Mean annual temperature is 41 to 53 degrees F (5.0 to 11.7 degrees C). The frost-free period is 100 to 150 days.

Table 1. Tuolumne County Designations and Classifications

Pollutant	Designation/Classification	
	Federal Standard	State Standard
Ozone - One hour	Attainment	Nonattainment
Ozone - Eight hour	Nonattainment	Nonattainment
PM 10	Unclassified	Unclassified
PM 2.5	Attainment/Unclassified	Unclassified
Carbon Monoxide	Attainment/Unclassified	Attainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Unclassified	Attainment
Lead (Particulate)	Attainment/Unclassified	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

Source: CARB

"Inhalable coarse particles (PM2.5-10)," such as those found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. PM2.5-10 is deposited in the thoracic region of the lungs.

"Fine particles (PM2.5)," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.

The Tuolumne County Air Pollution Control District (TCAPCD) does not meet the state one-hour or eight-hour standard for ozone and does not meet the federal eight-hour standard for ozone. The District is either in attainment or in an unclassified area for the remainder of the pollutants in Table 1, due to the lack of availability of data.

Local jurisdictions have the authority and responsibility to reduce air pollution through their policies, codes, and land use planning. The project was evaluated under the California Air Resource Board (CARB) air quality standards and area designations, and the Tuolumne County Air Pollution Control District's thresholds of significance, and the Tuolumne County Ordinance Code and Tuolumne County General Plan.

TCAPCD is the primary agency responsible for planning to meet National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) in the County and is responsible for implementing emissions standards and other requirements of federal and state laws regarding most types of stationary emission sources. In addition, TCAPCD has also set emissions thresholds for certain pollutants for the purposes CEQA. Pursuant to the State CEQA Guidelines, air quality impacts from project implementation would be significant if the project would:

- violate any air quality standard or contribute substantially to an existing or project air quality violation—for the purposes of the project locations, result in construction or operations of a project that generated emissions in excess of the following thresholds, except CO, used by TCAPCD (2017):
- reactive organic gases (ROG) – 1,000 pounds per day (lb/day) or 100 tons per year (tpy)
- oxides of nitrogen (NOX) – 1,000 lb/day or 100 tpy
- PM10 – 1,000 lb/day or 100 tpy
- CO – 1,000 lb/day or 100 tpy

- expose sensitive receptors to a substantial incremental increase in toxic air contaminant (TAC) emissions; or create objectionable odors affecting a substantial number of people

Primary criteria pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory) into the atmosphere. Primary criteria pollutants include carbon monoxide (CO), reactive organic gases (ROG), oxides of nitrogen (NO_X), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead. Secondary criteria pollutants are created by atmospheric chemical and photochemical reactions; ROG together with NO_X form the building blocks for the creation of photochemical (secondary) pollutants. Secondary criteria pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog). The characteristics, sources, and effects of the criteria air pollutants of most concern are described below.

Carbon Monoxide, CO, is a local pollutant that is found in high concentrations only near the source. The major source of CO, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually found only near areas of high traffic volumes. CO's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity, and impaired mental abilities.

Ozone is produced by a photochemical reaction (triggered by sunlight) between NO_X and ROG. NO_X is formed during the combustion of fuels, while ROG is formed during combustion and evaporation of fossil fuels and organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans, including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Nitrogen Dioxide, NO_2, is a byproduct of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of NO_X produced by combustion is NO, but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 part per million may occur. NO_2 absorbs blue light and causes a reddish-brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

PM_{10} is respirable particulate matter (PM) measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine PM measuring no more than 2.5 microns in diameter. PM_{10} and $PM_{2.5}$ are mostly dust particles, nitrates, and sulfates. Both PM_{10} and $PM_{2.5}$ are byproducts of fuel combustion and wind erosion of soil and unpaved roads and are directly emitted into the atmosphere through these processes. They are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with respirable particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. Respirable particulates generally come from windblown dust and dust kicked up from mobile sources. Fine particulates are generally associated with combustion processes and are formed in the atmosphere as a secondary pollutant through chemical reactions. $PM_{2.5}$ is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the PM_{10} and $PM_{2.5}$ that is inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Sulfur Dioxide, SO_2, is a colorless, pungent, irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. In humid atmospheres, SO_2 can form sulfur trioxide and sulfuric acid mist, with some of the latter eventually reacting to produce sulfate particulates. This contaminant is the natural combustion product of sulfur or sulfur-containing fuels. Fuel combustion is the major source, while chemical plants, sulfur recovery plants, and metal processing are minor contributors. At sufficiently high concentrations, SO_2 irritates the upper respiratory tract. At lower concentrations, when in conjunction with particulates, SO_2 appears able to do still greater harm by injuring lung tissues. Sulfur oxides, in combination with moisture and oxygen, can yellow the

leaves of plants, dissolve marble, and eat away iron and steel. Sulfur oxides can also react to form sulfates, which reduce visibility.

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). There are existing industrial and commercial land uses in the vicinity of the project site that may emit intermittent odors as a result of business operations.

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, outdoor playgrounds, places of worship, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants. Although the project site is located within an industrial land use area and there are no residential land uses, schools, or hospitals within 1,000 feet of the project boundary, there are sensitive receptors within 1,000 feet of the project boundary. They consist of an outdoor baseball park facility (Standard Park), a non-profit social service center (Interfaith Community Social), and a learning academy for pre-school through first grade (Safari Learning Academy).

According to the California Almanac of Emissions and Air Quality (CARB 2013), the majority of the estimated health risks from TAC can be attributed to relatively few compounds, the most prevalent being diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Diesel PM poses the greatest health risk among these 10 TACs mentioned. It is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to diesel PM (CARB 2019b). The potential cancer risk from inhaling diesel PM is greater than the potential for all other diesel PM–related health impacts (i.e., noncancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2003:K-1). The project would result in exhaust emissions of diesel PM from off-road equipment and haul truck trips as well as TACs, including SOX and CO, from the combustion of wood within the proposed CHP system. Because health effects are related to both the proximity of the emissions sources to sensitive receptors as well as the duration of exposure to the pollutant, the health risks should be evaluated at separate locations at which these TAC emissions would occur: near the biomass collection sites, along haul routes, and near the pellet mill.

Analysis:

a) Tuolumne County does not currently have an air quality plan. Tuolumne County's 2018 General Plan contains an Air Quality Element. The project has been reviewed for consistency with the Air Quality Element of the 2018 General Plan. The following goals, policies, and implementation programs of the Air Quality Element apply to the project:

   Policy 15.A.1: *Accurately determine and fairly mitigate the local and regional air quality impacts of land development projects proposed in the County.*

   The CalEEMod was used to determine the air quality impacts of the project. The estimated emissions are less than the thresholds set by the County, therefore no mitigation measures are needed. See the analysis in section b below for additional information.

   Implementation Program 15.A.k directs the County to require dust-control measures during project related activities. Any grading on the site is required to be in conformance with Chapter 12.20 of the TCOC. Section 12.20.370 of the TCOC requires the use of a watering truck or other watering device to suppress dust. Site Development Permit SDP21-001 will be conditioned to meet these requirements.

   The project is consistent with the Air Quality Element of the 2018 General Plan. Additionally, the project

will be required to comply with all permitting requirements of TCAPCD. Therefore, there is a less than significant impact.

b) The project would result in temporary increases in criteria air pollutants and precursors during construction activities, primarily associated with heavy-duty equipment use, worker commute, and material haul trips. Operation of the project would result in permanent increases in vehicular use, resulting in increases in exhaust emissions. Construction and operations are discussed separately below.

Criteria air pollutant emissions from construction of the proposed project were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 (California Air Pollution Control Officers Association [CAPCOA] 2016a), which is consistent with analysis performed in the Greenhouse Gas Study. Based on the information and assumptions described and per discussions with the applicant, CalEEMod estimated a construction duration period of approximately four months, with construction activities ending by June 2022. Construction activities were assumed to occur for 8 hours per day and 5 days per week. The proposed land uses were matched to the most similar land use types available in CalEEMod, which CalEEMod uses to estimate default modeling assumptions (e.g., the construction phasing durations, number of equipment, equipment hours per day, and worker trips). All model assumptions and model outputs can be found in the Air Quality Study in Appendix A of this document.

Construction

Construction of the proposed facilities would require site preparation and grading activities. The outdoor standalone equipment is assumed to come preassembled and would require cranes for equipment placement. Construction is assumed to begin in February 2022. Construction activities would include grading/excavation, foundation pouring, building construction, and paving, and would occur sequentially. Typical construction equipment would include dozers, excavators, loaders/backhoes, paving equipment, forklifts, and haul trucks.

As shown in Appendix A “Air Quality Study” Tables 5 and 6, criteria air pollutant emissions generated by project construction would not exceed TCAPCD’s significance thresholds. Therefore, air quality impacts related to construction would be less than significant.

Operation

Operation of the proposed project would involve chipping at the forest biomass pile collection sites, hauling the chips to the pellet mill, drying and milling of the chips at the mill, and delivery of the wood pellets for retail sale. These activities would result in criteria air pollutant emissions from the operation of diesel chipping and biomass handling equipment, worker trips to the collection sites and pellet mill, diesel truck haul trips between the biomass collection sites, pellet mill, and retail distribution; and combustion of a portion of the biomass in a CHP system to provide heat and electricity to power the pellet mill and other accessory buildings and lighting. The proposed project would not use natural gas or grid-based electricity but would operate a standby generator for initial system start-up and emergencies. Pellet mill operations are assumed to occur 333 days per year and up to 8,000 hours per year, and the first full year of operation would begin in 2023.

Table 2: Annual Operational Emissions Model Summary				
	ROG (tons/year)	**NO_X (tons/year)**	**PM_{10} total (tons/year)**	**CO (tons/year)**
Annual Operational Emission	0.46	10.90	2.68	6.86
Avoided Emissions from Burning of Biomass Piles	255.20	90.20	415.57	3,718.00
Net Change in Emissions	-254.74	-79.30	-412.89	-3,711.14
TCAPCD Threshold	100	100	100	100
Exceed Significance Threshold?	No	No	No	No

As shown in Table 2 and Appendix A of this document, implementation of the project would result in a net reduction in all four criteria air pollutants of concern. This is primarily because the open burning of biomass piles generates more emissions than the combustion of biomass at the pellet mill and other supporting activities. Under existing conditions, it is assumed that the biomass that would be used by the project would be piled and burned on site. As part of this project, it is certain that the biomass would be utilized as an energy source both by the pellet mill as dried biomass and by the end consumers as wood pellets. Thus, the effect of utilizing biomass from this site on the project would result in a net decrease in criteria air pollutant emissions because pile burning of this biomass would be avoided, and project operations would not exceed TCAPCD significance thresholds.

In addition, as shown in Appendix A Table 2, the Mountain Counties Air Basin is in attainment or unclassified for CO, NOX, PM2.5, PM10, SOX, sulfates, and lead for both the CAAQS and NAAQS and is in attainment for ozone for the CAAQS but in marginal non-attainment for ozone for the NAAQS, of which ROG and NOx are precursors (CARB 2019a and EPA 2021). As shown in Table 2 and Appendix A, the project would result in a net reduction in both ROG and NOX emissions in the basin. Thus, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment. The project would not exceed TCAPCD significance thresholds and would result in a net reduction in ozone precursors in the air basin, which is in marginal non-attainment for ozone. As such, impacts related to criteria air pollutants would be less than significant.

c) Particulate exhaust emissions from diesel-fueled engines (i.e., diesel PM) was identified as a TAC by CARB in 1998. The potential cancer risk from the inhalation of diesel PM outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2005). The Air Quality Report completed by Ascent Environmental, in Appendix A of this report, analyzes the project's impacts from pollutant concentrations on sensitive receptors.

Diesel PM emissions from the collection of biomass in forested land would occur at two separate sites at Zones 1 and 2, approximately 20 and 40 miles away from the project site, respectively. The exact location of these biomass collection sites would change over the course of time as the biomass is collected but are assumed to remain within the same "zones." Due to their remote locations and shifting locations, it is assumed that the biomass collection operations would occur more than one mile from the nearest sensitive receptor and would not take place near any sensitive receptors for an extended period of time. Thus, diesel PM generated during biomass collection would not expose any person to an incremental increase in cancer risk greater than 10 in one million or a Hazard Index of 1.0 or greater.

Diesel PM emissions from hauling activities would occur along roadways between biomass collection sites, the pellet mill, retail destinations, and ash disposal locations. Some these roadways may be adjacent to residential and other sensitive receptors. Diesel PM emissions would be dispersed along the roadways travelled by the haul trucks but would concentrate as the roads converge at the project site. (Idling emissions are considered separately along with the pellet mill on-site diesel usage.) CARB's Air Quality and Land Use Handbook states that sensitive land uses should not be sited within 1,000 feet of a distribution center that accommodates more than 100 trucks per day (CARB 2005:15). This standard can be applied to the proposed project as it also generates heavy duty diesel truck trips similar to a distribution center. The project would not generate more than 11 truck trips per day. Thus, diesel PM generated during hauling activities would not expose any person to an incremental increase in cancer risk greater than 10 in one million or a Hazard Index of 1.0 or greater.

TAC emissions from the pellet mill itself would occur both from the diesel PM from the operation of off-road material handling equipment and from the combustion emissions from the combined heat and power (CHP) system. The Project site is also located within 1,000 feet of three sensitive receptors. The pellet mill operations would result in 0.03 tons, or 69.72 pounds, of PM10 per year from diesel exhaust from off-road equipment and haul truck idling, as shown in the Air Quality Report in Appendix A of this document. Haul truck idling events accounts for less than 0.1 percent of diesel PM emissions on-site. TAC emission factors apart from CO were not available for the proposed CHP system.

According to EPA's AP-42 Emission Factors, combustion of wood refuse in an uncontrolled conical burner would result in 0.1 pounds of sulfur dioxide (SO2) per ton of fuel burned at 50 percent moisture content. This is equivalent to 0.17 pounds of SO2 per ton of dry wood with a 12 percent moisture content. In the absence of a health risk screening tool from the TCAPCD, to gauge the necessity of preparing a health risk assessment (HRA), Ascent used a screening tool: the San Joaquin Valley Air Pollution Control District's (SJVACPD) Prioritization Calculator (calculator). Although the calculator was developed for project within the SJVAPCD, the project is located adjacent to the SJVAPCD and shares similar meteorological conditions due to its location close to the Central Valley. Thus, the calculator is considered to be appropriate to use for the proposed project.

SJVACPD recommends that projects with a prioritization score of 10 or greater should be considered significant, and SJVAPCD recommends that a refined HRA be prepared for these projects. The calculator was used to provide a conservative estimate of the health risks from plant operations (SJVAPCD 2020). The calculator provides conservative unitless health risk scores and screening factors based on the proximity to nearby sensitive receptors. The Air Quality Report in Appendix A found that the TAC emission concentrations from the pellet mill operations would not exceed the SJVAPCD screening factors at any receptor locations within 2,000 meters (1.2 miles) of the project boundary. These risks are largely due to diesel PM emissions and to a much lesser extent the SO2 emissions from the CHP system. In fact, SO2 health impacts are only related to acute effects, so the maximum scores shown in Table 16 of Appendix A would remain the same without the consideration of SO2 emissions from the CHP system. Regardless of the distribution of health risk origins, the project meets the screening criteria of the prioritization calculator. Additionally, Mitigation measure AQ-1 has been incorporated to require monitoring data to TCAPCD to ensure that emissions meet applicable Federal, State, and Local thresholds. The project would be required to comply with all permitting requirements of TCAPCD prior to construction. Therefore, health risks associated with TAC emissions from the project site would be less than significant with mitigation.

d) The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the proximity and sensitivity of exposed individuals. The project may generate odors at all three affected locations: biomass collection site, hauling, and the pellet mill. At all three locations, odors would result from diesel exhaust. Biomass collection activities are generally in less populated, rural, or undeveloped areas, where human receptors

are sparse. Odors from diesel haul trips would be quickly dissipated, there would be no more than 20 trips per day on any given roadway, trucks would not concentrate at any single location, and trucks would also be limited to idling for no longer than five minutes at any location. At the pellet mill, storage of the delivered and dried biomass could also generate odors, especially if any of the wood mass had had a bacterial infection (Lignomat 2006). However, the degree to which these odors would be generated from the mill is uncertain due to the variability of the biomass origins and the duration and condition of outdoor storage prior to drying and combustion that could accelerate or inhibit any infections. However, these biomass piles are not anticipated to be stored for extended periods of time as the plant continually processes the delivered wood chips. As discussed, combustion of the dried biomass chips at the mill would result in negligible ROG emissions. Given that odors are primarily organic compounds, it is unlikely that the CHP system would generate noticeable odors during operation. This impact would be less than significant.

Mitigation Measure:

AQ-1: The project applicant shall submit annual monitoring data to the Tuolumne County Air Pollution Control District for applicable pollutants. Testing data shall also be submitted 30-60 days after the initial development and operation of the facility. If the data exceeds any applicable Federal, State, or Local thresholds, the applicant shall install necessary best available control technology (BACT) to bring the facility into compliance.

Mitigation Monitoring:

Compliance with Mitigation Measure AQ-1 will be required within 30-60 days of initial development and operation of the facility and will be verified by the Tuolumne County Air Pollution Control District (TCAPCD). Additionally, annual compliance with Mitigation Measure AQ-1 will be required and verified by the TCAPCD. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.

BIOLOGICAL RESOURCES

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on State or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting:

The elevation on the project site is approximately 2,220 feet above mean sea level. Vegetation on the site includes riparian vegetation along the southern portion of the site consisting of valley oak (*Quercus lobata*), willow (Salix sp.), and Himalayan blackberry (*Rubus discolor*). The riparian area surrounding Curtis Creek encompasses the southern portion of the project site. This area is protected with Open Space zoning which was established by Ordinance 2218 on December 2, 1997.

A Biological Resources Report was completed by Ascent Environmental for the proposed project. Data reviewed in preparation of this analysis include:

- Results of California Natural Diversity Database (CNDDB) records search of the Columbia, Chinese Camp, Columbia SE, Twain Harte, Sonora, Standard, Tuolumne, Moccasin, and Groveland U.S. Geological Survey (USGS) 7.5-minute quadrangles (CNDDB 2021).
- Results of California Native Plant Society Inventory of Rare and Endangered Plants records search of the Columbia, Chinese Camp, Columbia SE, Twain Harte, Sonora, Standard, Tuolumne, Moccasin, and Groveland USGS 7.5-minute quadrangles (CNPS 2021).
- Results of U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) electronic records search (USFWS 2021a).
- Results of USFWS National Wetlands Inventory mapping (USFWS 2021b).
- Results of U.S. Department of Agriculture (USDA) Web Soil Survey (USDA 2021).
- *Tuolumne County Biological Resources Review Guide* (Tuolumne County 2011).

- Aerial photographs of the project site and vicinity.

A reconnaissance-level survey for biological resources was conducted by an Ascent biologist on May 27, 2021. During the survey, the biologist verified land cover types on the project site as well as the suitability of habitats on the project site for special-status wildlife and plant species. Aquatic habitat and wetlands and potential wetlands were noted and mapped.

Land cover on the project site was verified during the reconnaissance-level survey and was characterized using Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) categories. The approximately 3.3-acre project site is mostly developed, and the southern portion of the project site is characterized as annual grasses and forbs and riparian mixed hardwood associated with Curtis Creek. Maps of the land cover can be found in the Biological Resources Report in Appendix B of this document. All project components will be installed or constructed within the developed portion of the project site and the northern half of the annual grasses and forbs portion of the project site.

The California Natural Diversity Database (CNDDB) includes plants and animal species that are rare, threatened, or endangered within California. The CNDDB is an inventory of these species and the location of know occurrences of these species. The California Native Plant Society (CNPS) maintains a database of rare and endangered plants of California. The US Fish and Wildlife Service (USFWS) maintains an Information for Planning and Consultation (IPac) database, which includes threatened and endangered species, critical habitats, and other special status species and sensitive habitats.

Of the 37 special-status plant species that are known to occur within the nine USGS 7.5-minute quadrangles including and surrounding the project site two species were determined to have potential to occur based on the presence of habitat suitable for the species. Of the 30 special-status wildlife species that could occur within the nine USGS 7.5-minute quadrangles including and surrounding the project site, five species were determined to have potential to occur based on the presence of habitat suitable for the species.

The five special-status species with potential to occur on the project site would be limited to Curtis Creek (i.e., San Joaquin roach), Curtis Creek and its streambanks (i.e., western pond turtle), or the riparian mixed hardwood habitat adjacent to Curtis Creek (i.e., ringtail, pallid bat, western mastiff bat). The riparian mixed hardwood habitat may also provide roosting habitat for common bat species.

The two special-status species with potential to occur on the project site, Stanislaus monkeyflower (*Erythranthe marmorata)* and Tuolumne fawn lily (*Erythronium tuolumnense*), would be limited to the streambanks immediately adjacent to Curtis Creek. No other species listed on the CNDDB have been known to occur within the project site.

Regulatory Setting:

Biological resources are regulated by federal, state, and local laws. In California and specifically in Tuolumne County, the Federal Engendered Species Act, Clean Water Act (CWA), California Endangered Species Act (CESA), Tuolumne County General Plan, the Tuolumne County Ordinance Code, and the Tuolumne County Wildlife Handbook are the primary regulations considered in this analysis.

Federal

Pursuant to the ESA, USFWS and the National Marine Fisheries Service (NMFS) have authority over projects that may affect the continued existence of federally listed (threatened or endangered) species. Section 9 of ESA prohibits any person from "taking" an endangered or threatened fish or wildlife species or removing, damaging, or destroying a listed plant species on federal land or where the taking of the plant is prohibited by state law. Take is defined under ESA, in part, as killing, harming, or harassing. Under federal regulations, take is further defined to include habitat modification or degradation where it results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. If a proposed project would

result in take of a federally listed species, the project applicant must consult with USFWS or NMFS before the take occurs under Section 10(a) of ESA or Section 7 of ESA if another federal agency is involved in the action. Conservation measures to minimize or compensate for the take are typically required.

Section 404 of the CWA requires project proponents to obtain a permit from the U.S. Army Corps of Engineers (USACE) before performing any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters of the United States, interstate waters, tidally influenced waters, and all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Many surface waters and wetlands in California meet the criteria for waters of the United States. In accordance with Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredged or fill material must obtain water quality certification from the appropriate regional water quality control board (RWQCB) indicating that the action would uphold state water quality standards.

State

Pursuant to CESA, a permit from the California Department of Fish and Wildlife (CDFW) is required for projects that could "take" a species state listed as threatened or endangered. Section 2080 of CESA prohibits take of state-listed species. Under CESA, take is defined as any activity that would directly or indirectly kill an individual of a species. The definition does not include “harm” or “harass” like the federal act. As a result, the threshold for take under CESA is higher than under ESA (i.e., habitat modification is not necessarily considered take under CESA). Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

The California Fish and Game Code identifies Fully Protected Species in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take. DFW has informed nonfederal agencies and private parties that their actions must avoid take of any fully protected species. In addition, Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (e.g., hawks, owls, eagles, and falcons), including their nests or eggs.

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations include destruction of active nests as a result of tree removal or disturbance caused by project construction or other activities that cause the adults to abandon the nest, resulting in loss of eggs and/or young.

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFW under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first notifying CDFW:

- substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. CDFW’s jurisdiction within

altered or artificial waterways is based on the value of those waterways to fish and wildlife. A CDFW streambed alteration agreement must be obtained for any action that would result in an impact on a river, stream, or lake.

The State Water Resources Control Board (SWRCB) and each of nine local RWQCBs have jurisdiction over "waters of the State" pursuant to the Porter-Cologne Water Quality Control Act, Water Code Section 13000 et seq., which are defined as any surface water or groundwater, including saline waters, within the boundaries of the State. SWRCB has issued general Waste Discharge Requirements regarding discharges to "isolated" waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction). The local RWQCB enforces actions under this general order for isolated waters not subject to federal jurisdiction and is also responsible for the issuance of water quality certifications pursuant to Section 401 of the CWA for waters subject to federal jurisdiction.

Under CEQA, special-status species include those species meeting the following criteria:

- Plant and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal and State Endangered Species Acts. Both acts afford protection to listed species;
- California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue;
- U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern;
- Sensitive species included in USFWS Recovery Plans; and
- CDFW special-status invertebrates.

Although CDFW Species of Special Concern generally do not have special legal status, they are given special consideration under CEQA. In addition to regulations for special-status species, most birds in the U.S., including non-status species, are protected by the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA, destroying active nests, eggs, and young is illegal. In addition, plant species on the California Native Plant Society (CNPS) Lists 1 and 2 are considered special-status plant species and are protected under CEQA.

Local

The Tuolumne County Wildlife Handbook (TCWH) and its associated maps detail the distribution of various habitat types countywide, evaluate their relative biological value, and establish Tuolumne County's standards and thresholds for evaluating the potential biological impacts pursuant to CEQA (Tuolumne County 1987). The avoidance and mitigation measures provided in the TCWH are intended to facilitate a consistent, fair, and cost-effective approach to wildlife mitigation that provides the greatest protection for the most sensitive resources. However, if a site-specific biological evaluation is conducted by a qualified biologist the environmental analysis and mitigation measures can rely on the recommendations of the biologist in lieu of the TCWH recommendations. The applicant has agreed to utilize the measures as indicated in the Tuolumne County Wildlife Handbook.

Implementation Program 16.B.i of the 2018 General Plan requires development that is subject to a discretionary entitlement from the County and to environmental review under the California Environmental Quality Act (CEQA) to evaluate potential impacts to biological resources and mitigate significant impacts for the following or as otherwise required by State or Federal law:

- Species listed or proposed for listing as threatened, rare, or endangered under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA);
- Species considered as candidates for listing under the ESA or CESA;
- Wildlife species designated by CDFW as Species of Special Concern;
- Animals fully protected under the California Fish and Game Code; and

- Plants considered by CDFW to be "rare, threatened, or endangered in California" (California Rare Plant Ranks [CRPR] of 1A, presumed extinct in California and not known to occur elsewhere; 1B, considered rare or endangered in California and elsewhere; 2A, presumed extinct in California, but more common elsewhere and 2B, considered rare or endangered in California but more common elsewhere).
- Sensitive natural communities, including wetlands under Federal or State jurisdiction, other aquatic resources, riparian habitats, and valley oak (*Quercus lobata*) woodland.
- Important wildlife movement corridors and breeding sites.
- Oak woodlands, as provided in Implementation Program 16.B.j.

Analysis:

a) To ensure that nesting bird and special status bird species are not impacted by project implementation, Mitigation Measure BIO-1 has been incorporated to require pre-construction bird surveys if construction is to take place between the nesting bird season, February 1 to August 31 of any year. Mitigation Measure BIO-1 includes protocol to be implemented should an active bird nest be identified during the preconstruction survey.

The two special-status species with potential to occur on the project site, Stanislaus monkeyflower (*Erythranthe marmorata)* and Tuolumne fawn lily (*Erythronium tuolumnense*), would be limited to the streambanks immediately adjacent to Curtis Creek. This area of the site is currently protected within Open Space zoning and would not be impacted by the proposed project. Therefore, there would be no impact to the sensitive plant species.

The five special-status species with potential to occur on the project site would be limited to Curtis Creek (i.e., San Joaquin roach), Curtis Creek and its streambanks (i.e., western pond turtle), or the riparian mixed hardwood habitat adjacent to Curtis Creek (i.e., ringtail, pallid bat, western mastiff bat). The riparian mixed hardwood habitat may also provide roosting habitat for common bat species. No project activities (i.e., vegetation removal, staging, ground disturbance) are proposed to occur within the riparian mixed hardwood habitat adjacent to Curtis Creek or within the creek itself. Thus, direct and indirect impacts on these species, if present, are not expected to occur.

No critical habitat was identified by the CNDDB, CNPS, or USFWS IPaC databases.

The implementation of Mitigation Measure BIO-1 would result in a less than significant impact on special status species.

b,c) Curtis Creek is located in the southern portion of the project site. The entire riparian corridor is zoned Open Space, which was established by Ordinance 2218 on December 2, 1997. No other riparian or wetland habitat is on the site outside of the Open Space zoning, and therefore the sensitive habitat on the site is already conserved.

In order to ensure that the Open Space area is not disturbed during construction, orange-webbed construction fencing shall be placed along the Open Space to notify contractors to avoid the riparian area.

Additionally, materials from the operation of the pellet plant could, through unintentional activities related to the operation of the project, enter the riparian area. Therefore, in order to ensure that pellet plant materials do not enter the riparian area and Curtis Creek, fencing shall be installed along the Open Space zoning boundary on the project site to prohibit drift of materials.

Incorporation of Mitigation Measures BIO-2, BIO-3, and BIO-4 would result in a less than significant impact on riparian and aquatic habitat.

d) The project site contains Open Space zoning along Curtis Creek, and no development is proposed in this area. This is the only area on the project site where trees are located, and no disturbance will occur in this area. Therefore, there would be no impact.

e, f) The project site contains Open Space zoning along Curtis Creek, and because this area will not be disturbed and will be managed in accordance with the Tuolumne County Ordinance Code, the project is consistent with local ordinances. The project was evaluated under Implementation Program 16.B.i of the 2018 General Plan and no potential impacts to biological resources were identified. The project site is not located within an area that is subject to an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Additionally, the project has been reviewed for compliance with the Tuolumne County Wildlife Handbook, Tuolumne County Wildlife Habitat Maps, and the 2018 Tuolumne County General Plan. The project has been found to be consistent with these documents and plans. Therefore, there would be no impact.

Mitigation Measures:

BIO-1: For construction activities expected to occur during the nesting season of raptors (February 1 to August 31) and migratory birds, a pre-construction survey by a qualified biologist shall be conducted to determine if active nests are present on or within 500 feet of the project site where feasible. Areas that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. The survey shall be conducted by a qualified biologist no more than seven days prior to the onset of construction. If no active nests are identified during the pre-construction survey, no further mitigation is necessary. If construction activities begin prior to February 1, it is assumed that no birds will nest in the project site during active construction activities and no pre-construction surveys are required. If at any time during the nesting season construction stops for a period of two weeks or longer, pre-construction surveys shall be conducted prior to construction resuming.

If active nests are found on or within 500 feet of the project site, the applicant shall notify CDFW and explain any additional measures that a qualified biologist plans to implement to prevent or minimize disturbance to the nest while it is still active. Depending on the conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the 500-foot buffer without impacting the breeding effort. Appropriate measures may include restricting construction activities within 500 feet of active raptor nests and having a qualified biologist with stop work authority monitor the nest for evidence that the behavior of the parents have changed during construction. Nests that are inaccessible due to private property restrictions shall be monitored using binoculars from the nearest vantage point. Appropriate measures would be implemented until the young have fledged or until a qualified biologist determines that the nest is no longer active. Construction activities may be halted at any time if, in the professional opinion of the biologist, construction activities are affecting the breeding effort.

BIO-2: Prior to initiation of ground disturbing activities, all areas within 50-feet Open Space zoning shall be clearly flagged. Orange fencing shall be placed along the Open Space zoning.

BIO-3: The project applicant should implement construction best management practices (BMPs) when operating in the southern portion of the project site adjacent to the riparian mixed hardwood habitat and Curtis Creek. BMPs will include those required by the project Stormwater Pollution Prevention Plan and the Tuolumne County Biological Resources Review Guide, and may include the following:

- Install fiber rolls, a sandbag barrier, or a straw bale barrier between the active construction site and the riparian mixed hardwood habitat/Curtis Creek to intercept runoff and remove sediment from runoff.
- Maintain all diesel- and gasoline-powered equipment per manufacturer's specifications, and in compliance with all state and federal emissions requirements. Prior to the start of project activities, inspect all equipment for leaks and inspect everyday thereafter until equipment is

removed from the site. Any equipment found leaking will be promptly removed to prevent inadvertent discharge into Curtis Creek.

- Equipment storage, working areas, and spoils should be limited to project staging areas.
- Equipment should not be serviced within areas within 100 feet of riparian mixed hardwood habitat and Curtis Creek, or in any locations that would allow grease, oil, or fuel to pass into Curtis Creek.
- Disturbed soils and all other disturbed areas should be stabilized as soon as possible and before the rainy season begins (but no later than October 15th of the construction year) in accordance with the County and Caltrans landscape guidelines and specifications.
- Prior to working in or near any stream, equipment should be thoroughly cleaned to prevent introduction of invasive aquatic species.

BIO-4: Prior to operation of the pellet plant, including bringing any woody material onto the site, a fence shall be constructed along the Open Space zoning to prohibit woody material from entering the riparian area.

Mitigation Monitoring:

Mitigation Measures BIO-1 through BIO-3 are required prior to ground disturbance or construction activities on site and would be verified prior to the issuance of a grading permit issued by the Department of Public Works or building permit issued by the Building and Safety Division. Mitigation Measure BIO-4 is required prior to operation of the site and will be verified by the Land Use and Natural Resources Division prior to a Final Inspection by the Building and Safety Division. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.

CULTURAL RESOURCES:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 of the State CEQA Guidelines?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Environmental Setting:

The project site is located in East Sonora, near the community of Standard. The project site consists of modifications made in the Twentieth Century consisted of access roads and industrial and commercial development, The Central Sierra Miwok settled in much of Tuolumne County are known to have lived in the area including the project site.

Under contract to Ascent Environmental, Natural Investigations prepared a Sacred Lands File search, pedestrian survey of the area of potential effect (APE), and a projects effects assessment. Natural Investigations conducted tribal and State Historic Preservation Officer (SHPO) consultation in accordance with Section 106 requirements. The methodology employed for identification of historic properties included a cultural resources literature search completed by the Central California Information Center on March 24, 2021; a Sacred Lands File search by the Native American Heritage Commission on April 16, 2021; and a search by Natural Investigations of the University of California Museum of Paleontology (UCMP) database on March 24, 2021. Natural Investigations conducted an intensive-level pedestrian survey of the APE on April 7, 2021.

Regulatory Setting:

State and Federal legislation requires the protection of historical and cultural resources. In 1971, the President's Executive Order No. 11593 required that all Federal agencies initiate procedures to preserve and maintain cultural resources by nomination and inclusion on the National Register of Historic Places.

In 1980, the Governor's Executive Order No. B-64-80 required that State agencies inventory all "significant historic and cultural sites, structures, and objects under their jurisdiction which are over 50 years of age and which may qualify for listing on the National Register of Historic Places."

In September of 2014, the California Legislature passed Assembly Bill (AB) 52, which added provisions to the Public Resources Code (PRC) regarding the evaluation of impacts on tribal cultural resources under CEQA, and consultation requirements with California Native American tribes. In particular, AB 52 now requires lead agencies to analyze project impacts to "tribal cultural resources" separately from archaeological resources (PRC §21074; 21083.09). The Bill defines "tribal cultural resources" in a new section of the PRC §21074. AB 52 also requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (PRC §21080.3.1, 21080.3.2, 21082.3).

Cultural resources include prehistoric resources, historic resources, and Native American resources. Pre-historic resources include resources that represent the remains of habitation prior to European settlement and historic resources include resources that represent the remains of habitation after European settlement. Native Americans arrived in Tuolumne County approximately 2,000 years ago. Their villages and areas of temporary settlement typically centralized around drainages, springs, and creeks. Historic resources in Tuolumne County

mostly consist of uses and sites centered around gold mining, early timber industry, or historic farming and ranching.

Analysis:

a, b, c) Telephone calls were made on April, 29, 2021, to the following tribal contacts, none of which identified concerns or potential impacts to cultural resources:

- Chicken Ranch Rancheria of Me-Wuk Indians, Lloyd Mathiesen.
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Cosme Valdez.
- Tule River Indian Tribe, Kerri Vera, Environmental Department.
- Tule River Indian Tribe, Joey Garfield, Tribal Archaeologist.
- Tule River Indian Tribe, Neil Peyron, Chairperson.
- Tuolumne Band of Me-wuk Indians, Stanley Cox, Cultural Resources Director.
- Tuolumne Band of Me-wuk Indians, Kevin Day, Chairperson.

Formal consultation letters were sent via certified mail on September 10, 2021 to the Tuolumne Band of Me-Wuk and Chicken Ranch Rancheria Tribes, in accordance with Assembly Bill 52. To date, no responses or requests for consultation have been received.

Natural Resources Investigations completed a cultural resource report on April 29, 2021 for the proposed project. This document is available for review by qualified professionals during regular business hours at the Community Development Department, 48 Yaney, Sonora, California. No tribal resources, historic properties or historical resources are documented within the project site. To ensure that any resources discovered during construction are appropriately managed, incorporation of Mitigation Measures CUL-1 and CUL-2 will result in a less than significant impact to cultural resources.

CUL-1: In the unlikely event that buried cultural deposits (e.g., prehistoric stone tools, milling stones, historic glass bottles, foundations, cellars, privy pits) are encountered during project implementation, all ground-disturbing activity within 100 feet of the resources shall be halted and a qualified professional archaeologist (36 Code of Federal Regulations [CFR] 61) shall be notified immediately and retained to assess the significance of the find. Construction activities could continue in other areas. If the find is determined to be significant by the qualified archaeologist (i.e., because it is determined to constitute either a historical resource or a unique archaeological resource), the archaeologist shall develop appropriate procedures to protect the integrity of the resource and ensure that no additional resources are affected. Procedures could include but would not necessarily be limited to preservation in place, archival research, subsurface testing, or contiguous block unit excavation and data recovery.

CUL-2: In accordance with the California Health and Safety Code (CHSC), Section 7050.5, and the Public Resources Code (PRC) 5097.98, regarding the discovery of human remains, if any such finds are encountered during project construction, all work within the vicinity of the find shall cease immediately, a 100-foot-wide buffer surrounding the discovery shall be established, and the County shall be immediately notified. The County Coroner shall be contacted immediately to examine and evaluate the find. If the coroner determines that the remains are not recent and are of Native American descent, the County Coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

Mitigation Monitoring: Mitigation Measure CUL-1 and CUL-2 are required during construction activities on site and will be verified by the LUNR Division of CDD. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.

ENERGY:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Environmental Setting:

California relies on a regional power system composed of a diverse mix of natural gas, petroleum, renewable, hydroelectric, and nuclear generation resources. Natural gas provides one third of the electricity used in California, coming from both California-based power plants, as well as Pacific Northwest- and Southwest-based power plants outside the state. After natural gas generation, electricity in California is mostly generated by renewables (29 percent), large hydroelectric (15 percent), and nuclear (9 percent) (California Energy Commission [CEC] 2018a). The contribution of in- and out-of-state power plants depends on the precipitation that occurred in the previous year, the corresponding amount of hydroelectric power that is available, and other factors.

Electricity in Tuolumne County is provided by Pacific Gas and Electric (PG&E). There is no natural gas consumption in Tuolumne County. However, there is propane consumption for residential uses.

Homes built between 2000 and 2015 used 14 percent less energy per square foot than homes built in the 1980s, and 40 percent less energy per square foot than homes built before 1950. However, the increase size of newer homes has offset these efficiency improvements. Primary energy consumption in the residential sector total 21 quadrillion Btu in 2009 (the latest year the U.S. Energy Information Administration's [EIA's] *Residential Energy Consumption Survey* was completed), equal to 54 percent of consumption in the buildings sector and 22 percent of total primary energy consumption in the U.S. Energy consumption increased 24 percent from 1990 to 2009. However, because of projected improvements in building and appliance efficiency, the EIA 2017 Annual Energy Outlook forecast a 5-percent increase in energy consumption from 2016 to 2040 (EIA 2017).

On-road vehicles use about 90 percent of the petroleum consumed in California. Based on the most recently available information, in 2008, the California Department of Transportation (Caltrans) projected 41.5 million gallons of gasoline and diesel would be consumed in Tuolumne County in 2015, an increase of approximately 4.7 million gallons of fuel from the projected 2010 levels (Caltrans 2008).

Energy consumption on the project site would include energy consumed for the construction of the wood pellet facility mainly using electric-powered and gas-powered equipment and vehicle usage. Once operational, a Biomass Combined Heat and Power system (BCHP) would be utilized to produce energy from woody biomass fuel to power the pellet manufacturing facility and will provide heat and electricity for biomass drying, the pellet mill, and other on-site energy needs. Operational energy would also include chipping at the forest biomass pile collection sites, hauling the chips to the pellet mill, and delivery of the wood pellets for retail sale.

Regulatory Setting:

Federal and state agencies regulate energy consumption through various policies, standards, and programs. At the local level, individual cities and counties establish policies in their general plans and climate action plans related to the energy efficiency of new development and land use planning and to the use of renewable energy

sources.

Federal:

Energy Policy and Conservation Act, and CAFE Standards

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Pursuant to this Act, the National Highway Traffic and Safety Administration, part of the U.S. Department of Transportation, is responsible for revising existing fuel economy standards and establishing new vehicle economy standards.

The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Compliance with CAFE standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. EPA calculates a CAFE value for each manufacturer based on the city and highway fuel economy test results and vehicle sales. The CAFE values are a weighted harmonic average of the EPA city and highway fuel economy test results. Based on information generated under the CAFE program, the U.S. Department of Transportation is authorized to assess penalties for noncompliance. Under the Energy Independence and Security Act of 2007 (described below), the CAFE standards were revised for the first time in 30 years.

Energy Policy Act (1992 and 2005) and Energy Independence and Security Act of 2007

The Energy Policy Act of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. The act includes several parts intended to build an inventory of alternative fuel vehicles in large, centrally fueled fleets in metropolitan areas. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

The Energy Independence and Security Act of 2007 increased the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel annually by 2022, which represents a nearly five-fold increase over current levels and reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020—an increase in fuel economy standards of 40 percent. By addressing renewable fuels and CAFE standards, the Energy Independence and Security Act of 2007 will build on progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century.

State:

State of California Energy Plan

CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 1997 California Energy Plan. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies strategies such as aiding public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, and encouraging urban design that reduces vehicle miles traveled (VMT) and accommodates pedestrian and bicycle access.

Senate Bill 1078: California Renewables Portfolio Standard Program

Senate Bill (SB) 1078 (Chapter 516, Statutes of 2002) establishes a renewables portfolio standard (RPS) for electricity supply. The RPS originally required retail sellers of electricity, including investor-owned utilities and community choice aggregators to provide 20 percent of their supply from renewable sources by 2017, but SB 1078

moved that date forward to require compliance by 2010, although the state did not meet the target. In addition, electricity providers subject to the RPS must increase their renewable share by at least 1 percent each year. As of 2016, the state sourced 34.8 percent of its electricity from certified renewable sources (CPUC 2018). The outcome of this legislation will affect regional transportation powered by electricity.

SB X1-2 of 2011 set a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. The state met the 2016 target and is on track to meet the 2020 target.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers through energy efficiency and conservation by December 31, 2030.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required CEC to prepare a state plan to increase the use of alternative fuels in California. CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other state, federal, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes the costs to California and maximizes the economic benefits of in-state production. It assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuel use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Executive Order S-06-06

Executive Order (EO) S-06-06, signed on April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The EO also calls for the state to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies barriers and recommends actions to address them so that the state can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 plan and provides a more detailed action plan to achieve the following goals:

- increase environmentally and economically sustainable energy production from organic waste;
- encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications;
- create jobs and stimulate economic development, especially in rural regions of the state; and
- reduce fire danger, improve air and water quality, and reduce waste.

As of 2015, 3.2 percent of the total electricity system power in California was derived from biomass.

Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy or Alternative Planning Strategy, showing prescribed land use allocation in each MPO's Regional Transportation Plan. CARB, in consultation with the MPOs, is to provide

each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035. Implementation of SB 375 will have the co-benefit of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

The Tuolumne County Transportation Council (TCTC) serves as the federally designated rural transportation agency and the state-designated regional transportation planning agency for Tuolumne County. While the TCTC is required to prepare a Regional Transportation Plan, it is not required to prepare a Sustainable Communities Strategy, as it is not a federally designated MPO. However, the TCTC's *2016 Final Regional Transportation Plan* includes an optional Rural Sustainable Strategies chapter to help Tuolumne County comply with AB 32 and to reduce GHG emissions.

California Green Building Standards

California Code of Regulations, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-Residential Buildings. Title 24 Part 6 was established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy-efficiency standards for residential and nonresidential buildings. In 2013, CEC updated Title 24 standards with more stringent requirements, effective July 1, 2014. All buildings for which an application for a building permit is submitted on or after July 1, 2014, must follow the 2013 standards. Energy-efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The CEC *Impact Analysis for California's 2013 Building Energy Efficiency Standards* estimates that the 2013 standards are 23.3 percent more efficient than the previous 2008 standards for residential construction and 21.8 percent more efficient for nonresidential construction. In 2016, CEC updated Title 24 standards again, effective January 1, 2017. CEC estimates that the 2016 standards are 28 percent more efficient than 2013 standards for residential construction (CEC n.d.) and are approximately 5 percent more efficient for nonresidential construction (CEC 2015).

The 2019 Title 24 Part 6 Building Energy Efficiency Standards were adopted by the CEC on May 9, 2018 and took effect on January 1, 2020. The standards are designed to move the state closer to its zero net energy goals for new residential development. It does so by requiring all new residences to install enough renewable energy to offset all the site electricity needs of each residential unit (California Code of Regulations, Title 24, Part 6, Section 150.1(c)14). CEC estimates that the combination of mandatory on-site renewable energy and prescriptively required energy efficiency features will result in new residential construction that uses 53 percent less energy than the 2016 standards. Nonresidential buildings are anticipated to reduce energy consumption by 30 percent compared to the 2016 standards primarily through prescriptive requirements for high-efficacy lighting (CEC 2018b). The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary in response to local climatologic, geologic, or topographic conditions, provided that these standards are demonstrated to be cost effective and exceed the energy performance required by Title 24 Part 6.

Assembly Bill 32, Climate Change Scoping Plan and Update

In December 2008, CARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons of carbon dioxide–equivalent ($MMTCO_2e$) emissions, or approximately 21.7 percent from the state's projected 2020 emission level of 545 $MMTCO_2e$ under a business-as-usual scenario (this is a reduction of 47 $MMTCO_2e$, or almost 10 percent, from 2008 emissions). In May 2014, CARB released and has since adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate progress that has been made between 2000 and 2012 (CARB 2014:4–5). According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 (CARB 2014:ES-2). The update also reports the trends in GHG emissions from various emissions sectors (e.g., transportation, building energy, agriculture).

After releasing multiple versions of proposed updates in 2017, CARB adopted the final version titled *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan), which lays out the framework for achieving the 2030

reductions as established in more recent legislation (discussed below). The 2017 Scoping Plan identifies the GHG reductions needed by each emissions sector to achieve a statewide emissions level that is 40 percent below 1990 levels before 2030.

Executive Order B-30-15

On April 20, 2015, Governor Edmund G. Brown Jr. signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's EO aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming to below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the state's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050. Achievement of these goals will have the co-benefit of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. The new rules strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (CARB 2016).

Local:

2018 Tuolumne County General Plan:

The 2018 Tuolumne County General Plan provides a framework for addressing issues related to energy efficiency. The Community Development and Design, Housing, Transportation, Economic Development, Water, Air Quality, and Climate Change Elements contain goals and policies that would reduce energy consumption. Specific Goals, Policies, and implementation Programs related to energy that are applicable to the project are as follows:

Implementation Program 18.A.a: Include specific GHG emissions reduction measures in the CAP. Examples include, but are not limited to, the following:

- Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 Building Energy Efficiency Standards for eligible alterations or additions to existing buildings;
- Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 standards for all new

construction, and phase in Zero Net Energy (ZNE) standards for new construction;
- Require new or replacement residential water heating systems to be electrically powered and/or alternatively fueled systems;
- Promote recycling to reduce waste and energy consumption;
- Refine protection guidelines for existing riparian lands to establish a no-net-loss goal;

Policy 18.A.5: Promote energy efficiency and alternative energy while reducing energy demand.

Analysis:

a,b) The project would not produce on-going demand for energy from off-site sources. A Biomass Combined Heat and Power system (BCHP) would be utilized to produce energy from woody biomass fuel to power the pellet manufacturing facility, and battery storage would provide backup energy. A temporary generator would be used on site during initial project startup and would then be removed from the site. Backup power would be provided through the electrical grid. Grid-provided electricity would only be used as an emergency backup power supply if the BCHP system was not functional. Thus, electricity demand would be negligible. The facility would be designed to meet California Green Building Standards Code (minimum mandatory) standards, including water-efficient fixtures and energy-efficient lighting. Woody biomass for on-site energy production and for pellet manufacturing would be sourced from National Forest System forestlands and privately-owned forest areas. No impact would occur.

Mitigation Measure: None required.

Mitigation Monitoring: Not applicable.

GEOLOGY AND SOILS:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks of alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☒	☐

Environmental Setting:

The purpose of this section is to disclose and analyze the potential impacts associated with the geology of the project site and regional vicinity, and to analyze issues such as the potential exposure of people and property to geologic hazards, landform alteration, and erosion.

Tuolumne County is located primarily within the Sierra Nevada geomorphic province, with an extremely small portion (less than 10 percent) of the western boundary within the Great Valley province. The Sierra is a tilted fault block nearly 400 miles long. Its east face is a high rugged multiple scarp, contrasting with the gentle western slope that disappears under the sediments of the Great Valley to the west. Deep river canyons are cut into the western slope. Their upper courses, especially in massive granites of the higher Sierra, have been modified by glacial activity, forming such scenic features as Yosemite Valley. The high crest in the Sierra culminates in Mt. Whitney with an elevation of 14,495 feet above sea level near the eastern scarp. The metamorphic bedrock contains gold-bearing veins in the northwest trending Mother Lode. The northern Sierra boundary is marked where bedrock disappears under the Cenozoic volcanic cover of the Cascade Range.

Tuolumne County is located in central California, which is a region known to have limited fault zones and seismic activity. There are four “capable” faults, which are faults with tectonic displacement within the last 35,000 years which could produce a quake, located within Tuolumne County: Negro Jack Point, Bowie Flat,

Rawhide Flat West, and Rawhide Flat East. These faults are located primarily in the western and southwestern portion of the County. Historically, earthquake activity in Tuolumne County has been substantially below the California State average.

In addition to the Tuolumne County General Plan and Ordinance Code, the project was evaluated using the Tuolumne County Multi-Jurisdiction Hazard Mitigation Plan, the USDA/CDF Cooperative Soil-Vegetation Survey of Tuolumne County, and the California Geological Survey's geotechnical maps.

The project site was mapped using the USDA Natural Resource Conservation Service (NRCS) soil survey maps. The project site contains the Urban land-Sierra-Flanly Complex, which is found on 3-25% slopes, and the Cumultic Humixerepts-Riverwash complex, found on 0-8% slopes. The Urban land-Sierra-Flanly Complex soil type encompasses approximately 90% of the project site and includes the area of the site that would be developed. The Cumultic Humixerepts-Riverwash complex soil encompasses the remaining 10% of the site and includes the area of Curtis Creek. This area is zoned Open Space and would not be impacted by project development.

Ground shaking

Earthquake activity within Tuolumne County is significantly below the California state average (Tuolumne County 2018). Over the past century, a total of five historical earthquakes within recorded magnitudes of 3.5 or greater have occurred. Further, there is an approximate 28 percent chance of a major earthquake within 50 kilometers of Tuolumne County within the next 50 years. The probability of a moderate earthquake occurring in the next 30 years is low. Only one major "active fault" is located in Tuolumne County, the New Melones fault, located approximately 5 miles west of the project site (DOC 2018). The fault transects the County, running roughly north to south along the western boundary, and is part of the Foothill fault system which runs along the west base of the Sierra Nevada mountain range. The estimated maximum capability for this fault is Magnitude 6.5 (Tuolumne County 2018).

The Alquist-Priolo Earthquake Fault Zoning Act was signed into California law on December 22, 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Act only applies to structures for human occupancy (houses, apartments, condominiums, etc.)

The California Building Code (CBC) identifies seismic factors that must be considered in structural design. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, while Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction. Appendix J of the CBC regulates grading activities, including drainage and erosion control. The CBC also contains a provision that provides for a preliminary soil report or geotechnical report to be prepared to identify "…the presence of critically expansive soils or other soil problems which, if not corrected, would lead to structural defects" (CBC Chapter 18 Section 1803.1.1.1). Additionally, the state earthquake protection law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes.

Landslides, Subsidence and Liquefaction

Liquefaction is a process whereby soil is temporarily transformed to a fluid form during intense and prolonged groundshaking. Areas most prone to liquefaction are those that are water saturated (e.g., where the water table is less than 30 feet below the surface) and consist of relatively uniform sands that are low to medium density. In addition to necessary soil conditions, the ground acceleration and duration of the earthquake must be of sufficient energy to induce liquefaction. Due to the nature of the soils, groundwater conditions, and low

seismicity in the County, the risk and danger of liquefaction and subsidence occurring within the County is considered to be minimal (Tuolumne County 2018).

Naturally occurring landslides do not typically occur in the County. Slopes disturbed by grading or development have failed, especially during periods of heavy rainfall, and have resulted in the destruction of County infrastructure. Within the County, there is a considerable amount of area where the topography can be considered steep to very steep. In the vast majority of this area, the underlying rock formation is very stable, and the soil found on these slopes is shallow and held in place by deep rooted vegetation. These slopes do not typically fail unless disturbed by grading or development (Tuolumne County 2018). Landslides are a primary geologic hazard and are influenced by four factors:

- Strength of rock and resistance to failure, which is a function of rock type (or geologic formation)
- Geologic structure or orientation of a surface along which slippage could occur
- Water (adds weight to a potentially unstable mass or influence strength of a potential failure surface)
- Topography (amount of slope in combination with gravitation forces

Expansive Soils

Clays are present in some soils both as a weathering product and as native sediments. Clays have the potential for expansion and contraction when they go through wet/dry cycles. Expansive soils (also known as shrink-swell soils) are soils that contain expansive clays that can absorb significant amounts of water into their crystalline structure. The presence of clay makes the soil prone to large changes in volume in response to changes in water content. The quantity and type of expansive clay minerals affects the potential for the soil to expand or contract. Wetting can occur naturally in a number of ways, (e.g., absorption from the air, rainfall, groundwater fluctuations, lawn watering and broken water or sewer lines). When an expansive soil becomes wet, water is absorbed, and it increases in volume, and as the soil dries it contracts and decreases in volume. This (often repeated) change in volume can produce enough force and stress on buildings and other structures to damage foundations and walls.

In hillside areas, as expansive soils expand and contract, gradual downslope creep may occur, eventually causing landslides (see below for more information on landslides and other forms of mass wasting). Clay soils also retain water and may act as lubricated slippage planes between other soil/rock strata, also producing landslides, often during earthquakes or by unusually moist conditions. The shrink-swell characteristics of soils can vary widely within short distances, depending on the relative amount and type of clay. Soils with clay content have been mapped throughout the County and may be susceptible to expansion (USDA 1964).

Paleontological Resources

Based on geologic mapping, the majority of the County is not considered sensitive for paleontological resources. Paleozoic marine rocks occur in the western portion of the County and may contain fossils of marine invertebrates. Records of paleontological finds maintained by the University of California Museum of Paleontology state that there are 72 localities at which fossil remains have been found in Tuolumne County. These occur primarily in the Mehrten geologic formations (Tuolumne County 2018).

Erosion:

Erosion is the process by which soil and rock at the earth's surface is gradually broken down and transported to a different location. Erosive processes include rainfall, surface runoff, glacial activity, wind abrasion, chemical dissolution, and gravity in the form of mass wasting (described below). Under normal conditions, these erosive processes, together with physical characteristics of the material being eroded, control the rate at which erosion occurs. Development activities can accelerate that rate, causing excessive erosion and a wide variety of detrimental effects on the environment including sedimentation of waterways (see Section 3.10, "Hydrology and

Water Quality"), slope instability, ground instability, loss of agricultural productivity through the removal of topsoil, or even desertification.

The potential for erosion increases as a function of slope steepness. Areas within the County where slopes exceed 30 percent are generally considered to have a high potential for erosion. The majority of development in Tuolumne County is not located on such terrain, and there are no steep slopes on the site. Erosion problems in developed regions of the County are generally limited to areas where grading has resulted in steep slopes where deposits of fill have not stabilized, or where slope stabilization practices have not been employed following grading activities. Rain and runoff have also produced incidents of excessive erosion on burn scars that have not yet sufficiently revegetated. However, by comparison with other areas of the state, such as the coastal mountains, erosion has proven to be a modest hazard in Tuolumne County.

The project would result in new impervious surfaces on the project site. Minor grading associated with drainage, building, and storage would occur. Construction activities would not disturb more than one acre; however, discharge from the project site would enter directly to Curtis Creek, so a stormwater pollution prevention plan (SWPPP) would be required by the Central Valley Regional Water Quality Control Board (RWQCB) and would be prepared before construction and implemented throughout project construction to comply with National Pollutant Discharge Elimination System (NPDES) requirements. The project would also comply with the California Building Code (CBC) to reduce any potential slope, soil, or erosion impacts.

An existing drainage ditch is located on the project site, which is exempt from federal jurisdiction according to the Navigable Waters Protection Rule and no federal permits would be required for filling the ditch. The ditch is not a water of the state pursuant to the State Procedures so no State discharge or fill permit is required.

Analysis:

a i) The project site is not located within a delineated fault zone or located within a known liquefaction zone or seismic landslide zone as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map. The project site has been located on the Tuolumne County Geotechnical Interpretive Map for the USGS Sonora Minute Quadrangle. This map indicates that there are no faults located on the project site or within the vicinity of the project site. The nearest fault as identified on the Tuolumne County Geotechnical Interpretive Map is approximately 4.2± miles west of the project site. Therefore, there will be no impact.

a ii-iii) The Environmental Impact Report for the 2018 Tuolumne County General Plan update indicates that there is a low potential for significant seismic activity within the County. There is a low potential for strong seismic ground shaking or seismic related ground failure, including liquefaction. Tuolumne County's Geotechnical Maps show the approximate boundaries of various hazard and resource zones, such as fault rupture zones, erosive soil areas, steep slopes, and limestone deposits. There are no steep slopes on the project site, and no fault zones are located within the vicinity of the project site. The nearest fault location as indicated in the Geotechnical maps is located approximately 4.2± miles west of the project site. There would be a less than significant impact.

a iv) The Technical Background Report for the 2018 General Plan indicate that the landslide susceptibility of the County is low. As the project site is flat, and not surrounded by steep slopes, there is no threat from landslides. There would be no impact.

b,c) The project site is flat. The likelihood of landslides, lateral spreading, subsidence, liquefaction, or collapse of these soils is fairly low.

Although the erosive and soil failure hazards are fairly low, grading for the development of the project have the potential to result in erosion or loss of the topsoil. Any grading on the project site is subject to Chapter 12.20 of the TCOC and the project proponent would be required to secure a Grading Permit

from the Engineering Division of the Department of Public Works. Grading Permit review from the Engineering Division will ensure consistency with Chapter 12.20 of the TCOC and ensure that the appropriate measures are taken to stabilize slope, control erosion, and protect exposed soils. Prior to the issuance of a Grading Permit by the Engineering Division of the Department of Public Works, the project proponent is required to submit an erosion control plan to be reviewed and approved which must be implemented during project construction activities. The project will also be conditioned to require that all soils that are disturbed by clearing or grading shall be reseeded or hydro mulched or otherwise stabilized as soon as possible. Emergency erosion control measures shall be utilized as requested by County officials.

The project proponent is required to submit a Notice of Intent (NOI) to the State Water Resources Control Board Water Permitting Unit to obtain coverage under the General Construction Activity Stormwater Permit for the disturbance of one acre or more. A Stormwater Pollution Prevention Plan (SWPP) is required to be developed and submitted with the NOI. The SWPP must be prepared by a qualified professional and includes Best Management Practices (BMPs) to minimize stormwater runoff, erosion, and sediment movement during construction activities.

Based on the above and the requirement of a preparation of a SWPPP with BMPs, the submittal of a NOI and the enforcement of the County's Grading Ordinance through the requirement and review of a grading permit, including implementation of an erosion control plan and stabilization of soils that are disturbed by grading, there will be a less than significant impact.

d) The project site does not contain expansive soils, as defined in Table 18-1-B of the Uniform Building Code. Therefore, there is no impact.

e) Septic tanks are not proposed with this project. There would be no impact.

f) As previously described, paleontological resources within the county are not common. However, if present, these resources occur primarily in the Mehrten geologic formations. The Mehrten formation is a geologic formation dating back to the Neogene period, which is part of the Miocene and later Pliocene geologic epochs (Cenozoic Era). The generalized rock type identified within the project area is metasedimentary rock (Pz) (DOC 2018). This rock type is not associated within the Cenozoic Era, where resources from the Mehrten formation would be present. Construction activities associated with the project would involve site grading and excavation. Operation of the project would not result in any ground disturbance. Because the project site is not located within a geologic area where paleontological resources would likely be present, construction activities resulting from the project would not directly or indirectly result in destruction of a paleontological resource. Impacts would be less than significant.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

GREENHOUSE GAS EMISSIONS:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant with Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting:

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. GHGs are responsible for "trapping" solar radiation in the earth's atmosphere, a phenomenon known as the greenhouse effect. Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (Intergovernmental Panel on Climate Change 2014).

The different types of GHGs have varying global warming potentials (GWPs) (Table 3). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere. Because GHGs absorb different amounts of heat, a common reference gas, usually carbon dioxide, is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "CO_2 equivalent," and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a GWP of one. By contrast, methane (CH_4) has a GWP of 21, meaning its global warming effect is 21 times greater than carbon dioxide on a molecule per molecule basis.

Table 3
Global Warming Potentials (GWPs)

Gas	Global Warming Potential
Carbon Dioxide	1
Methane	21
Nitrous Oxide	310
HFC-23	11,700
HFC-134a	1,300
HFC-152a	140
PFC: Tetrafluoromethane (CF4)	6,500
PFC: Hexafluoroethane (C2F6)	9,200
Sulfur Hexafluoride (SF6)	23,900

Source: http://epa.gov/climatechange/emissions/downloads09/Introduction.pdf

As noted above, the earth needs a certain amount of greenhouse gases in order to maintain a livable temperature. However, it is believed by many that global climate change may occur as a result of excess amounts of GHG, which, in turn, may result in significant adverse effects to the environment that will be experienced worldwide. The effects may include the melting of polar ice caps and rising sea levels, increased

flooding in wet areas, droughts in arid areas, harsher storms, problems with agriculture, and the extinction of some animal species. Regardless of whether the rise in GHG is caused by natural cyclic events or not, it is widely believed production of additional GHG should be reduced in order to maintain a "healthy" level of GHG in the atmosphere.

Regulatory Setting:

State Legislation

GHG emission targets established by the state legislature include reducing statewide GHG emissions to 1990 levels by 2020 (Assembly Bill [AB] 32 of 2006) and reducing them to 40 percent below 1990 levels by 2030 (Senate Bill [SB] 32 of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. Executive Order B-55-18 calls for California to achieve carbon neutrality by 2045 and achieve and maintain net negative GHG emissions thereafter. These targets are in line with the scientifically established levels needed in the United States to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (United Nations 2015:3).

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan), prepared by CARB, outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and "substantially advance toward our 2050 climate goals" (CARB 2017:1, 3, 5, 20, 25–26). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste).

Tuolumne County Regional Blueprint Greenhouse Gas Study

In 2012, the Tuolumne County Transportation Council (TCTC) conducted a regional blueprint planning effort, which presented the results of a countywide (including incorporated and unincorporated areas) GHG emissions inventory, which evaluated existing (2010) GHG emissions, and projected (2020, 2030, and 2040) emissions for three growth scenarios. It also identified policies and measures Tuolumne County and land use project applicants can implement to reduce GHG emissions consistent with AB 32 and prepare for the potential impacts of climate change. In 2010, Tuolumne County emitted approximately 782,846 metric tons of CO2 equivalent GHG emissions (MTCO2e) as a result of activities and operations that took place within the transportation, residential (energy consumption), nonresidential (energy consumption), off-road vehicles and equipment, agriculture and forestry, wastewater, and solid waste sectors. This equates to 9.8 MTCO2e per resident and employee in Tuolumne County's service population (service population is defined as the total County resident population + people employed in the County). Because the project completed a project-specific GHG study, it does not need to rely on the evaluation and mitigations in the Blueprint GHG Study.

Significance Criteria

Tuolumne County and the Tuolumne County Air Pollution Control District (TCAPCD) do not have an adopted GHG threshold for the purposes of determining significance under CEQA. California Air Resources Board's California's 2017 Climate Change Scoping Plan (Scoping Plan) states that, for project-level GHG thresholds,

> Absent conformity with an adequate geographically specific GHG reduction plan as described in the preceding section above, CARB recommends that projects incorporate design features and GHG reduction measures, to the degree feasible, to minimize GHG emissions. Achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development. (CARB 2017:101)

Therefore, the project would be considered significant if it results in a net increase in GHG emissions compared to existing conditions. This threshold is specific to the proposed project and may not necessarily apply to other

projects in the county. Calculations of the project's GHG emissions can be found in Appendix C.

Analysis:

a,b) To assist project applicants with determining whether a proposed project's GHG emissions are consistent with AB 32 a Greenhouse Gas Study was complete for the project and can be found in Appendix C of this document.

Construction

GHG emissions from construction of the proposed project were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 (California Air Pollution Control Officers Association 2016). Based on the information and assumptions described above, CalEEMod estimated a construction duration period of approximately four months, with construction activities ending by June 2022. Construction activities were assumed to occur for 8 hours per day and 5 days per week. The proposed land uses were matched to the most similar land use types available in CalEEMod, which CalEEMod uses to estimate default modeling assumptions (e.g., the construction phasing durations, number of equipment, equipment hours per day, and worker trips). These assumptions are shown in the CalEEMod output remarks in Appendix C. Material hauling emissions during the grading phase were adjusted to account for the gravel that would be needed for the storage yard, assuming a depth of eight inches and an average weight of 1.35 tons per cubic yard of gravel (Inch Calculator 2021).

Based on the modeling conducted, construction activities are estimated to result in 92 metric tons (MT) of MT CO_2e over the four-month construction period. In absence of guidance from the TCAPCD and in light of recommendations from other air district, the construction emissions were amortized this across an average 30-year project lifetime, resulting in an annualized emissions of 3 MT CO_2e per year (Placer County 2016).

Operation

Operation of the proposed project would involve chipping at the forest biomass pile collection sites, hauling the chips to the pellet mill, drying and milling of the chips at the mill, and delivery of the wood pellets for retail sale. The modeling assumptions for the off-road mobile sources, on-road mobile sources, biomass combustion at the pellet mill, and offset emissions from avoided pile burning are described Appendix C.

Project Emissions

Under the project, GHG emissions would be generated by construction activities, off-road equipment, on-road haul trucks and worker trips, and combustion of biomass at the pellet mill. GHG emissions would also be avoided because the same biomass material delivered to the project site would no longer be piled and burned in the forest.

Implementation of the project would result in a net reduction in GHG emissions of 46,738 MT CO_2e. This is primarily because the open burning of biomass piles generates more emissions than the combustion of biomass at the pellet mill and other supporting activities. The estimates in Appendix C do not account for emissions associated with the fate of wood pellets sold by the pellet mill. Under existing conditions, the biomass that would be used by the project would be piled and burned on site. As part of this project, it is certain that the biomass would be utilized as an energy source both by the pellet mill as dried biomass and by the end consumers as wood pellets. Thus, the effect of utilizing biomass from this site on the project would result in a net decrease in GHG emissions because pile burning of this biomass would be avoided, and therefore would be a less than significant impact.

Mitigation Measures: None Required.

Mitigation Monitoring: Not Applicable.

HAZARDS AND HAZARDOUS MATERIALS:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

Environmental Setting:

Hazardous substances and wastes that are likely to be generated from the project would include hydraulic fluids and solvents used in the construction and operations of the pellet plant. All hazardous substances and wastes are highly regulated by federal, state, and local regulations regarding the use, storage, transportation, handling, processing, and disposal. All hazardous substances and waste are required to be stored, transported, handles, processed, and disposed of in accordance with these regulations.

To address compliance of these regulations in the home, Tuolumne County adopted the Household Hazardous Waste Element of the Tuolumne County Integrated Waste Management Plan. This plan aims to reduce the amount of household hazardous waste generated within Tuolumne County through reuse and recycling, to divert household hazardous waste from landfills, to promote alternatives to toxic household products, and to educate the public regarding household hazardous waste management. Household hazardous waste is collected at the Cal Sierra Transfer Station in East Sonora and the Groveland Transfer Station in Groveland. Tuolumne County also holds collection events for household hazardous waste which is organized by the Solid Waste Division of the Department of Public Works.

The project site is located within the Curtis Creek Elementary School district, which is located 0.3± aerial miles from the project site. There are no schools located within 0.25 mile of the project site.

The California Department of Toxic Substance Control (DTSC) maintains a list of cleanup sites and hazardous waste permitted facilities on its EnviroStor database. The State Water Resources Control Board regulates spills, leaks, investigation, and cleanup sites and maintains an online GeoTracker database. The GeoTracker database tracks regulatory data about leaking underground storage tank (LUST) sites, fuel pipelines, and public drinking water supplies. These databases were consulted for the project site.

There are two airports located within Tuolumne County. One is located within the community of Columbia, the other airport is located in the community of Groveland. Parcels that are subject to the Tuolumne County Airport Compatibility Plan are designated with the Airport Overlay (-AIR) General Plan land use designation the :AIR (Airport Combining) zoning district. The project site is not located within two miles of an airport.

Information on emergency response plan and evacuation plan is contained in the Natural Hazards Element of the 2018 Tuolumne County General Plan and the Tuolumne County Multi-Jurisdiction Hazard Mitigation Plan. Tuolumne County does not have a static emergency plan or evacuation plan due to the dynamic nature of emergencies. In the event of an emergency, the Tuolumne County Sheriff Office is the responsible entity for declaring and directing evacuations in the case of emergencies. The Sherriff's Department will inform members of the public via the Everbridge Emergency Notification System, local media, and door-to-door when feasible.

The project site is located within a State Responsibility Area (SRA) and is rated as high fire hazard severity zone. This rating is based on factors of slope, vegetation, and annual summer weather patterns. These zones, referred to as Fire Hazard Severity Zones (FHSZ), provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. The zones also relate to the requirements for building codes designed to reduce the ignition potential to buildings in the wildland-urban interface zone.

Regulatory Setting:

Federal:

Toxic Substances Control Act

The 1976 Toxic Substances Control Act regulates the manufacturing, inventory, and disposition of industrial chemicals, including hazardous materials. The Model Accreditation Plan, adopted under Title II of the Act, requires that all persons who inspect for asbestos-containing material (ACM) or design or conduct response actions with respect to friable asbestos obtain accreditation by completing a prescribed training course and passing an exam. Section 403 of the Toxic Substances Control Act establishes standards for LBP hazards in paint, dust, and soil.

Resource Conservation and Recovery Act

RCRA (42 U.S. Code [USC] 6901 et seq.) is the law under which EPA regulates hazardous waste from the time the waste is generated until its final disposal ("cradle to grave"). EPA has authorized DTSC to enforce hazardous waste laws and regulations in California. Under RCRA, DTSC has the authority to implement permitting, inspection, compliance, and corrective action programs to ensure that people who manage hazardous waste follow state and federal requirements. Generators must ensure that their wastes are disposed of properly, and legal requirements dictate the disposal requirements for many waste streams (e.g., banning many types of hazardous wastes from landfills).

Superfund Amendments and Reauthorization Act

The Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499; USC Title 42, Chapter 116), also known as SARA Title III or the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, imposes hazardous materials planning requirements to help protect local communities in the event of accidental release.

EPCRA requires states and local emergency planning groups to develop community emergency response plans for protection from a list of extremely hazardous substances (40 CFR 355 Appendix A). In California, EPCRA is implemented through the Cal ARP program.

Hazardous Materials Transportation

DOT regulates transport of hazardous materials between states and is responsible for protecting the public from dangers associated with such transport. The federal hazardous materials transportation law, 49 USC 5101 et seq. (formerly the Hazardous Materials Transportation Act 49 USC 1801 et seq.) is the basic statute regulating

transport of hazardous materials in the United States. Hazardous materials regulations are enforced by the Federal Highway Administration, the Federal Railroad Administration, and the Federal Aviation Administration.

Comprehensive Environmental Response, Compensation, and Liability Act

Brownfield sites are areas with actual or perceived contamination and that may have potential for redevelopment or reuse. Brownfields are often former industrial facilities that were once the source of jobs and economic benefits to the community but lie abandoned due to fears about contamination and potential liability. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Over 5 years, $1.6 billion was collected and the tax went into a fund for cleaning up abandoned or uncontrolled hazardous waste sites. CERCLA was amended in January of 2002 with passage of the Small Business Liability Relief and Brownfields Revitalization Act. This Act provides some relief for small businesses from liability under CERCLA. It authorizes $200 million per fiscal year through 2006 to provide financial assistance for brownfield revitalization. CERCLA also facilitated a revision of the National Contingency Plan, which provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The plan also established the generation of EPA's National Priorities List, a list of all the sites with known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. According to the National Priorities List database, there are no Superfund sites within Tuolumne County (EPA 2018).

National Emissions Standards for Hazardous Air Pollutants

The asbestos regulations under NESHAP control work practices during the demolition and renovation of institutional, commercial, or industrial structures. Following identification of friable asbestos, OSHA requires that asbestos trained and certified abatement personnel perform asbestos abatement and all ACM removed from on-site structures shall be hauled to a licensed receiving facility and disposed of under proper manifest by a transportation company certified to handle asbestos.

Clean Water Act

The U.S. Environmental Protection Agency (EPA) is the federal agency primarily responsible for water quality management. The CWA establishes the basic structure for regulating discharges of pollutants into "waters of the United States." The Act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Some of these tools include:

Section 311 details the Spill Prevention and Countermeasure Control (SPCC) rule, which requires facilities to prepare and maintain a SPCC plan. A facility falls under federal jurisdiction and the SPCC rule if it has an aggregate aboveground oil storage capacity greater than 1,320 U.S. gallons or a completely buried storage capacity greater than 42,000 U.S. gallons and there is a reasonable expectation of an oil discharge into or upon navigable waters of the U.S. or adjoining shorelines. A SPCC plan describes oil handling operations, spill prevention practices, discharge or drainage controls, and the personnel, equipment, and resources at a facility that are used to prevent oil spills from reaching navigable waters or adjoining shorelines.

State:

California Accidental Release Prevention Program

Cal ARP (CCR Title 19, Division 2, Chapter 4.5) covers certain businesses that store or handle more than a specified volume of regulated substances at their facilities. The Cal ARP program regulations became effective on January 1, 1997, and include the provisions of the federal Accidental Release Prevention program (Title 40, CFR Part 68), with certain additions specific to the state pursuant to Health and Safety Code Section 25531 et seq. The list of regulated substances is found in 19 CCR Section 2770.5 of the Cal ARP program regulations. Businesses that use a regulated substance above the noted threshold quantity must implement an accidental

release prevention program, and some may be required to complete RMPs. An RMP is a detailed engineering analysis of the potential accident factors present at a business and the mitigation measures that can be implemented to reduce this accident potential. The purpose of an RMP is to decrease the risk of an off-site release of a regulated substance that might harm the surrounding environment and community. An RMP includes the following components: safety information, hazard review, operating procedures, training, maintenance, compliance audits, and incident investigation. The RMP must consider the proximity to sensitive populations located in schools, residential areas, general acute care hospitals, long-term health care facilities, and child day-care facilities, as well as external events such as seismic activity.

California Government Code Section 65962.5

California Government Code Section 65962.5 requires DTSC to compile and maintain lists of potentially contaminated sites located throughout the State of California. This "Cortese List" includes hazardous waste and substance sites from DTSC's database, LUST sites from the SWRCB's database, solid waste disposal sites with waste constituents above hazardous waste levels outside of the waste management unit, Cease and Desist Orders and Cleanup and Abatement Orders concerning hazardous wastes, and hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.

There are no sites in unincorporated Tuolumne County on DTSC's database of hazardous waste and substance sites, and there are no solid waste disposal sites in the County with waste constituents above hazardous waste levels outside of the waste management unit. There are six Cease and Desist Orders and Cleanup and Abatement Orders in the unincorporated County area, but none are apparently concerning hazardous waste. As described above, there are several records of LUST sites in the County (DTSC 2018).

Hazardous Waste Control Act

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act, Health and Safety Code Section 25100 et seq. and Title 26 of the CCR, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

Hazardous Materials Release Response Plans and Inventory Law

The Hazardous Materials Release Response Plans and Inventory Law, Health and Safety Code Section 25500 et seq., aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

Transport of Hazardous Materials and Hazardous Materials Emergency Response Plan

The State of California has adopted DOT regulations for the movement of hazardous materials originating within the state and passing through the state. State regulations are contained in Title 26 of the CCR. State agencies with primary responsibility for enforcing state regulations and responding to hazardous materials transportation emergencies are the CHP and Caltrans. Together, these agencies determine container types used and license hazardous waste haulers to transport hazardous waste on public roads.

The State of California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Response to hazardous materials incidents is one part of the plan. The plan is managed by the California Office of Emergency Services, which coordinates the responses of other agencies in the area.

Worker and Workplace Hazardous Materials Safety

Cal/OSHA is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication

Standard requires that workers are informed of the hazards associated with the materials they handle. For example, manufacturers are to appropriately label containers, material safety data sheets are to be available in the workplace, and employers are to properly train workers.

California State Aeronautics Act

At the state level, Caltrans's Division of Aeronautics administers Federal Aviation Administration regulations. The division issues permits for hospital heliports and public-use airports, reviews potential and future school sites proposed within 2 miles of an airport and authorizes helicopter landing sites at or near schools. In addition, it administers noise regulation and land use planning laws, which regulate the operational activities and provides for the integration of aviation planning on a regional basis.

CAL FIRE Regulations

Title 14 of the CCR establishes regulations for CAL FIRE in areas where CAL FIRE is responsible for wildfire protection. These regulations constitute the basic wildland fire protection standards of the California Board of Forestry and Fire Protection. They have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction, and development in state recreation areas. Additionally, Title 14 sets forth the minimum standards for emergency access, fuel modification, setback, signage, and water supply.

Emergency Services Act

Under the Emergency Services Act, Government Code Section 8550 et seq., the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including EPA, the CHP, regional water quality control boards, air quality management districts, and county disaster response offices.

International Building Code

In January of 2008, California officially switched from the Uniform Building Code to the International Building Code. The International Building Code specifies construction standards to be used in urban interface and wildland areas where there is an elevated threat of fire.

2010 Strategic Fire Plan for California

The 2010 Strategic California Fire Plan is the state's road map for reducing the risk of wildfire. By emphasizing fire prevention, the Fire Plan seeks to reduce firefighting costs and property losses, increase firefighter safety, and to contribute to ecosystem health.

Local:

Certified Unified Program Agency

Pursuant to Senate Bill 1082 (1993), the State of California adopted regulations to consolidate six hazardous materials management programs under a single, local agency, known as the Certified Unified Program Agency. In addition to conducting annual facility inspections, the Hazardous Materials Program is involved with hazardous materials emergency response, investigation of the illegal disposal of hazardous waste, public complaints, and storm water illicit discharge inspections. In January 1997, the Tuolumne County Environmental Health Division was designated as the Certified Unified Program Agency by the Secretary of the California Environmental Protection Agency for Tuolumne County. Accordingly, it is the Environmental Health Division's responsibility to prevent public health hazards in the community and to ensure the safety of water and food. The Environmental Health Division coordinates activities with federal, state, and regional agencies when planning programs that deal with the control of toxic materials, housing conditions, nuisance complaints, protection of food and water supply, public bathing areas, and sewage and solid waste.

Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan

Implementation of the *Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan* (HMP) (2018) is a coordinated effort between Tuolumne County, the City of Sonora, the Tuolumne Utilities District, the Sonora Union High School District, the Groveland Community Services District, Twain Harte Community Services District, Mi-Wuk Sugar Pine Fire Protection District, Belleview Elementary School District, Big Oak Flat-Groveland Unified School District, Jamestown Sanitary District, Columbia Fire Protection District, Columbia Union School District, Curtis Creek School District, Jamestown Elementary School District, Sonora Elementary School District, Summerville Elementary School District, Summerville Union High School District, Twain Harte Long Barn School District, and the Tuolumne Band of Me-Wuk Indians to effectively deal with natural catastrophes that affect the County. The HMP addresses risks associated with numerous hazards, including wildfire, earthquake, flooding, sinkholes, and extreme weather.

Tuolumne County Emergency Operations Plan

The Tuolumne County Emergency Operations Plan delineates the County's procedures and policies in response to a significant disaster, including extreme weather, flood or dam failure, earthquakes, hazardous materials, terrorism or civil disturbance, transportation accidents, and wildland fires.

County 4290 In Lieu Regulations

California Public Resources Code Section 4290 requires local jurisdictions in California to adopt General Plan Safety elements that meet Section 4290 standards or, in lieu of this regiment, local jurisdictions must adopt local fire safe ordinances addressing issues including emergency access, signing and building numbering, private water supply reserves for emergency fire use, and vegetation modification. The County currently has local fire safe ordinances in place in Titles 11, 15, and 16 of the Tuolumne County Ordinance Code. The California Board of Forestry and Fire Protection certified the County's fire safe ordinances in 2016.

2018 Tuolumne County General Plan

The 2018 General Plan contains goals, policies, and implementation programs related to wildland fires, emergency services, and hazardous materials within the Safety Element and the Public Safety Element. These are contained within Chapters 9 and 17 of the 2018 General Plan.

Waste associated with construction (treated wood waste, organic vegetation waste, rock), and waste associated with project operation (ash, municipal solid waste), would be disposed of at the approved recycling Waste Management Facility located at 14909 Camage Avenue, less than 0.5 mile from the project site. The project would not produce excessive hazardous waste, solid waste for landfills, and may be served by existing facilities. Therefore, impacts would be minimal, and no mitigation is required.

Analysis:

a) Construction activities would involve the use of hazardous materials such as fuels, lubricants, and solvents typically associated with construction equipment and vehicles. These materials are commonly used during construction and are not acutely hazardous. The federal Occupational Safety and Health Administration (OSHA) is the agency responsible for assuring worker safety in the handling and use of chemicals identified in the Occupational Safety and Health Act of 1970 (Public Law 91-596, 9 USC 651 et seq.). OSHA has adopted numerous regulations pertaining to worker safety, contained in CFR Title 29. These regulations set standards for safe workplaces and work practices, including standards relating to the handling of hazardous materials and those required for construction activities such as excavation and trenching. Any materials used during construction activities would be handled in accordance with applicable laws, regulations, and protocols related to protect worker, user, and public safety. Operation of the project would involve industrial activities, the operation of which would not involve the use, emission, or release of hazardous wastes or materials (beyond small amounts of common household products such as fuels, solvents, and cleaners). Implementation Program 9.I.d of the 2018 Tuolumne County General Plan states for the Tuolumne County Environmental Health Division and Tuolumne County Fire Department to review applications for discretionary projects for

compliance with the latest adopted regulations for safety and environmental protection. Both divisions reviewed the project application and provided comments. Compliance with applicable laws, regulations, and protocols and the 2018 General Plan would result in impacts being less than significant.

b) Reasonably foreseeable upset and accident conditions could include small spills or leaks associated with the use of construction equipment and vehicles, as described in item (a). Any materials utilized during construction activities would be handled in accordance with applicable laws, regulations, and protocols, and operation of the project would not result in the creation of any hazards to the public. As discussed under item (a), operation of the project would not involve the use of or result in the release of hazardous materials. Impacts would be less than significant.

c) The project site is not located within 0.25 mile of an existing or proposed school. The closest school to the project site is Curtis Creek Elementary, which is located 0.3± aerial miles east of the project site. There are no new schools currently proposed within Tuolumne County. Therefore, there is no impact.

d) NEPAssist was used to conduct an initial search of potential hazardous waste sites in proximity to the project. The tool searches inventories that contain sites regulated by Resource Conservation and Recovery Act (RCRA); air pollution data (ICIS-AIR); water dischargers covered by the National Pollutant Discharge Elimination System (NPDES); the Toxic Release Inventory (TRI), which contains information on toxic chemical releases and waste management reported by industries; and Superfund sites covered by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Two sites known to handle hazardous waste were located within 0.25 miles of the proposed project. One facility is a Waste Management recycling center and business office with an NDPES discharge permit. The site is located at 14959 Camage Avenue. No record of specific effluents or site violations were found, and no violations were recorded. Potential for contamination of the project site from this facility is anticipated to be low. A Paint and Supply store known to handle hazardous materials is located at 18484 Striker Court. No record of violations, spills, or soil contamination are recorded for this. Potential for contamination from this facility is anticipated to be low.

A review of the Department of Toxic Substances Control (DTSC) database, *EnviroStor*, which includes lists of hazardous materials sites compiled pursuant to California Government Code Section 65962.5, did not identify any sites on or adjacent to the project site that have used, stored, disposed of, or released hazardous materials. Therefore, there will be no impact.

e) The project site is not located within an area that is subject to the Tuolumne County Airport Land Use Compatibility Plan. The nearest airport, Columbia Airport, is located approximately 7 miles northwest of the project site. A helipad supporting the Sonora Regional Medical Center Emergency Room is located approximately 3.3. miles northwest of the project site. The project would be located at a distance far enough from the airstrip that it would not create a unique safety hazard for people working within the project site. Therefore, there would be no impact.

f) The project would be located at a distance far enough from the airstrip that it would not create a unique safety hazard for people working within the project site. Therefore, there will be no impact.

g) Tuolumne County does not have a static emergency plan or evacuation plan due to the dynamic nature of emergencies. Tuolumne County does not have any designated evacuation routes because fires can happen anywhere and may block specific roads and certain areas may not be safe for travel. The Tuolumne County Sheriff Office is the responsible entity for declaring and directing evacuations in the case of emergencies. The Sherriff's Department will inform members of the public via the Emergency Notification System, local media, and door-to-door when feasible of where the wildfire is located, which routes are safe to use, and which locations are safe to seek refuge from the fire. Generalized emergency information is also contained within the adopted Multi-Jurisdictional Hazard Mitigation Plan. Tuolumne

County maintains the Hazard Mitigation Plan and Emergency Operations Plan. Through the development approvals and coordination processes, the County would limit the potential for hazards, particularly associated with wildfire and emergency access, with the General Plan Update policies and implementation programs. The project has been found to be consistent with Chapter 9 Public Safety and Chapter 17 Natural Hazards of the 2018 General Plan, as shown in Section g below. Impact is less than significant.

h) The project site is located within an SRA and is rated as high fire hazard severity zone. The project has been reviewed by the Tuolumne County Fire Prevention Division. The Fire Prevention Division provided conditions for the project to ensure consistency with the Titles 11, 12, 15 and 16 of the Ordinance Code, the California Building Code, and the California Fire Code. Conditions will be added to the project including requirements for fuel reduction and thinning, building setbacks, road construction standards, driveway construction standards, and fire and life safety requirements. The project has been found to be consistent with Chapter 9 Public Safety and Chapter 17 Natural Hazards of the 2018 General Plan. Consistency with specific Goals, Policies, and Implementation Programs will be demonstrated below.

Policy 9.A.1: *Actively involve fire protection agencies within Tuolumne County in land use planning decisions.*

The Tuolumne County Fire Prevention Division has been consulted with during the processing of the application. The Tuolumne County Fire Prevention Division provided conditions which have been incorporated into the projects' conditions of approval. See the "Wildfire" Section below for specific conditions provided by the Tuolumne County Fire Prevention Division.

Policy 9.E.3: *Require new development to be consistent with State and County regulations and policies regarding fire protection.*

The development and operation of the site will be consistent with all applicable State and County regulations and policies regarding fire protection. Road and driveway improvement plans will be reviewed by the Tuolumne County Fire Prevention Division and Engineering Division of the Department of Public Works to ensure compliance with the California Fire Code and Titles 11 and 15 of the TCOC. All building permits will be reviewed for compliance with the California Building Code and Fire Code.

Policy 17.E.2: *Require the maintenance of defensible space setbacks in areas proposed for development if wildland fire hazards exist on adjacent properties.*

Conditions have been incorporated into the projects conditions of approval to require defensible space setbacks from all property boundaries and to require a fuel modification prior to construction.

Policy 17.E.3: *Require new development to have adequate fire protection and to include, where necessary, design and maintenance features that contribute to the protection of the County from the losses associated with wildland fire.*

Conditions provided by the Tuolumne County Fire Prevention Division have been incorporated into the projects' conditions of approval to minimize fire hazards and to contribute to the protection of the County from the losses associated with wildland fire. See the "Wildfire" Section below for specific conditions provided by the Tuolumne County Fire Prevention Division. The incorporation of these conditions and the project's consistency with Titles 11, 12, 15 and 16 of the Ordinance Code, the Tuolumne County General Plan, the California Building Code, and the California Fire Code would result in a less than significant impact. See the Wildfire Section below for additional information and analysis.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

HYDROLOGY AND WATER QUALITY:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:	☐	☐	☒	☐
i) result in substantial erosion or siltation on or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount or surface runoff in a manner which would create flooding on- or off-site;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or?	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Environmental Setting:

The project site is bordered by Curtis Creek to the south, which is located within the Stanislaus River watershed. This drainage eventually flows into the Tuolumne River and Lake Don Pedro Reservoir. The project proposes to be served via public water and sewer provided by the Tuolumne Utilities District.

A Water Quality Plan was prepared for Tuolumne County in 2007 and contains a comprehensive program that addressed a wide range of water quality concerns within the county and emphasizes mechanisms for maintaining and improving surface water quality (Tuolumne County 2007). The project site is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB).

Regulatory Setting:

The Federal Water Pollution Control Act was adopted to protect the quality of surface waters of the Country and is implemented through the National Pollutant Discharge Elimination System (NPDES). In California, the NPDES is implemented through the Storm Water Permitting Unit of the State Water Resources Control Board. Pursuant to State regulations, land development projects which disturb one acre or more must submit a Notice of Intent (NOI) to obtain coverage under the General Construction Activity Storm Water Permit. A Stormwater Pollution Prevention Plan (SWPPP) is required to be submitted with the NOI. The SWPP is required to be prepared by a qualified professional and includes Best Management Practices (BMPs) to be implemented during project construction to minimize stormwater runoff, erosion, and sediment movement.

The Federal Emergency Management Agency (FEMA) provides information on flood hazards for communities based on its Flood Insurance Rate Maps (FIRM). The project site is located with Flood Zone X, which are areas of minimal flood hazards. Chapter 15.24 of the TCOC provides regulations related to flood hazards. The

purpose of Chapter 15.24 is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions ins specific areas by legally enforceable regulations applied uniformly throughout the County to all publicly and privately owned land within flood prone or flood relation erosion areas.

Chapter 13.20 of the TCOC provides guidance on management of groundwater within Tuolumne County. The purpose of Chapter 13.20 is to establish an effective county policy that will assure that the overall economy and environment of Tuolumne County are protected from the impacts of the exportation of groundwater out of the county. All wells within Tuolumne County must be constructed and maintained in accordance with Chapter 13.16 and 13.20 of the TCOC.

Analysis:

a) Runoff from the project site has the potential to transport silt and other sediments to off-site surface waters if soil surfaces exposed during construction on the project site are not stabilized. However, the requirement of preparation of a SWPPP with BMPs and the submittal of a NOI with the State Water Resources Control Board would ensure compliance with water quality standards and waste discharge requirements and would protect the discharge of pollutants into surface or ground water. The Open Space zoning on site would prohibit development or ground disturbing activities adjacent to the drainages on site. Further, prior to operation of the pellet plant, a fence shall be constructed along the Open Space zoning to prohibit woody material from entering the riparian area (BIO-3).

Compliance with applicable permits and construction measures would ensure that the project would not violate any water quality standards or waste discharge requirements set forth by the Central Valley RWQCB or result in the degradation of surface and groundwater quality. Impacts would be less than significant.

b) The project site will be served via public water provided by Tuolumne Utilities District, therefore it will not substantially decrease groundwater supplies. The Tuolumne Utilities District has reviewed the proposed project and indicated that there is adequate water supply capacity to serve the project. Conformance with Ordinance Code and applicable State and Federal regulations would result in a less than significant impact.

ci-civ) While Curtis Creek is adjacent to the project site, it is located within Open Space zoning, and no disturbance is proposed in this area. The Engineering Division of the Department of Public Works reviewed the project and indicated that a drainage plan is required to be submitted prior to the issuance of a Grading Permit. The drainage plan is required to address the entire project site drainage, including parking lots and paved areas, and eliminate any increase in run off to downstream drainages, culverts, and adjacent property.

Chapter 12.20 of the TCOC contains the County's regulations regarding grading activities. The Engineering Division of the Department of Public Works has reviewed the project and responded with conditions in accordance with Chapter 12.20, which will become Conditions of Approval for the project. Prior to the issuance of a Grading Permit by the Engineering Division of the Department of Public Works, the project proponent is required to submit an erosion control plan to be reviewed and approved which must be implemented during project construction activities. The project will also be conditioned to require that all soils that are disturbed by clearing or grading shall be reseeded or hydro mulched or otherwise stabilized as soon as possible. Emergency erosion control measures shall be utilized as requested by County officials.

Additionally, the project is required to submit an NOI to the State Water Resources Control Board Water Permitting Unit to obtain coverage under the General Construction Activity Stormwater Permit for the disturbance of more than one acre. A SWPPP is required to be developed and submitted with the NOI. The SWPPP must be prepared by a qualified professional and includes BMPs to be implemented to

minimize stormwater runoff, erosion, and sediment movement during construction activities. Compliance with the above conditions would result in a less than significant impact.

d) The Federal Emergency Management Agency (FEMA) publishes Flood Insurance Rate Maps (FIRM) delineating flood hazard zones for communities. Most of the project site, including areas where new structures would be sited and grading would occur is located in an area identified on the FEMA FIRM Panel Number 06109C0854C (dated April 16, 2009) in "Zone X," an area of very low flood hazard. The project would connect to an existing sewage line within areas on the parcels identified to be within the "Zone A" flood risk area (one percent annual chance of flooding) of Curtis Creek. Connection to the sewage line would not alter existing impervious area or flood flows in that area. The project would not affect habitable structures, nor locate any people or habitable structures within any areas prone to flood. The project would not result in increased flood risk to people or property for the above reasons and would not alter pervious coverage in a manner that would lead to increased flood flows or alter the existing floodplain**.** The Technical Background Report for the 2018 General Plan indicates that there is no risk of tsunamis in Tuolumne County due to its distance from the ocean. There is also no risk of earthquake-induced seiches within Tuolumne County. No impact would occur.

e) The goal of the Tuolumne County Water Quality Plan is to minimize the risk of pollution into water sources. This can be achieved by the implementation of BMPs during project development.

The Water Quality Plan categorizes BMPs into the following categories: prevention, source control, and treatment control. The project is required to submit an NOI with the State Water Resources Control Board. This submittal requires the preparation of a SWPPP, prepared by qualified professional, which must incorporate BMPs to be implemented during project construction. The SWPPP is required prior to the issuance of a Grading Permit by the Engineering Division of the Department of Public Works. Erosion control measures are required to be implemented during site disturbing activities, as required by Title 12 of the Tuolumne County Ordinance Code. The Engineering Division verifies these requirements prior to the issuance of a grading permit. Additionally, the drainages on site are protected with Open Space zoning in which development may not occur. These measures will help reduces impacts to water quality and would support the goals of the Tuolumne County Water Quality Plan.

The project is consistent with the following General Plan goals, policies, and implementation programs:

Policy 14.C.2: Encourage new urban development to locate in areas where public water and sewer services are available or can be developed.

Policy 3.E.3: Encourage new industrial and commercial development in areas where a public sewer system is available, or require evidence that there is a capability of functioning on a private system without any adverse public health impact.

Implementation Program 3.B.b: Encourage new industrial development to locate in areas which have the capability of being served by a public water system, or a private system when it can be reasonably demonstrated that the development will not cause an adverse public health problem by maintain zoning code standards for the provision of public water for industrial zoning districts and requiring review by the Environmental Health Division when exceptions are requested.

As demonstrated above, the project is consistent with the goals, policies, and implementation programs of the General Plan and the Tuolumne County Water Quality Plan. Therefore, there would be a less than significant impact.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

LAND USE AND PLANNING:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation of an agency with jurisdiction over the project (adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Environmental Setting:

The project site consists of two parcels totaling 3.24± acres zoned M-1 (Light Industrial) and O (Open Space) under Title 17 of the Tuolumne County Ordinance Code. The commercial and industrial development is located to the north, west and east of the project site. The site is flat and has been used in the past as a staging yard for a utility company. There is Open Space zoning on the property along the riparian area, and this area will serve not only as protection for biological resources, but due to the development restrictions in the Open Space zoning, will also retain the only scenic features on the site. Parcels to the west, east and south are zoned M-1 and O with a Light Industrial general plan land use designation. Property to the north is zoned M-1, M-2 and O with a Heavy Industrial general plan land use designation. Commercial/industrial operations are to the west, east and south, and the SPI mill is located to the north.

Analysis:

a) The project site will be developed with a pellet plant and is surrounded by development. A community will not be divided, therefore there would be no impact.

b) The Light Industrial General Plan land use designation provides for industrial land uses with an emphasis on manufacturing, processing, assembly, storage, distribution, and research and development activities. This designation is applied to areas with good access to major truck transportation routes and rail lines, located near concentrated residential areas so that employee commute times and distances are minimized. Typical land uses allowed include all types of manufacturing and processing activities, business support services and public facilities. The proposed wood pellet facility is compatible with the LI General Plan land use designation.

Table 1.3 of the Community Development and Design Element in the 2018 General Plan indicates that the LI land use designation is compatible with the M-1 zoning district. The O zoning district is compatible with all General Plan designations.

The following Goals, Policies and Implementation Programs of the 2018 Tuolumne County General pertain to this project.

Goal 1.A
Protect and enhance the quality of life for all residents of Tuolumne County while facilitating growth and development to meet the present and future needs of the County's residents, visitors, and businesses.

Policy 1.A.3
Address the impacts associated with new development on cultural resources and protect such resources.

Policy1.A.5

Promote infill and clustered patterns of development that facilitate the efficient and timely provision of urban infrastructure and services.

Goal 1G
Promote the development of industrial uses to meet the present and future needs of Tuolumne County's residents and to provide jobs and promote economic vitality.

Policy 1.G.3
Encourage industrial businesses which utilize the output of lumber and natural resource processors and other industries that can provide a broad economic base for Tuolumne County.

Implementation Program 3.B.b
Encourage new industrial development to locate in areas which have the capability of being served by a public water system.

Policy 6.D.6
Identify areas within the County which will be appealing to, and capable of accommodating, the amount of industrial and other employment-generating development required to meet the County's needs over the planning horizon of this General Plan.

The following Goals, Policies, and Implementation Programs of the East Sonora Community Plan, found in Volume III of the 2018 Tuolumne County General Plan apply to the project:

- *Redefine and revitalize the commercial and industrial areas of East Sonora.*
- *Promote the development of new industrial and regional business parks along Tuolumne Road.*
- *Designate areas within the East Sonora Community Plan boundaries on the General Plan land use diagrams for new industrial complexes and business parks, including lands within and around Sierra Pacific Industries, to provide employment opportunities for residents of Tuolumne County.*

Zoning Ordinance

The project site is zoned M-1 and O under Title 17 of the TCOC. "General manufacturing, processing and refining" is a permitted use in the M-1 zoning district. The proposed wood pellet facility would fit this land use.

Prior to construction within the M-1 zoning district, a Site Development Permit must be secured to ensure that certain types of proposed developments will serve to achieve a design which is desirable. The project review associated with a Site Development Permit includes verifying conformance to the latest accepted planning and engineering standards covering the following areas: site layout, structure design, landscaping, water and sewer service and other utilities, surface drainage and erosion control, fire protection, access, traffic circulation and parking. The project has been designed to meet these standards.

The purpose of the O zoning district is to protect the public in areas not suitable for development because of flooding or other natural hazards and to provide areas of open space for the protection of wildlife habitat and scenic quality where vegetation removal may be appropriate in certain instances or for the preservation of cultural resources. The Open Space zoning currently protects the riparian corridor on site. Development of SDP21-001 would not impact the area of the site zoned Open Space.

Prior to development of the project site, the following entitlements may be required:

Table 4: Future Entitlements	
Permit	**Agency**
Grading Permit	Engineering Division of the Department of Public Works
Road Encroachment Permit	Engineering Division of the Department of Public Works
General Construction Activity Storm Water Permit	Regional Water Quality Control Board
Building Permits	Building Division of the Community Development Department

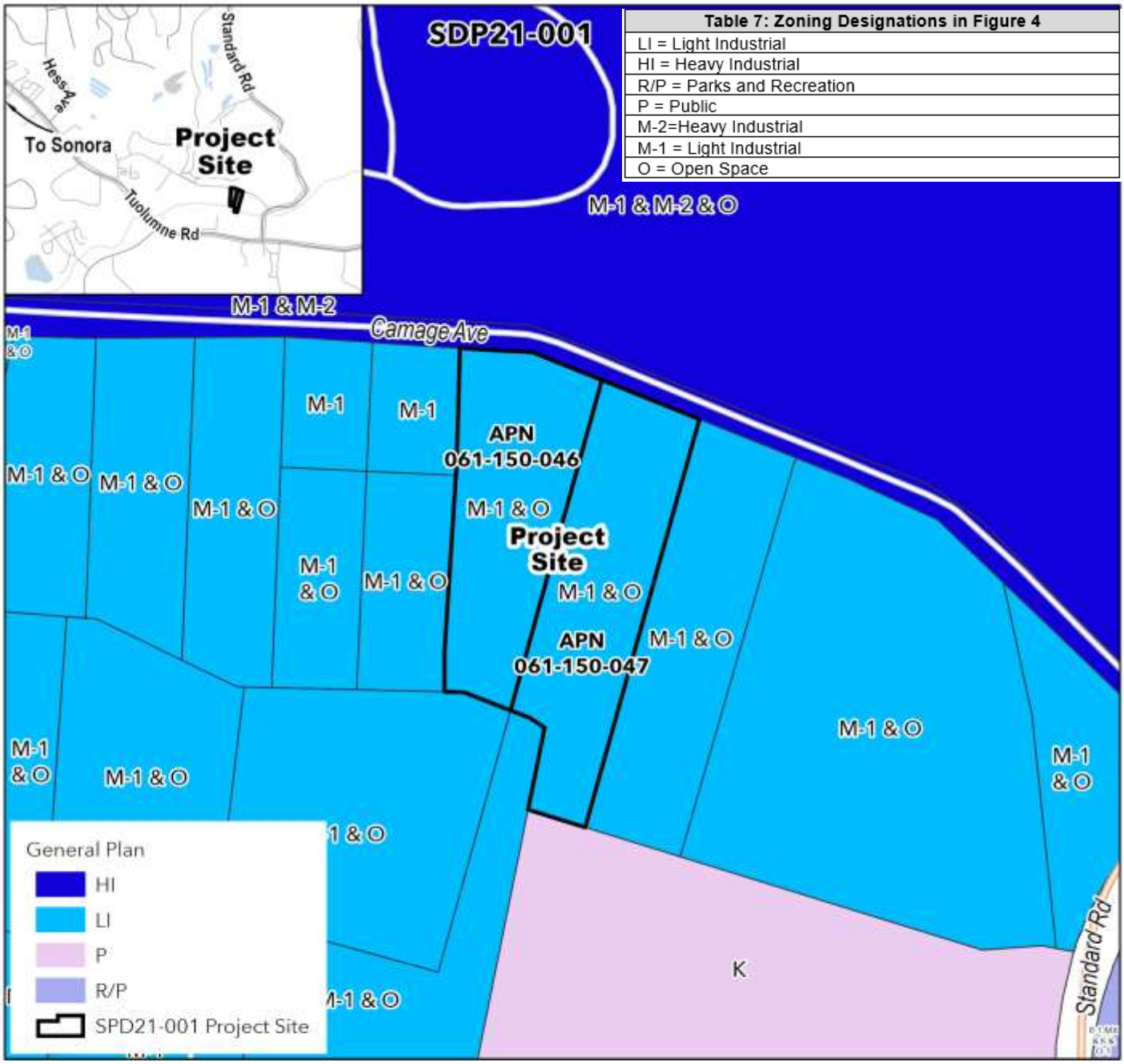
The project will be conditioned to require securement of the above permits (Table 4) if needed. This will ensure compliance with all applicable policies and regulations of each of the permitting agencies.

As indicated above, the project is consistent with all applicable land use plan, policy, and regulations of agencies with jurisdiction over the project. Therefore, there is a less than significant impact.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

Figure 3: General Plan and Zoning Designation Map



Project: SDP21-001
Owner: Pip SM, LLC
Applicant: Joe Pluim
APN: 061-150-046 & 061-150-047
Acres: 3.24± acres
Current Zoning: M-1 & O
Current General Plan Designation: LI
Project Description: Site Development Permit SDP21-00 to allow the development of a wood pellet facility consisting of a 4,000 square foot building, outdoor equipment, covered storage, outdoor storage, and associated infrastructure. The project site consists of two parcels totaling 3.24± acres zoned M-1 (Light Industrial) and O (Open Space) under Title 17 of the Tuolumne County Ordinance Code.

MINERAL RESOURCES:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☒	☐

Environmental Setting:

Tuolumne County has an extensive history as a mining community. Tuolumne County was historically mined for gold during the early 1850s. Current mining operations within Tuolumne County mine for limestone and dolomite, and various crushed rock, gravel, and sand products.

Regulatory Setting:

The California Surface Mining and Reclamation Act of 1975 (SMARA) requires classification of land in the state according to the known or inferred mineral resource potential of that land, which is provided direction under the State Geologist. The California Department of Conservation Division of Mines and Geology has developed Mineral Resource Zones (MRZ) to classify the areas where significant mineral resources occur or are likely to occur. Areas classified as MRZ-2a or MRZ-2b have been identified as having demonstrated or inferred significant mineral resources.

The Mineral Preserve Overlay (MPZ) General Plan land use designation is used to identify land that has been classified as either Mineral Resource Zone MRZ-2a or MRZ-2b by the State Mining and Geology Board under the State Classification System and meets criteria for relationship to surrounding land uses, access, and other issues. The MPZ overlay designation is found along the Mother Lode gold ore zone, the carbonate belt from Columbia to Algerine, and the table mountain basalt as an aggregate source. The MPZ Overlay is used to direct the development potential towards the types of development that are compatible with possible mineral resource extraction.

Analysis:

a,b) The *Mineral Land Classification of a Portion of Tuolumne County, California for Precious Metals, Carbonate Rock and Concrete-Grade Aggregate (1997),* DMG Open File Report 97-09, was reviewed for the project. For precious metals and aggregate minerals, the project site is located within Pocket Belt-East Belt, which is classified as MRZ-3b and is defined as areas of inferred mineral occurrence with undetermined mineral resources significance.

For carbonate minerals, the project site is located within the Southwestern County Area which is classified as MRZ-3b.

The -MPZ overlay designation provides for the extraction and processing of mineral resources. This overlay is used to identify land that has been classified as either Mineral Resource Zone MRZ-2a or MRZ-2b by the State Mining and Geology Board under the State Classification System and meets criteria for relationship to surrounding land uses, access, and other issues. Uses within the -MPZ overlay designation are those that are compatible with mineral resource extraction and processing. The project site does meet the criteria for the MPZ overlay as the site does not contain mineral deposits classified as MRZ-2a or MRZ-2b. Therefore, there are no known mineral resources of value

on site.

Policy 7.C.1 of the Tuolumne County General Plan directs the County to protect lands classified as significant Mineral Resource Zone-2 (MRZ-2) by the State Department of Conservation Division of Mines and Geology, and meeting the criteria established in the General Plan for MPZ overlay, from conflicts, such as incompatible development on surrounding land, which might prevent future mining activities. The project site does not contain the MPZ overlay General Plan land use designation and does not meet the criteria for the MPZ overlay. There are no parcels within the vicinity of the project site that contain the -MPZ overlay designation. Therefore, the project would have a less than significant impact on known mineral resources.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

NOISE:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project Result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located with the vicinity of a private airstrip or an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Environmental Setting:

Noise (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz) (Tuolumne County 2018). In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress.

One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (L_{eq}). The L_{eq} is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (Tuolumne County 2018). Typically, L_{eq} is summed over a one-hour period. The maximum instantaneous noise level (L_{max}) can be used to describe short noise events (e.g., construction activities, car pass-by). In addition, the community noise equivalent level (CNEL), is typically used for describing ambient noise levels and sources that generate noise over extended periods of time (e.g., roadway noise). The CNEL is a weighted noise level over a 24-hour period that applies a penalty of 5 dB during the evening hours (7:00 p.m. to 10:00 p.m.) and a 10-dB penalty during the nighttime hours (10:00 p.m. to 7:00 a.m.).

The sound pressure level is measured on a logarithmic scale with the 0-dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Decibels cannot be added arithmetically, but rather are added on a logarithmic basis. Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3-dB change in community noise levels is noticeable, while 1–2 dB changes generally are not perceived. Quiet suburban areas typically have exterior noise levels in the range of 40–50 dBA, while those along arterial streets are in the 50–60+ dBA range. Normal conversational levels are in the 60–65 dBA range and ambient noise levels greater than that can interrupt conversations (Tuolumne County 2018).

Discretionary projects are evaluated utilizing Chapter 5 of the Tuolumne County General Plan relating to Noise. The following definitions are from the Glossary of the Tuolumne County General Plan and are used in the Noise Element of the General Plan:

- CNEL: Community Noise Equivalent Level means a 24-hour energy equivalent level derived from a variety of single-noise events, with weighing factors of approximately 4.8 and 10 decibels applied to the evening (7:00 PM to 10:00 PM) and nighttime (10:00 PM to 7:00 AM) periods, respectively, to allow or the greater sensitivity to noise during these hours.

- Ldn: the day/night average sound level. The Ldn is the average equivalent sound level during a 24-hour day, obtained after addition of ten (10) decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

- dBA: is the "A-weighted" scale for measuring sound in decibels. It weighs or reduces the effects of low and high frequencies in order to simulate human hearing. Every increase of 10 dBA doubles the perceived loudness though the noise is actually ten times more intense.

- A-Weighted Sound Level: All sound levels referred to in this document are in A-weighted decibels. A weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A weighting, as it provides a high degree of correlation with human annoyance and health effects.

Decibel: means a unit used to express the relative intensity of a sound as it is heard by the human ear. The decibel scale expresses sound level relative to a reference sound pressure of 20 micronewtons per square meter, which is the threshold of human hearing. Sound levels in decibels (dB) are calculated on a logarithmic basis. An increase of 10 decibels represents a 10-fold increase in acoustic energy, and an increase of 20 decibels corresponds to a 100-fold increase in acoustic energy. An increase of 10 dB is usually perceived as a doubling of noise.

Equivalent Sound Level (Leq)**:** The equivalent sound level is the sound level containing the same total energy as a time varying signal over a given sample period. Leq is typically computed over 1, 8 and 24-hour sample periods.

Leq is the energy equivalent level, defined as the average sound level on the basis of sound energy (or sound pressure squared). The Leq is a "dosage" type measure and is the basis for the descriptors used in current standards, such as the 24-hour CNEL used by the State of California. The hourly Leg is measure over a 1-hour sample period.

Lmax: is the highest sound level measured over a given period of time.

The ambient noise environment in Tuolumne County is largely affected by traffic on highways and County roadways, commercial and industrial uses, agricultural uses, railroad operations, and aircraft. The most prominent sources of noise in the project vicinity are motor vehicles (e.g., automobiles, buses, trucks, and motorcycles) and industrial operations from adjacent land uses.

Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a sustained noise level, and because of its proximity to noise sensitive uses. In general, corridors throughout Tuolumne County consist of one or two lanes in each direction with varying speed limits ranging from 35 miles per hour (mph) to 55 mph.

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads.

Receptors sensitive to noise such as schools, day care facilities, hospitals, or senior nursing facilities, are not located within 0.25 mile of the project.

Table 5 MAXIMUM ALLOWABLE NOISE EXPOSURE-STATIONARY NOISE SOURCES[1]		
	Daytime (7 a.m. to 10 p.m.)	**Nighttime (10 p.m. to 7 a.m.)**
Hourly L_{eq}, dB[2]	50	45
Maximum level, dB[3]	70	65

[1] This table applies to noise exposure as a result of stationary noise sources. For a development project or land use change involving a noise-sensitive land use, the noise from nearby noise sources will be considered during design and approval of the project, or in determining whether the land use change is appropriate. For development projects which may produce noise, land use changes and project review will consider the effects of the noise on possible noise-sensitive land uses. When considering modification or expansion at a site that already produces noise levels which exceed these standards at noise-sensitive land uses, the modification or expansion shall be reviewed to consider if the proposed action will further raise the existing noise levels received at the noise-sensitive land use(s).
Noise-sensitive land uses include urban residential land uses, libraries, churches, and hospitals, in addition to nursing homes or schools which have over 6 beds or students, respectively. Transient lodging establishments which are considered noise sensitive land uses include hotels, motels, or homeless shelters, but not bed and breakfast establishments located in rural areas, campgrounds, or guest ranches.
[2] The sound equivalent level as measured or modeled for a one-hour sample period. The daytime or nighttime value should not be exceeded as determined at the property line of the noise-sensitive land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.
[3] Similar to the hourly L_{eq}, except this level should not be exceeded for any length of time.

Table 6 SIGNIFICANCE OF CHANGES IN CUMULATIVE NOISE EXPOSURE[1]	
Ambient Noise Level Without Project[2] (Ldn or CNEL)	**Significant Impact if Cumulative Level Increases By:**
<60 dB	+ 5.0 dB or more
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

[1]These standards shall be applied when considering the noise impacts from projects that could cause a significant increase in the cumulative noise exposure of existing noise-sensitive land uses. If it is likely that existing noise-sensitive land uses could experience these increases in cumulative noise exposure, as measured in CNEL or Ldn, then an acoustical analysis that meets the requirements of Table 6 shall be accomplished and the results considered in project design.
[2]Ambient Noise is defined as the composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.
Source: Federal Interagency Committee on Noise (FICON), Federal Agency Review of Selected Airport Noise Analysis Issues, August 1992.

Analysis:

a) Construction

Construction activities would result in short-term noise. Construction activities would consist of grading and site preparation, paving activities, and building construction, all of which require the use of heavy-duty equipment that generate varying noise levels. Construction activities would be limited to the less noise-sensitive hours (e.g., daytime) of 7:00 a.m. to 7:00 p.m., Monday through Saturday, consistent with Tuolumne County General Plan Maximum Allowable Noise Exposure-Stationary Noise Source standards in Table 5.C of Chapter 5: Noise Element of the General Plan (Tuolumne County 2019).

Construction-generated noise levels would fluctuate depending on the type, number, and duration of equipment used. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment at nearby receptors. Construction equipment would vary by phase, but the entire construction process would include operation of dozers, excavators, loaders/backhoes, paving equipment, forklifts, and haul trucks. Noise generated from these pieces of equipment would be intermittent and short as typical use is characterized by periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

The grading and site preparation phase typically generate the most substantial noise levels because of the onsite equipment associated with grading, compacting, and excavation are the noisiest. Site preparation equipment and activities include graders, dozers, and excavators. Because this is typically the loudest phase, it was assumed that one grader, one dozer, and one excavator could be operating simultaneously, generating the loudest anticipated noise levels for the overall construction activities. Noise emission levels from these types of construction equipment are shown in Table 7.

Table 7
Noise Levels Generated by Typical Construction Equipment

Equipment Type	Maximum Noise Level (dB Lmax) at 50 feet[1]	Typical Noise Level (dB Leq) at 50 feet[1,2]
Grader	85	81
Dozer	85	81
Loader	80	76
Combined Noise Level at 50 feet	88.6	84.7

Notes: dB= decibels; Lmax = maximum sound level; Leq = equivalent continuous sound level
[1] Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment.
[2] Assumes typical usage factors.
Source: Federal Transit Administration 2006

Based on the reference noise levels listed in Table 7 and accounting for typical usage factors for each piece of equipment, onsite construction activities could generate a combined average noise level of approximately 86 dB Leq and 85 dB Lmax at 50 feet from the project site boundary.

Tuolumne County does not have adopted daytime construction noise standards. However, when evaluating potential noise impacts, temporary short-term noise occurring during the less sensitive times of the day, when people are active, out of their homes, or otherwise not sleeping, are generally considered less of a nuisance and less likely to disrupt sleep, or otherwise result in significant noise exposure. Thus, considering that construction activities would occur during the daytime hours, in accordance with typical County-required conditions of approval limiting construction activities to Monday through Saturdays from 7:00 a.m. and 7:00 p.m., overall construction activities would be temporary, construction noise would fluctuate, and the loudest levels would occur for a shorter duration than the overall construction duration, existing nearby sensitive receptors would not be substantially affected. To ensure impacts are less than significant, NOI-1 shall be implemented.

Operation

Noise generated by the project operation would be similar to other stationary noise sources in the area which are industrial and commercial in nature. Noise sources would include a general increase in ambient noise levels resulting from increased noise from trucks transporting raw biomass and pellets in and out of the project site, as well as operations from the pellet plant. Project operations could occur 24 hours per day 7 days a week. However, operations are expected to occur for a total of approximately 8,000 hours per year. The BCHP unit would produce more noise than other elements of the facility. It is estimated to have a noise level of 65 dB measured at 33 feet.

The project may result in a temporary increase in ambient noise associated with construction, and in However, this increase would be to be temporary and limited to daytime hours.

The project does not include a Zone Change or change in use of the parcel, so sources and types of noise would not substantially change from what is currently permitted. However, to ensure that any noise generated by the project is reduced to a less than significant level, NOI-2 should be implemented and will be enforced through the Code Compliance process based on citizen complaints.

Incorporation of Mitigation Measures NOI-1 and NOI-2 would reduce potential impacts to a less than significant level.

b) Sources of vibration would include construction equipment operating during construction of the facility and operational activities such as loading, transporting, and dumping material and milling operations. Construction would occur between 7 a.m. and 7 p.m. to reduce potential disturbance impacts. No construction activities would occur on Sundays or County holidays. Project operations could occur 24 hours per day 7 days a week. However, operations are expected to occur for a total of approximately 8,000 hours per year. Vibration originating at this site would be generally be consistent with existing vibration levels from industrial uses in the project vicinity.

   Construction would include grading, site preparation, building construction, and paving activities. No pile driving or blasting would occur. Typical equipment that would be used includes dozers, loaders, excavators, trucks, and paving equipment. In addition, construction activities would only take place during the daytime hours, when people are less susceptible to noise.

   Considering reference vibration levels for large dozers, FTA's vibration standard of 80 vibration-decibels (VdB) would not be exceeded beyond 40 feet and Caltrans's recommended vibration level for fragile buildings of 0.1 in/sec peak particle velocity (PPV) would not be exceeded beyond 25 feet from construction activity. Existing receptors and structures are located beyond these distances. Considering that construction activities would not include major sources of vibration, would occur during the daytime hours, and existing structures are located at adequate distances from proposed construction activity, no existing structures or sensitive land uses would be exposed to excessive vibration levels. This impact would be less than significant.

c) The project site is not located near an airport. There is no impact.

Mitigation Measures:

NOI-1: Hours of exterior construction on the project site shall be limited to 7:00 a.m. to 7:00 p.m. Monday through Saturday. Exterior construction shall be prohibited on Sunday and County holidays.

NOI-2: The noise levels generated by the project shall be restricted to the following exterior noise limits as measured at the property line:

Zoning Classification of Receiving Property	Noise Level (dB) of Sound Source	
	Daytime (7 a.m. to 10 p.m.)	**Nighttime (10 p.m. to 7 a.m.)**
MU, R-3, R-2, R-1, RE-1, RE-2, RE-3, RE-5, RE-10, C-O, C-1, C-S, BP	50 L_{eq}. (1 hour)[1]	45 L_{eq}. (1 hour)[1]

[1]L_{eq}. 1 hour refers to the average noise level measured over a one-hour period.

Mitigation Monitoring: Mitigation Measure NOI-1 will be required during construction activities on site. Mitigation Measure NOI-2 will be on-going**.** These conditions will be monitored through citizen complaints. Confirmed violations will be referred to the Code Compliance Officer for processing consistent with established code compliance procedures outlined in Chapter 1.10 of the Ordinance Code. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.

POPULATION AND HOUSING:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting:

The population in Tuolumne County in 2018 was at 55,365 for the entire County including the City of Sonora. Between 2010 and 2018 Tuolumne County's growth rate was less than 1% and was negative for some years, as indicated in Figure 5 in the Housing Element found in the Technical Background Report of the 2018 General Plan. The projected population for Tuolumne County in 2024, including the City of Sonora, is estimated at 54,390, which is a decrease from its current population. The proposed project includes the development of a wood pellet facility in an area with existing infrastructure to serve the site.

The project site is vacant, and there are existing roads which serve the project site. Utilities are in the area, including electricity and telecommunications infrastructure. The property will be served by public water and public sewer. The project would not require the demolition of the existing single-family dwellings or conversions of the dwelling units to a non-residential use.

Analysis:

a) Infrastructure and roads exist adjacent to the site to serve the development. The project will not induce substantial unplanned population growth in the area either indirectly or directly. Therefore, there would be no impact.

b) The project site is vacant. Therefore, the proposed project would not displace people or housing and the construction of replacement housing elsewhere would not be required as a result of the project. Therefore, there would be no impact.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

PUBLIC SERVICES:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of these public services:				
Fire Protection?	☐	☐	☒	☐
Police Protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☒	☐
Other Public Facilities?	☐	☐	☒	☐

Environmental Setting:

Fire Protection

Fire protection services are provided to unincorporated Tuolumne County by Tuolumne County Fire Department (TCFD), California Department of Forestry and Fire Protection (CAL FIRE), seven fire protection districts, and the United States Department of Agriculture in the Stanislaus National Forest (Tuolumne Fire Safe 2008). The majority of unincorporated Tuolumne County falls outside a fire district boundary and is protected by TCFD (administered by CAL FIRE under a contractual agreement with the County since 1975). TCFD has 13 fire stations, eight of which are in the unincorporated area of Tuolumne County. (Source: GPU EIR)

The nearest fire station to the project site on Hillsdale Rod, Mono Village Station 51. This station is operated under a cooperative agreement with CalFire and Tuolumne County Fire. In 2006, Tuolumne County Fire Department and other local and State fire protection agencies entered in the Automatic Aid/Mutual Aid Agreement. This is a mutual cooperation agreement to increase fire and other emergency protection by allowing for the closest fire department to be dispatched for emergency calls, even if the emergency is outside of their jurisdictional boundary.

Police Protection

Law enforcement services in the in the unincorporated portion of Tuolumne County is provided by the Tuolumne County Sherriff's office. The nearest station to the project site is located at 28 Lower Sunset Drive in Sonora. Response times for the entire county averages between 5 minutes to 35 minutes depending on day of the week, time, and the location of the incident. An average of six deputies patrols the county at any given time.

The California Highway Patrol (CHP) provides additional enforcement along State Highways and County roadways. The CHP offers other services as needed to support the safety for residents of the County. The nearest CHP office to the project site is located at 18437 Fifth Avenue in Jamestown.

Schools

The project site is within the Curtis Creek Elementary School District and the Sonora Union High School District.

Parks

Tuolumne County has a variety of recreational opportunities for the public, including Yosemite National Park, Stanislaus National Forest, State parks, and other Federal, State and Local government agencies such as the U.S. Bureau of Reclamation and the Bureau of Land Management. Community based recreation and park districts include the Tuolumne County Recreation Department and the City of Sonora Recreation Department. Tuolumne County operates and maintains approximately 341± acres of parks.

Recreational facilities in the area include Columbia State Park, the Heaven for Children playground and skatepark in Sonora, Tuttletown Recreation Area, and Standard Park. Columbia State Park offers hiking trails, picnic tables, museums and exhibits, and guided tours. The Heaven for Children playground offers a children's playground, skateboard park, and picnic and barbeque facilities. Tuttletown Recreation Area offers access to New Melones Reservoir, and includes camping facilities, a boat launch, day use area, and hiking trails. Standard Park offers baseball and soccer fields.

Analysis:

Fire Protection

Fire protection services would be provided via Tuolumne County Fire. The project has been reviewed by the Tuolumne County Fire Prevention Division (FPD) for consistency with the National Fire Code, California Fire Code, California Building Code, the Tuolumne County General Plan and Ordinance Code. Any future development on the project site will be subject to the rules and regulations contained in these documents.

The recommendations and conditions provided by the FPD include road construction standards and turn around areas to support fire apparatus, driveway construction requirements, defensible space requirements, the requirement of a fuel medication program approved by FPD, fire flow requirements, and gateway access requirements found in Titles 11, 12 and 15 of the Tuolumne County Ordinance Code and the California Fire Code. Additionally, neither the Tuolumne County Fire Prevention Division nor CalFire indicated the need for the development of a new facility based on development of the proposed project.

Application and enforcement of the above-mentioned code requirements would reduce impacts related to fire hazard and fire protection, which would not require the provision of new or physically altered fire protection facilities. Therefore, there would be a less than significant impact.

See the Wildfire Section below for additional analysis.

Police Protection

The Tuolumne County Sheriff's Division was notified of the proposed project. The Sheriff's Division did not provide a response on the project. The addition of biomass facility would not substantially impact existing police facilities or require additional facilities to be developed

Schools

The addition of biomass facility would not substantially impact existing educational facilities or require additional facilities to be developed. There would be no impact.

Parks

The addition of biomass facility would not substantially degrade existing recreational facilities or require additional facilities to be developed. There are a number of varying recreational opportunities located within the vicinity of the project site. There would be a less than significant impact.

Other Public Facilities

Other public facilities would include churches or other places of worship, hospitals, and government buildings. Because the project is a commercial development, the project will not significantly increase the demand to require development of new public facilities. Therefore, there is a less than significant impact.

Mitigation Measures: None Required

Mitigation Monitoring: Not Applicable

RECREATION:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental Setting:

Tuolumne County has a variety of recreational opportunities for the public, including Yosemite National Park, Stanislaus National Forest, State parks, and other Federal and State government agencies such as the U.S. Bureau of Reclamation and the Bureau of Land Management. Community based recreation and park districts include the Tuolumne County Recreation Department and the City of Sonora Recreation Department. Tuolumne County operates and maintains approximately 341± acres of parks.

The nearest recreational facilities to the project site include Standard Park, the Heaven for Children playground and skatepark in Sonora, Columbia State Park, Tuttletown Recreation Area, and Standard Park. Columbia State Park offers hiking trails, picnic tables, museums and exhibits, and guided tours. The Heaven for Children playground offers a children's playground, skateboard park, and picnic and barbeque facilities. Tuttletown Recreation Area offers access to New Melones Reservoir, and includes camping facilities, a boat launch, day use area, and hiking trails. Standard Park offers baseball and soccer fields.

Analysis:

a,b) Implementation Program 8.D.b. of the Tuolumne County General Plan requires certain new residential development of five units or more to participate in the provision of recreational facilities for their residents. The project does not include construction of residential units, therefore participation in Implementation Program 8.D.b. is not required. The project is not expected to overburden existing recreational facilities and will not require the construction of new recreational facilities or the expansion of existing facilities. Therefore, there would no impact.

Mitigation Measures: None Required.

Mitigation Monitoring: Not Applicable.

TRANSPORTATION:

Issues and Supporting Information Sources		*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/:					
a)	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b)	Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d)	Result in inadequate emergency access?	☐	☐	☒	☐

Environmental Setting:

The proposed project will be accessed via Camage Avenue. Camage Avenue is a privately maintained, publicly dedicated road. Camage Road is utilized to support other industrial uses, so the project would not detrimentally impact the use of the roadway system. The plans will be reviewed by the Engineering Division of the Department of Public Works. An Encroachment Permit would be required prior to work within the County road right-of-way

Public transit is provided by Tuolumne County Transit. Services are available in the mornings, afternoons, and evenings and are available five days a week. Tuolumne County also has a “dial-a-ride” program available on demand for the route serving the area. There are no sidewalks or bike lanes in the project vicinity.

Goals, policies, and implementation programs regarding Tuolumne County’s circulation system, including transit, roadway, bicycle, and pedestrian facilities, are contained within the Transportation Element in Chapter 4 of the 2018 General Plan. The Regional Transportation Plan (RTP), adopted by the Tuolumne county Transportation Council (TCTC), acts as the planning document to guide transit investments within Tuolumne County for the next 5 years. In addition, the project has been reviewed for consistency with applicable road standards found in Titles 11 and 15 of the Tuolumne County Ordinance Code and the California Fire Code.

Vehicle Miles Traveled

On August 4, 2020, the Board of Supervisors adopted CEQA thresholds regarding vehicle miles traveled (VMT) as required by Senate Bill (SB) 743. As stated in the legislation, upon adoption of the new guidelines, “automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any.”

While this project was deemed complete prior to adoption of the VMT thresholds, this subject is still discussed in this report. The Board of Supervisors adopted screening criteria for projects- if a project meets any of the screening criteria, the project’s impacts on VMT would be less than significant. Included in this screening criteria is residential projects located within a low VMT area defined by Tuolumne County Transportation Council VMT maps.

In addition to analyzing a project’s VMT generation, the County also analyzes projects based on vehicle trips per day or Level of Service, as required in the Tuolumne County General Plan. A site-specific traffic study is

required when traffic generation for a project exceeds 500 vehicle trips per day or 50 trips during peak hours as indicated in the *Tuolumne County General Plan and Regional Transportation Plan Evaluation and Analysis*.

Chapter 3.54 of the Ordinance Code states that an estimated 30 daily vehicle trips occur for every acre for or three daily vehicle trips (dvt) for every 1,000 square feet for "manufacturing/assembly/ agricultural processing" uses. Chapter 3.54 defines "manufacturing/assembly/ agricultural processing" as manufacturing or assembly facilities where the primary activity is the conversion of raw materials, products or parts into finished commodities for sale or distribution, which is appropriate for the proposed use.

Analysis:

a) Goals, policies, and implementation programs regarding Tuolumne County's circulation system, including transit, roadway, bicycle, and pedestrian facilities, are contained within the Transportation Element in Chapter 4 of the 2018 General Plan. Specific road design standards are found it Titles 11 and 15 of the Tuolumne County Ordinance Code. As the project is an infill project, it is not expected to conflict with any transportation related goals, policies, and implementation programs of the General Plan.

   The County's threshold for requiring a Traffic Study is 500 vehicle trips per day or 50 trips at peak hours. The estimated traffic generation is 30 daily vehicle trips occur for every acre for or three daily vehicle trips (dvt) for every 1,000 square feet for "manufacturing/assembly/ agricultural processing" uses. The estimated number of daily vehicle trips (dvt) is as follows: 9,000 ft^2 x 3 dvt/1,000 ft^2 = 27 daily vehicle trips.

   The Engineering Division of the CRA did not require a traffic study for the project because the anticipated level of traffic resulting from the project was not large enough to warrant a traffic study. The estimated traffic generation of the project is below the threshold and is therefore considered a less than significant impact.

b) The VMT threshold in this area is 34.7 VMT per employee for the East Sonora subarea. The site is located in an area where VMT per Capita is below the County Average, or 2-14% below County average. Because the project is in an area that is below the County average, it is classified as a "Low VMT" area on the TCTC VMT maps, and the project's impacts on VMT are less than significant.

c) Project plans that have been submitted to staff do not indicate that any hazardous or incompatible designs are proposed. The driveway plans and internal circulation roadways will be reviewed by the Engineering Division of the Department of Public Works and the Tuolumne County Fire Prevention Division to ensure compliance with Title 11 and Title 15 to ensure that the onsite circulation will not introduce hazardous or incompatible design. Therefore, there will be a less than significant impact.

d) The proposed driveways and internal roadways will be designed and constructed in accordance with all applicable regulations contained in Titles 11 and 15 of the Tuolumne County Ordinance Code and the California Fire Code to allow for sufficient emergency vehicle access, including width and clearance of the roadways, the surfacing of the roadways, and turnaround bulbs and hammerheads for emergency vehicles to be able to turn around. The Tuolumne County Fire Prevention Division reviewed the proposed project and provided conditions to ensure compliance with these requirements. These conditions have been incorporated into the projects' conditions of approval. Therefore, there will be a less than significant impact.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

TRIBAL CULTURAL RESOURCES:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant with Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or pursuant to Section 15064.5?	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Environmental Setting:

The project site is located in East Sonora, near the community of Standard. The project site consists of modifications made in the Twentieth Century consisted of access roads and industrial and commercial development. The Central Sierra Miwok settled in much of Tuolumne County are known to have lived in the area including the project site.

Regulatory Setting:

CEQA requires lead agencies to consider whether projects will affect tribal cultural resources. PRC 21074 states the following:

a) "Tribal cultural resources" are either of the following:
   1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
      A) Included or determined to be eligible for inclusion in the CRHR.
      B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
   2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

AB 52, signed by the California Governor in September of 2014, establishes a new class of resources under

CEQA: “tribal cultural resources.” It requires that lead agencies undertaking CEQA review must, upon written request of a California Native American tribe, begin consultation once the lead agency determines that the application for the project is complete, prior to the issuance of a notice of preparation of an EIR or notice of intent to adopt a negative declaration or mitigated negative declaration.

To date, two tribal entities have contacted the Tuolumne County Community Development Department to request formal consultation under the AB 52 process. The Chicken Ranch Rancheria of Me-Wuk Indians and Tuolumne Band of Me-Wuk Indians have requested formal consultation under the AB 52 process for projects subject to CEQA.

Formal consultation letters were sent to the contacts for the Chicken Ranch Rancheria of Me-Wuk Indians and Tuolumne Band of Me-Wuk Indians Tribes. AB 52 consultation letters we sent via certified mail on September 10, 2021. To date, neither Tribe has requested consultation or provided comments on the proposed project. project notification letters were sent to both Tribes during the initial project notification period.

Analysis:

a,b) In accordance with Assembly Bill 52, formal consultation letters were sent to the contacts for the Chicken Ranch Rancheria of Me-Wuk Indians and Tuolumne Band of Me-Wuk Indians Tribes. AB 52 consultation letters we sent via certified mail on September 10, 2021. Informal project notification letters were sent to both Tribes on April 20, 2021 during the initial project notification period. To date, neither Tribe has responded to the proposed project or requested consultation.

As indicated in the “Cultural Resources” Section above, the project site contains no cultural resources consisting of Native American resources. Mitigation Measures CUL-1 and CUL-2 would ensure protection of resources that are potentially unearthed or discovered during constructions activities.

Incorporation of Mitigation Measures CUL-1 and CUL-2 will result in a less than significant impact on Tribal Cultural Resources.

Mitigation Measures: See Cultural Resources section of this report.

Mitigation Monitoring: See Cultural Resources section of this report.

UTILITIES AND SERVICE SYSTEMS:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Would the Proposed Project/Action:				
a) Require or result in the relocation or construction of new or expanded water wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statues and regulations related to solid waste?	☐	☐	☒	☐

Environmental Setting:

Water and sewer system infrastructure and service will be provided by Tuolumne Utilities District (TUD).

Pacific Gas and Electric (PG&E) provides electric service to the project site. There is no natural gas consumption in Tuolumne County. There are existing telecommunications facilities that serve the area. Potential wireless internet providers include Xfinity, AT&T, Conifer Communications, Hughes Net and Cal.net. Cellular providers include Verizon and AT&T.

Cal Sierra Disposal Inc, which is owned by Waste Management, is responsible for garbage and recycling collection in the Sonora area and would provide weekly trash service to the site. Chapter 8.05 of the Tuolumne County Ordinance Code contains the County's regulations for refuse, rubbish, and recycling handling and storage. All of the solid waste generated within the County is processed at one of the transfer stations where solid waste is sorted to remove recyclables and hazardous materials from the waste stream. Residual waste is transported to the Highway 59 Landfill located in Merced. The maximum capacity of the Highway 59 Landfill is 30,012,352 cubic yards.

Cal Sierra Disposal operates a buy-back center at 14959 Camage Avenue, in East Sonora. Untreated wood and yard waste are presently accepted by Cal Sierra Disposal at its Earth Resources Facility located at 14909 Camage Avenue. Such material is accepted for a fee and is ground up or chipped and sold as compost or any other uses deemed appropriate for such material.

Analysis:

a) The project site is adjacent to utilities that can serve the project. Storm water drainage is provided via natural drainages and channels. The project will not require the construction of new or expanded water wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities. Therefore, there will be a less than significant impact.

b) The project site will be served by the Tuolumne Utilities District. TUD has reviewed the proposed project and has not indicated that there are limited water supplies or that they are unable to serve the project. A

will serve letter will be required prior to issuance of a building permit. The impact will be less than significant.

c) The project site will be served by the Tuolumne Utilities District. TUD has not indicated that there are wastewater capacity limitation that would render them unable to serve the project. A will serve letter will be required prior to issuance of a building permit. The impact will be less than significant.

d,e) Cal Sierra Disposal Inc provides weekly trash service to the area and would dispose of waste at the Highway 59 Landfill. The Highway 59 Landfill is below its maximum capacity; therefore, there is capacity to serve the project. Any future construction on the project site or land use would be required to comply with all applicable Federal, State, and Local statutes and regulations related to solid waste. Conditions have been added to the project to ensure compliance with the provisions of Chapter 8.05 of the TCOC, which contains the County's regulations for the storage and handling of solid waste. Therefore, there would be a less than significant impact.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

WILDFIRE:

Issues and Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Proposed Project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Environmental Setting:

In 2018, a Multi-Jurisdictional Hazard Mitigation Plan (Plan) for Tuolumne County was prepared to provide mitigation solutions to minimize each jurisdiction's vulnerability to the identified hazards and ultimately reduce both human and financial losses subsequent to a disaster. The Plan includes existing information on typical hazards, such as earthquakes, flooding, and fire, and provides risk assessments of each hazard and the potential for occurrence within the County. Specific wildland fire objectives provided in the Plan include vegetation management, code enforcement, GIS mapping, and compliance with the planning process.

Mitigation actions provided in the Plan range from improving water supply systems and conveyance systems for potential fire needs, initiating fuel thinning and chipping projects in high-priority areas, to updating existing and preparing new fire protection and evacuation plans. The Plan states that Tuolumne County Fire Protection District/CAL FIRE along with seven fire districts and one city fire department provide life and property emergency response. In addition to services traditionally provided by most fire protection agencies nationwide, these agencies work cooperatively with the U.S. Forest Service and the National Park Service in providing wildfire response in Tuolumne County. Although there are existing plans, programs, ordinances, and regulations in place within the County, wildland fire risks and the potential for future fire hazards occurring within the County is considered high (Tuolumne County 2018).

Tuolumne County does not have a static emergency plan or evacuation plan due to the dynamic nature of emergencies. In the event of an emergency, the Tuolumne County Sheriff Office is the responsible entity for declaring and directing evacuations in the case of emergencies. The Sherriff's Department will inform members of the public via the Emergency Notification System, local media, and door-to-door when feasible.

The project site is located within a State Responsibility Area (SRA) and is rated as high fire hazard severity zone. This rating is based on factors of slope, vegetation, and annual summer weather patterns. These zones, referred to as Fire Hazard Severity Zones (FHSZ), provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. The zones also relate to the requirements for building codes designed to reduce the ignition potential to buildings in the wildland-urban interface zone.

Analysis:

a) Tuolumne County does not have a static emergency plan or evacuation plan due to the dynamic nature of emergencies. Tuolumne County does not have any designated evacuation routes because fires can

happen anywhere and may block specific roads and certain areas may not be safe for travel. The Tuolumne County Sheriff Office is the responsible entity for declaring and directing evacuations in the case of emergencies. The Sherriff's Department will inform members of the public via the Emergency Notification System, local media, and door-to-door when feasible of where the wildfire is located, which routes are safe to use, and which locations are safe to seek refuge from the fire. Generalized emergency information is also contained within the adopted Multi-Jurisdictional Hazard Mitigation Plan.

In an emergency, Camage Avenue road would be utilized by workers at the project site. From there, residents could travel towards Tuolumne Road or Standard Road towards State Route 108, depending on which route was the safest for travel. The addition of project would not significantly impact the ability for roads in the vicinity of the project site to be used as evacuation routes in the event of an emergency. Approval of this project would result in a less than significant impact on Tuolumne County's emergency or evacuation plans.

b,c) The slopes on the site are relatively flat. Due to the location of the project site to existing roadways and other developed areas, it is unlikely that the project would exacerbate wildfire risks.

The project has been reviewed by the Tuolumne County Fire Prevention Division (FPD) for consistency with the National Fire Code, California Fire Code, California Building Code, the Tuolumne County General Plan and Ordinance Code. Any future development on the project site will be subject to the rules and regulations contained in these documents. Prior to the issuance of a building permit, the following conditions will be required to be met:

- The required fire flow for the proposed building is 1,500 gpm at 20-psi for 2 hours with Type V –B construction. If the building's construction type changes, the required fire flow shall also change. Fire flow is determined by the square footage of the largest building on site including all horizontal projections. A reduction of up to 75%, as approved, is allowed when the building is provided with an approved automatic sprinkler system. The resulting fire-flow shall not be less than 1,500 gallons per minute. (CFC Section 508.3)
- The required fire flow shall be on site, tested and approved by Tuolumne County Fire Prevention prior to the issuance of any building permits. (TCOC Chapter 15.20.010)
- County Standard Dry Barrel Hydrant shall be available within 300 feet of the furthest portion of all proposed buildings measured by way of drivable access. Tuolumne County Fire Prevention shall approve all hydrant plans, locations and installations.(TCOC Chapter 15.20)
- A letter from Tuolumne Utilities District (TUD) shall be provided to Tuolumne County Fire Prevention confirming that the required fire flow is available to the project site prior to issuance of any building permits.
- An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where the fire area exceeds 2,500 square feet. Submit plans and calculations for the Automatic Engineered Fire Sprinkler System to Fire Prevention for review and approval prior to the issuance of a building permit or the installation of any portion of the system. Plan check fees are assessed upon completion of review. (TCOC Section 15.20.10)

The Tuolumne County Fire Prevention Division also provided conditions to ensure that the internal roadways and driveways would meet applicable fire code regarding width, clearance, surfacing, and to prohibit obstructions of roadways.

The following Policies of the 2018 Tuolumne County General Plan apply to the proposed project:

Policy 9.A.1: *Actively involve fire protection agencies within Tuolumne County in land use planning decisions.*

The Tuolumne County Fire Prevention Division has been consulted with during the processing of the

application. The Tuolumne County Fire Prevention Division provided conditions which have been incorporated into the projects' conditions of approval, as discussed above.

Policy 9.E.3: *Require new development to be consistent with State and County regulations and policies regarding fire protection.*

The development and operation of the site will be consistent with all applicable State and County regulations and policies regarding fire protection. Road and driveway improvement plans will be reviewed by the Tuolumne County Fire Prevention Division and Engineering Division of the Department of Public Works to ensure compliance with the California Fire Code and Titles 11 and 15 of the TCOC. All building permits will be reviewed for compliance with the California Building Code and Fire Code.

Policy 17.E.2: *Require the maintenance of defensible space setbacks in areas proposed for development if wildland fire hazards exist on adjacent properties.*

The project site is required to comply with all applicable defensible space regulations.

Policy 17.E.3: *Require new development to have adequate fire protection and to include, where necessary, design and maintenance features that contribute to the protection of the County from the losses associated with wildland fire.*

Conditions provided by the Tuolumne County Fire Prevention Division have been incorporated into the projects' conditions of approval to minimize fire hazards and to contribute to the protection of the County from the losses associated with wildland fire.

The incorporation of these conditions and compliance with the National Fire Code, California Fire Code, California Building Code, the Tuolumne County General Plan, and Tuolumne County Ordinance Code would reduce the risk of wildfire and would not exacerbate wildfire risks or the risk of uncontrolled spread of wildfire. Project development would not require the installation or maintenance of associated infrastructure. Therefore, there would be a less than significant impact.

d) As discussed under "Geology and Soils," and "Hydrology and Water Quality," runoff occurs naturally at the project site and flooding and landslide events are not common within the project area. Once operational, onsite drainage would not affect offsite drainage conditions, including runoff that naturally occurs to Curtis Creek. The project site and surrounding areas have not been subject to burns such that downslope areas would be affected by project development. Impacts would be less than significant.

Mitigation Measures: None required.

Mitigation Monitoring: Not applicable.

MANDATORY FINDINGS OF SIGNIFICANCE:

Supporting Information Sources	*Potentially Significant Impact*	*Less-than-Significant With Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*
Proposed Project/Action:				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Analysis:

a) As discussed under "Biological Resources," the project site provides suitable habitat for nesting birds. Mitigation has been included that requires preconstruction surveys to identify the presence of these species, avoid or remove them from the construction area (if they are present), and establish disturbance buffers to ensure they are not disturbed during construction.

As discussed in "Air Quality" section, there is potential for impacts to sensitive receptors. Mitigation has been included to reduce impacts to a less than significant level and to ensure the facility would operate within applicable Federal, State, and Local thresholds.

As discussed in the "Cultural Resources" section, there is the potential for unmarked, previously unknown Native American or other graves to be present and be uncovered during construction activities. Mitigation has been included that would ensure that proper procedures would be followed in the event of the discovery of previously unknown human remains.

As discussed in the "Greenhouse Gas" section, there is a potential for impacts from greenhouse gases. Mitigation has been included to reduce impacts to a less than significant level.

For the reasons above, all impacts would be a less-than-significant impact with mitigation incorporated.

b) As discussed throughout the "Environmental Checklist," all potentially significant impacts would be reduced to a less-than-significant level with mitigation. In addition, aesthetic, biological resources, cultural and tribal cultural resources, greenhouse gas emissions, noise, and recreation impacts discussed above would result from temporary construction activities and would be limited to the immediate project site, and, therefore, would not combine with impacts from other past, present, and probable future development. Noise-related impacts are also localized and limited to the immediate project vicinity. Operation of the project would be limited to noise similar in nature to the commercial and industrial land uses in the area. The project's potential contribution to significant cumulative impacts would not be considerable and this impact would be less than significant.

c) As discussed above in the "Hazards and Hazardous Materials," construction activities would require the

use of hazardous materials such as fuels, lubricants, and solvents. However, all construction activities would be required to comply with existing regulations that would limit exposure of nearby sensitive receptors and construction workers to hazardous materials. Operation of the project would not include the use or storage of any hazardous material and would not result in adverse effects on people. This impact would be less than significant.

Mitigation Measures: See the Mitigation Monitoring and Reporting Program Table Below.

Mitigation Monitoring: See the Mitigation Monitoring and Reporting Program Table Below.

Table 8: Mitigation Monitoring and Reporting Program

Mitigation Measure	When Implemented	Monitored by	Verified by
AES-1: A lighting plan shall be submitted and approved by the Land Use and Natural Resources Division prior to the issuance of a building permit by the Building and Safety Division. Any exterior lighting shall incorporate the following features: direct the light downward to the area to be illuminated, install shields to direct light and reduce glare, utilize low rise light standards or fixtures attached to the buildings, and utilize low or high pressure sodium lamps instead of halogen type lights.	The submittal and approval of a lighting plan will be required prior to the issuance of a Building Permit issued by the Building and Safety Division of the Community Development Department and will be verified by the Land Use and Natural Resources (LUNR) Division. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.	Tuolumne County Community Development Department (CDD)	Land Use and Natural Resources (LUNR) Division
AQ-1: The project applicant shall submit annual monitoring data to the Tuolumne County Air Pollution Control District for applicable pollutants. Testing data shall also be submitted 30-60 days after the initial development and operation of the facility. If the data exceeds any applicable Federal, State, or Local thresholds, the applicant shall install necessary best available control technology (BACT) to bring the facility into compliance.	Compliance with Mitigation Measure AQ-1 will be required within 30-60 days of initial development and operation of the facility and will be verified by the Tuolumne County Air Pollution Control District (TCAPCD). Additionally, annual compliance with Mitigation Measure AQ-1 will be required and verified by the TCAPCD. Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.	Tuolumne County Air Pollution Control District (TCAPCD)	TCAPCD
BIO-1: For construction activities expected to occur during the nesting season of raptors (February 1 to August 31) and migratory birds, a pre-construction survey by a qualified biologist shall be conducted to determine if active nests are present on or within 500 feet of the project site where feasible. Areas that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. The survey shall be conducted by a qualified biologist no more than seven days prior to the onset of construction. If no active nests are identified during the pre-construction survey, no further mitigation is necessary. If construction activities begin prior to February 1, it is assumed that no birds will nest in the project site during active construction activities and no	The nesting bird surveys are required prior to ground disturbance or construction activities on site and would be verified by the LUNR Division prior to the issuance of a grading permit issued by the Department of Public Works or building permit issued by the Building and Safety Division. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.	CDD/ Tuolumne County Department of Public Works (DPW)	LUNR Division

pre-construction surveys are required. If at any time during the nesting season construction stops for a period of two weeks or longer, pre-construction surveys shall be conducted prior to construction resuming. If active nests are found on or within 500 feet of the project site, the applicant shall notify CDFW and explain any additional measures that a qualified biologist plans to implement to prevent or minimize disturbance to the nest while it is still active. Depending on the conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the 500-foot buffer without impacting the breeding effort. Appropriate measures may include restricting construction activities within 500 feet of active raptor nests and having a qualified biologist with stop work authority monitor the nest for evidence that the behavior of the parents have changed during construction. Nests that are inaccessible due to private property restrictions shall be monitored using binoculars from the nearest vantage point. Appropriate measures would be implemented until the young have fledged or until a qualified biologist determines that the nest is no longer active. Construction activities may be halted at any time if, in the professional opinion of the biologist, construction activities are affecting the breeding effort.			
BIO-2: Prior to initiation of ground disturbing activities, all areas within 50-feet Open Space zoning shall be clearly flagged. Orange fencing shall be placed along the Open Space zoning.	The orange flagging and fencing are required prior to ground disturbance or construction activities on site and would be verified prior to the issuance of a grading permit issued by the Department of Public Works or building permit issued by the Building and Safety Division. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.	CDD/DPW	Engineering Division and Building and Safety Division
BIO-3: The project applicant should implement construction best management practices (BMPs) when operating in the southern portion	The BMPs are required prior to ground disturbance or construction activities on site and would be verified prior to the issuance of	CDD/DPW	Engineering Division and Building and

of the project site adjacent to the riparian mixed hardwood habitat and Curtis Creek. BMPs will include those required by the project Stormwater Pollution Prevention Plan and the Tuolumne County Biological Resources Review Guide, and may include the following: • Install fiber rolls, a sandbag barrier, or a straw bale barrier between the active construction site and the riparian mixed hardwood habitat/Curtis Creek to intercept runoff and remove sediment from runoff. • Maintain all diesel- and gasoline-powered equipment per manufacturer's specifications, and in compliance with all state and federal emissions requirements. Prior to the start of project activities, inspect all equipment for leaks and inspect everyday thereafter until equipment is removed from the site. Any equipment found leaking will be promptly removed to prevent inadvertent discharge into Curtis Creek. • Equipment storage, working areas, and spoils should be limited to project staging areas. • Equipment should not be serviced within areas within 100 feet of riparian mixed hardwood habitat and Curtis Creek, or in any locations that would allow grease, oil, or fuel to pass into Curtis Creek. • Disturbed soils and all other disturbed areas should be stabilized as soon as possible and before the rainy season begins (but no later than October 15th of the construction year) in accordance with the County and Caltrans landscape guidelines and specifications. • Prior to working in or near any stream, equipment should be thoroughly cleaned to prevent introduction of invasive aquatic species.	a grading permit issued by the Department of Public Works or building permit issued by the Building and Safety Division. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.		Safety Division

BIO-4: Prior to operation of the pellet plant, including bringing any woody material onto the site, a fence shall be constructed along the Open Space zoning to prohibit woody material from entering the riparian area.	Required prior to operation of the site and will be verified by the LUNR Division prior to a Final Inspection by the Building and Safety Division. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.	CDD	LUNR Division
CUL-1: In the unlikely event that buried cultural deposits (e.g., prehistoric stone tools, milling stones, historic glass bottles, foundations, cellars, privy pits) are encountered during project implementation, all ground-disturbing activity within 100 feet of the resources shall be halted and a qualified professional archaeologist (36 Code of Federal Regulations [CFR] 61) shall be notified immediately and retained to assess the significance of the find. Construction activities could continue in other areas. If the find is determined to be significant by the qualified archaeologist (i.e., because it is determined to constitute either a historical resource or a unique archaeological resource), the archaeologist shall develop appropriate procedures to protect the integrity of the resource and ensure that no additional resources are affected. Procedures could include but would not necessarily be limited to preservation in place, archival research, subsurface testing, or contiguous block unit excavation and data recovery.	Required during construction activities on site. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.	CDD	LUNR Division
CUL-2: In accordance with the California Health and Safety Code (CHSC), Section 7050.5, and the Public Resources Code (PRC) 5097.98, regarding the discovery of human remains, if any such finds are encountered during project construction, all work within the vicinity of the find shall cease immediately, a 100-foot-wide buffer surrounding the discovery shall be established, and the County shall be immediately notified. The County Coroner shall be contacted immediately to examine and evaluate the find. If the coroner determines that the remains are not recent and are of Native American descent, the County Coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely	Required during construction activities on site. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.	CDD	LUNR Division

<table>
<tr><td>Descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.</td><td></td><td></td><td></td></tr>
<tr><td>NOI-1: Hours of exterior construction on the project site shall be limited to 7:00 a.m. to 7:00 p.m. Monday through Saturday. Exterior construction shall be prohibited on Sunday and County holidays.</td><td>Required during construction activities on site. Will be monitored through citizen complaints. Confirmed violations will be referred to the Code Compliance Officer for processing consistent with established code compliance procedures outlined in Chapter 1.10 of the Ordinance Code. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.</td><td>CDD</td><td>Building and Safety Division</td></tr>
<tr><td>NOI-2: The noise levels generated by the project shall be restricted to the following exterior noise limits as measured at the property line:

<table>
<tr><th rowspan="2">Zoning Classification of Receiving Property</th><th colspan="2">Noise Level (dB) of Sound Source</th></tr>
<tr><th>Daytime (7 a.m. to 10 p.m.)</th><th>Nighttime (10 p.m. to 7 a.m.)</th></tr>
<tr><td>MU, R-3, R-2, R-1, RE-1, RE-2, RE-3, RE-5, RE-10, C-O, C-1, C-S, BP</td><td>50 L_{eq}. (1 hour)[1]</td><td>45 L_{eq}. (1 hour)[1]</td></tr>
</table>
</td><td>Required as an on-going condition. Will be monitored through citizen complaints. Confirmed violations will be referred to the Code Compliance Officer for processing consistent with established code compliance procedures outlined in Chapter 1.10 of the Ordinance Code. A Notice of Action will be recorded to advise future owners of the required mitigation measures and the responsibility to comply with said measures.</td><td>CDD</td><td>LUNR Division</td></tr>
</table>

AGENCIES CONTACTED:

Tuolumne County:
Community Development Department, Building and Safety Division
Community Development Department, Environmental Health Division
Department of Public Works, County Surveyor
Department of Public Works, Engineering Division
Department of Public Works, Solid Waste Division
Department of Public Works, Roads
Fire Department, Fire Prevention Division
Sheriff's Department
Sonora Union High School District
Soulsbyville Elementary
Superintendent of Schools
Tuolumne County Transportation Council

State of California:
Department of Fish and Wildlife
Department of Forestry and Fire Protection
Department of Highway Patrol
Department of Transportation, Caltrans District 10
Regional Water Quality Control Board

Other:
AT&T
Audubon Society
Central Sierra Environmental Resource Center
Chicken Ranch Rancheria of Me-Wuk Tribal Council
Citizens for Responsible Growth
Comcast Cable Communications
Pacific Gas & Electric Company
Sierra Club, Tuolumne Group
Jamestown School District
Sonora Union High School District
Tuolumne County Association of Realtors
Tuolumne County Farm Bureau
Tuolumne Heritage Committee
Tuolumne Me-Wuk Tribal Council
Tuolumne Utilities District
United States Fish and Wildlife Service
U.S. Army Corp of Engineers
U.S. Postal Service
Willow Springs Homeowners Association

SOURCES REVIEWED:

Tuolumne County:
2018 General Plan
EIR for the 2018 General Plan Update
Zoning Ordinance (Title 17)
Land Divisions Ordinance (Title 16)
Road Standards (Title 11)
Connecting Roadways (Chapter 12.04)
Grading Ordinance (Chapter 12.20)

Water and Sewers (Title 13)
Construction Codes (Chapter 15.04)
Fire Code (Chapter 15.08)
Fire Safety Standards (Chapter 15.20)
Traffic Impact Mitigation Fees (Chapter 3.54)
County Service Impact Mitigation Fees (Chapter 3.50)
Rubbish, Refuse and Recyclables (8.05)
Geotechnical Interpretive Maps
General Plan Maps
Wildlife Habitat Maps
Tuolumne County Wildlife Handbook
Wildlife Aerial Photography
Fire Hazard Maps
Deer Herd Maps
Regional Transportation Plan
Historic/Archeological Index to Studies

Other:

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California Public Utilities Commission. 2018. California Renewables Portfolio Standard (RPS). Available: https://www.cpuc.ca.gov/rps/. Accessed September 9, 2020.

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Natural Investigations Company. 2021. Cultural Resources Inventory Report and Paleontological Resources Assessment for the Tuolumne Bioenergy, Inc. Project, Tuolumne County, California.

Natural Diversity Data Base Maps, Department of Fish & Wildlife

Office of Environmental Health Hazard Assessment. 2015 (February). *Air Toxics Hot Spots Program: Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments.* Available: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. Accessed September 9, 2020.

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Tuolumne County. 2007. *Tuolumne County Water Quality Plan.* Available: https://www.tuolumnecounty.ca.gov/DocumentCenter/View/7570/Tuolumne-County-Water-Quality-Plan?bidId=. Accessed September 9, 2020.

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PREPARED BY: Natalie Rizzi, Senior Planner
Quincy Yaley, AICP, Community Development Director
Steve Gregory, Fire Prevention Bureau
Dave Ruby, Department of Public Works
Brian Bell, Chief Building Official

Appendix A:
Air Quality Study

Greenhouse Gas Study

for the

Biomass Utilization Fund,

Tuolomne BioEnergy Inc., Woody Biomass Pellet Manufacturing Facility

Prepared By:

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Prepared For:

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West Sacramento, CA 95691

December 2021

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Appendices

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1 INTRODUCTION

Ascent Environmental (Ascent) is conducting a comprehensive greenhouse gas (GHG) emissions assessment for the Tuolumne Bioenergy Woody Biomass Pellet Manufacturing Facility (Project) to determine the significance of the Project's estimated emissions to support environmental review pursuant to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The Project proposes to construct and operate a woody biomass pellet manufacturing facility in Sonora, CA. The biomass feedstocks would be sourced from low-market value biomass piles accumulated at and left over from various forestry thinning and logging sites within 40 miles of the Project site. Without the Project, these biomass piles would otherwise be subject to open pile burning.

This report presents the methodology and results of the estimated the GHG emissions from the Project in comparison with emissions offset through the avoidance of open pile burning of the same biomass feedstock.

2 PROJECT DESCRIPTION

The project proposes to construct and operate a woody biomass pellet manufacturing facility (pellet mill) on a 3.27 acre leased property in an industrial business park in Sonora, CA, located in Tuolumne County. According to the California Biomass Utilization Facility Feedstock Supply Report, the project would have access up to 44,000 bone dry tons (BDT) of biomass annually (Department of Housing and Community Development 2018: Table 5.3). The pellet mill is expected to produce between 29,000 and 31,000 tons of wood pellets per year, with a maximum production capacity of 31,200 tons per year. Approximately 9,293 BDT of additional biomass would be used to fuel the on-site combined heat and power (CHP) system proposed for the facility. In total, the facility would consume between 38,293 and 40,493 BDT of biomass. The CHP system will provide heat and electricity for biomass drying, the pellet mill, and other on-site energy needs (e.g., office space, outdoor lighting). The biomass on-site would also be handled via enclosed electrical receivers and conveyers and off-road material handling equipment. The pellet mill would have the ability to run 24 hours per day (up to 8,000 hours per year), 7 days per week, and 333 days per year. Haul trucks are assumed to operate 5 days per week and 42 weeks per year (240 days per year).

The project would source its biomass from small understory trees, shrubs, and limbs and branches left over from forest thinning and fire fuel reduction on U.S. Forest Service and private lands within 40 miles of the project site. In the absence of the project, under existing conditions, the 44,000 BDT of biomass is pile burned annually, generating criteria air pollutants and greenhouse gas (GHG) emissions. GHG emissions from the project are evaluated in a separate Greenhouse Gas Study for this project.

Under the project, the biomass piles would be collected and chipped at two different zones, located up to 20 miles (Zone 1) and 40 miles (Zone 2) from the project site. Deliveries would be made to the project site five days per week. At the project site, the chipped biomass would be dried in a biomass dryer, heated by the CHP system, until it reaches a 12 percent moisture content. About 24 percent of the dried biomass would be used to fuel the CHP system and the remaining biomass would be processed in the pellet mill to manufacture wood pellets. Most material handling will be done via electric conveyer belts and receivers. On-site material handling would also include the use of off-road equipment, such as a yard tractor with a hooklift trailer to dump bins into a receiver or stack and store pallets of finished bagged pellets. The manufactured wood pellets would then be shipped for retail distribution. Waste ash (approximately 700 tons per year) would also be disposed at a compost facility less than one mile from the project site.

The project would purchase all new off-road equipment and on-road trucks to support the operations.

3 SIGNIFICANCE CRITERIA

Impacts from the Project would be significant if the project would exceed either of the following significance criteria. Because no applicable local or federal criteria have been adopted for GHG emissions for this type of facility, significance criteria are based on Appendix G of the State CEQA Guidelines, which account for the context and intensity of direct, indirect, and cumulative effects:

- generate GHGs, either directly or indirectly, that may have a significant impact on the environment; or
- conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

As of May 2021, Tuolumne County and the Tuolumne County Air Pollution Control District (TCAPCD) does not have an adopted GHG threshold for the purposes of determining significance under CEQA or NEPA. California Air Resources Board's *California's 2017 Climate Change Scoping Plan* (Scoping Plan) states that, for project-level GHG thresholds,

> *Absent conformity with an adequate geographically-specific GHG reduction plan as described in the preceding section above, CARB recommends that projects incorporate design features and GHG reduction measures, to the degree feasible, to minimize GHG emissions. Achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development. (CARB 2017:101)*

As such, the project would be considered significant if it results in a net increase in GHG emissions compared to existing conditions. This threshold is specific to the proposed Project and may not necessarily apply to other projects in the county.

4 METHODOLOGY AND RESULTS

Construction and operation of the Project would result in GHG emissions. The primary GHGs of concern generated by the Project would be carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These GHGs are collectively represented as "carbon dioxide equivalents" (CO_2e), using global warming potential (GWP) factors recommended in the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report to be consistent with the State's GHG inventory methodology (CARB 2021a). For example, a gas with a GWP of 10 is 10 times more potent than CO_2 over 100 years. The use of GWP allows GHG emissions to be reported using CO_2 as a baseline. Carbon dioxide equivalents are the sum of each GHG multiplied by its associated GWP. This essentially means that 1 metric ton of a GHG with a GWP of 10 has the same climate change impacts as 10 metric tons of CO_2. For CH_4 and N_2O, the GWP factors recommended by IPCC's Fourth Assessment Report are 25 and 298, respectively.

Detailed calculations and assumptions can be found in Appendix A.

4.1 CONSTRUCTION EMISSIONS

The Project would construct the proposed woody biomass pellet manufacturing facility on a 3.27-acre lot. The existing lot is undeveloped and has minimal vegetative cover. Construction of the proposed facilities would require site preparation and grading activities. Based on the Project site plan, the Project would construct a 4,000 square foot (sf) manufacturing facility, a 5,000-sf covered outdoor storage area, two 100-foot diameter chip storage silos, outdoor standalone equipment (e.g., dryer, battery, bins, chip receivers, furnace), 10,200 sf of flatwork concrete, 3,300 sf of landscaped area, 3,600 sf of pavement, and a 22,000-sf graveled storage yard. According to TBI, the outdoor standalone equipment is assumed to come preassembled and would require cranes for equipment placement (TBI 2021). Construction is assumed to begin in February 2022. The Project site plan is included in Appendix B.

GHG emissions from construction of the proposed Project were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 (California Air Pollution Control Officers Association 2016). A newer version of

CalEEMod (version 2020.4.0) is available, but was released on June 23, 2020, after the first draft of the Greenhouse Gas Study was already completed. Based on the information and assumptions described above, CalEEMod estimated a construction duration period of approximately four months, with construction activities ending by June 2022. Construction activities were assumed to occur for 8 hours per day and 5 days per week. The proposed land uses were matched to the most similar land use types available in CalEEMod, which CalEEMod uses to estimate default modeling assumptions (e.g., the construction phasing durations, number of equipment, equipment hours per day, and worker trips). These assumptions are shown in the CalEEMod output remarks in Appendix C. Material hauling emissions during the grading phase were adjusted to account for the gravel that would be needed for the storage yard, assuming a depth of eight inches and an average weight of 1.35 tons per cubic yard of gravel (Inch Calculator 2021). Additional modeling details can be found in Appendix C.

Based on the modeling conducted, construction activities are estimated to result in 92 metric tons (MT) of MT CO_2e over the four-month construction period. In absence of guidance from the TCAPCD and in light of recommendations from other air districts, the construction emissions were amortized this across an average 30-year project lifetime, resulting in an annualized emissions of 3 MT CO_2e per year (Placer County 2016). Based on the modeling conducted, Table 1 shows the estimated annual and amortized GHG that would result from construction activities over the four-month construction period.

Table 1 Estimated Construction Criteria Air Pollutant Emissions (Annual)

Phase	CO_2e (MT/year)
Site Preparation	1.61
Grading	3.46
Building Construction	78.39
Paving	6.64
Architectural Coating	1.50
Construction Total (MT/year)	91.60
Amortized Construction Emissions over 30 years (MT/year)	3.05

Note: CO_2e = carbon dioxide equivalent, MT = metric tons, PM_{10} = inhalable particle with diameters of 10 micrometers or smaller, CO = carbon monoxide, TCAPCD = Tuolumne County Air Pollution Control District, NA = not applicable, lb = pounds.

Source: Modeled by Ascent Environmental., Inc. in 2021

4.2 OPERATIONAL EMISSIONS

Operation of the proposed Project would involve chipping at the forest biomass pile collection sites, hauling the chips to the pellet mill, drying and milling of the chips at the mill, and delivery of the wood pellets for retail sale. These activities would result in GHG emissions from the operation of diesel chipping and biomass handling equipment, worker trips to the collection sites and pellet mill, diesel truck haul trips between the biomass collection sites, pellet mill, and retail distribution; and combustion of a portion of the biomass in a CHP system to provide heat and electricity to power the pellet mill and other accessory buildings and lighting. The proposed Project would not use natural gas or grid-based electricity but would operate a standby generator for initial system start-up and emergencies. Pellet mill operations are assumed to occur 33 days per year and up to 8,000 hours per year, and the first full year of operation would begin in 2023. Haul trucks and field operations are assumed to operate 240 days per year, or 5 days per week and 48 weeks per year.

The modeling assumptions for the off-road mobile sources, on-road mobile sources, biomass combustion at the pellet mill, and offset emissions from avoided pile burning are described in the following sections. Detailed calculations and assumptions can be found in Appendix A.

4.2.1 Off-Road Mobile Sources

Off-road mobile sources used during project operations include diesel-fueled chippers, forwarders, tractors, and other material handling equipment. Based on information provided by TBI, equipment at the forest collection sites would include all new 500-horsepower (hp) Bruks chippers attached to 285-hp Ponsse forwarders and one 217-hp JBC 4220 field tractor (TBI 2021). During biomass collection, three chippers and three forwarders are assumed to operate, one set in Zone 1 and two sets in Zone 2, based on the amount of biomass available in each Zone (TBI 2021). This equipment would operate 8 hours per day and 240 days per year. During pellet mill operations, diesel off-road equipment, such as tractors, are assumed to handle material at various stages of the manufacturing process (TBI 2021). (Patenaude pers. comm., 2021a, 2021b).

The proposed off-road equipment was matched with emission factors from the CARB's OFFROAD 2017-ORION model, version 1.0.1 (CARB 2021b), corresponding to the equipment type, 2022 model years, and horsepower rating, to quantify the GHG emissions from off-road mobile sources. The activity and equipment assumptions, emission factors, and calculated emissions are shown in Table 2. Additional modeling information is available in Appendix A.

Table 2 Off-Road Mobile Sources Activity and Emissions

Activity	Off-Road Equipment	Number of Equipment	OFFROAD 2017 Engine Bin (hp)	Hours per year per equipment	Load Factor[3]	Emissions Factor (kg CO_2/hr)	Emissions (MT CO_2/year)
Forest Biomass Collection	Chipper (450 hp)	3	600	2080	0.4	75.7[1]	188.9
	Forwarder (200 hp)	3	175	2080	0.4	63.4[2]	62.4
Forest Biomass Collection Subtotal							**251.2**
Pellet Mill Operations	Yard Tractor	1	175	2080	0.4	4.5[4]	3.7
	Field Tractor	1	175	2080	0.4	4.5[4]	1.5
	Bin Trucks	1	300	2080	0.4	42.3[5]	7.3
Pellet Mill Operations Subtotal							**12.6**
Total Off-Road Mobile Sources							**263.8**

Note: kg = kilograms, MT CO_2e = metric tons of carbon dioxide, hp = horsepower

[1] Based on factors for the "Industrial - Other Material Handling Equipment" equipment type in OFFROAD 2017.

[2] Based on factors for the "OFF - Logging – Skidders" equipment type in OFFROAD 2017.

[3] The load factors are based on assumptions for material handling equipment and off-highway trucks, as assumed in Table 3.3 of Appendix D of the CalEEMod User's Guide.

[4] Based on factors for the "Agricultural - Agricultural Tractors" equipment type in OFFROAD 2017.

[5] Based on factors for the "ConstMin - Off-Highway Trucks" equipment type in OFFROAD 2017.

Source: Modeled by Ascent Environmental. Inc., in 2021 based on information received from TBI (TBI 2021).

4.2.2 On-Road Mobile Sources

On-road mobile sources include worker trips (to the forest biomass collection sites and the pellet mill) and diesel haul truck trips (between the forest biomass collection sites, the pellet mill, and retail sales distribution). For worker trips, each Zone is assumed to have 6 workers and the pellet mill is assumed to employ 25 workers (TBI 2021). Based on the default worker commute assumptions in CalEEMod, each worker's commute trip is assumed to be an average of 16.8 miles. The calculated vehicle miles traveled (VMT) for worker commute trips were then applied to the average GHG emission factors for light duty vehicles in Tuolumne County for calendar year 2023, as derived from CARB's EMission FACtor model (EMFAC), version EMFAC 2021 (CARB 2021c).

Emissions from haul trucks include exhaust from on-road transportation and from idling during loading and unloading at each terminal site. Haul truck activities are divided into two categories: transportation from the biomass collection site to the pellet mill and transportation from the pellet mill to retail sales and ash disposal. The number of

haul trips for each category was calculated based on the tonnage of material needed to be transported, the capacity of the trucks, and the trip lengths. The project is anticipated to haul up to 12,821 BDT of biomass from Zone 1 and up to 27,473 BDT from Zone 2 annually to the project site. BDT refers to the equivalent tonnage of the biomass at zero percent moisture. Assuming the collected green biomass has a moisture content of 35 percent, the haul trucks are assumed to carry up to 19,724 tons of green biomass from Zone 1 and up to 42,265 tons from Zone 2. In all cases, trucks are assumed to carry 20 tons per load. The trip lengths from Zone 1 and 2 to the Project site were assumed to be 20 and 40 miles per trip, respectively, based on information provided by TBI. The trip length between the pellet mill and retail sales was assumed to be 50 miles, which is the approximate driving distance between the Project site and Merced, CA, which is the closest urban center. Trips outside of this range were not included due to the speculative nature of further retail destinations and the tonnages shipped beyond this range. Trucks were assumed to idle for a maximum of five minutes at each site (biomass collection and pellet mill) to account for loading and unloading activities. Under its adopted Airborne Toxic Control Measure set forth in Title 13 of the California Code of Regulations, Section 2485, CARB requires that diesel-fueled commercial motor vehicles with gross vehicle weight ratings greater than 10,000 pounds not idles for longer than five minutes at any location (CARB 2021d).

To calculate the emissions from haul trucks, the calculated VMT and total idling time for haul truck trips were applied to the average GHG emission factors for T6 in-state heavy duty diesel trucks in Tuolumne County for calendar year 2023 for 2022 truck model years, as derived from EMFAC 2021 (CARB 2021c). The project applicant has identified that all new vehicles would be purchased for this project, which would begin full operations in 2023 (Patenaude, pers comm., 2021b). Additional modeling information is available in Appendix A.

The on-road mobile source activity and vehicle trip assumptions, emission factors, and calculated emissions are shown in Table 3.

Table 3 On-Road Mobile Source Emissions

Activity	Trips per day	Trip length	VMT per year	Average Emissions Factor [1] (g CO_2e/mi)	Emissions (MT CO_2e/year)
Commute Trips					
Biomass Collection – Worker Trips	36	16.8	145,152	327.4	47.5
Pellet Mill – Worker Trips	50	16.8	279,720	327.4	91.6
Commute Trips Subtotal	**86**	**NA**	**424,872**	**NA**	**139.1**
Haul Trips					
Zone 1 Biomass Collection to Pellet Mill	4.1	20	39,448	1,135.1	44.8
Zone 2 Biomass Collection to Pellet Mill	4.4	40	84,531	1,135.1	96.0
Zone 1 Idling	4.1	5 min per trip	NA	1.3 g CO_2e/min	0.01
Zone 2 Idling	4.4	5 min per trip	NA	1.3 g CO_2e/min	0.01
Biomass Collection Subtotal	**NA**	**NA**	**123,978**	**NA**	**140.8**
Idling	8.5	5 min per trip	NA	1.7 g CO_2e/min	0.02
Pellet Mill to Ash Disposal	0.15	1	0.29	1,148.6	0.08
Pellet Mill to Retail Sales	6.25	50	625	1,148.6	170.3
Pellet Mill Trips Subtotal	**23**	**NA**	**625.3**	**NA**	**170.4**
Haul Trips Subtotal	**34.1**	**NA**	**124,604**	**NA**	**311.1**
TOTAL On-Road Mobile Sources	**120.1**	**NA**	**549,476**	**NA**	**450.2**

Note: VMT = vehicle miles traveled, g = grams, MT = metric tons, CO_2e = carbon dioxide equivalent, min = minute, NA = not applicable

[1] Commute trip average vehicle emission factors based on the LDA, LDT1, and LDT2 vehicle categories in EMFAC 2021. Haul truck emission factors based on the diesel "T6 instate heavy" vehicle category in EMFAC 2021. EMFAC 2021 results reflect conditions for Tuolumne County for calendar year 2023 and 2023 model years.

Source: Modeled by Ascent Environmental., Inc. in 2021

4.2.3 Pellet Mill Operations (Biomass Combustion)

The proposed Project operations at the pellet mill would result in GHG emissions from the on-site combustion of 9,293 BDT of biomass per year and in fugitive dust from the processing of 31,000 BDT of biomass for pellet production. Accounting for 12 percent moisture content in oven-dried biomass, this equates to 10,560 tons per year used for combustion and 35,227 tons per year used in pellet production. With respect to combustion, oven-dried tonnage contrasts with bone dry tonnage in that BDT is a metric of the fuel contained within biomass, as any moisture cannot be combusted. Woody biomass with a 12 percent moisture content has a combustion emission factor of 1,658 kilograms per CO_2e per ton (The Climate Registry 2020). Based on this emissions factor, 10,560 tons of dried mass combusted per year results in a total emissions rate of 17,512 MT CO_2e per year. These calculations are shown in additional detail in Appendix A.

Combustion of the wood pellets manufactured by the proposed Project are not included in this analysis. This is largely because the location at which these wood pellets would be combusted would be speculative, as they could occur anywhere in the country after they have been sold for retail distribution. The location is important when considering the determination of significance for GHG emissions is based on the state's GHG reduction targets, which are based on the State's directly generated emissions. The State's GHG emissions inventory does not include combustion of fuels exported out of the state (CARB 2021e). In addition, the Project would not result in net new consumption of wood pellets, but would rather replace pellets that may be sourced from less sustainable resources (e.g., virgin timber vs. biomass burn piles).

4.2.4 Offset Pile Burning

Under a No Project alternative, the biomass collected for the proposed Project would otherwise be burned in piles at the forest collection sites. Based on a report released by the National Wildfire Coordinating Group (NWCG 2020), average pile burning generates 3,711 pounds of CO_2e per bone dry ton (NWCG 2020: Table 4.1.1, Peterson, pers. comm,. 2021). Thus, the Project would avoid 67,832 MT CO_2e that would be emitted annually from pile burning.

5 PROPOSED PROJECT EMISSIONS

Under the Project, GHG emissions would be generated by construction activities, off-road equipment, on-road haul trucks and worker trips, and combustion of biomass at the pellet mill. GHG emissions would also be avoided because the same biomass material delivered to the Project site would no longer be piled and burned in the forest. A summary breakdown of the of the emissions levels associated with these activities is provided in Table 4. See Appendix A for detailed parameters and calculations.

Table 4 Off-Road Activity and Emissions

Emissions Source	GHG Emissions (MT CO_2e)
Off-Road Equipment	53
Worker Commute	139
Haul Trips	311
Biomass Combustion at the Pellet Mill	17,512
Amortized Construction Emissions[1]	3
Total Emissions from Project	18,018
Avoided GHG Emissions from Burning of Biomass Piles	-67,832
Net Change in GHG Emissions	-49,814

Note: MT CO_2e = metric tons of carbon dioxide

[1] Based on an assumed 30-year project lifespan.

Source: Modeled by Ascent Environmental. Inc., in 2021.

As shown in Table 3, implementation of the project would result in a net reduction in GHG emissions of 49,814 MT CO_2e. This is primarily because the open burning of biomass piles generates more emissions than the combustion of biomass at the pellet mill and other supporting activities. The estimates in Table 3 do not account for emissions associated with the fate of wood pellets sold by the pellet mill. Under existing conditions, the biomass that would be used by the Project would be piled and burned on site. As part of this Project, it is certain that the biomass would be utilized as an energy source both by the pellet mill as dried biomass and by the end consumers as wood pellets. Thus, the effect of utilizing biomass from this site on the project would result in a net decrease in GHG emissions because pile burning of this biomass would be avoided.

6 CONCLUSION

In summary, because hauling and combustion of biomass for the manufacture of wood pellets is less GHG intensive than pile burning on site, this Project would not result in a net increase in GHG emissions. For these reasons, this impact would be less than significant.

7 REFERENCES

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Appendix A

Greenhouse Gas Calculations

Input Assumptions

inputs/assumptions
calculations

Biomass Consumption Assumptions

Annual Biomass - Zone 1	12,821	bone dry tons/yr
Annual Biomass - Zone 2	27,473	bone dry tons/yr
Total Bone Dry Tons (Average annual)	40,293	bone dry tons/yr
Biomass Used for Pellet Production	31,000	bone dry tons/yr
Biomass Used for Combustion	9,293	bone dry tons/yr
Green Wood Moisture Content	35%	[1]
Green tons: Bone Dry tons ratio	1.54	Calculation
Total Green Tons	61,989	green tons/yr
Mill Work Days	333	days/yr

Haul Trips to TBI Facility - Zone 1

Annual Biomass - Zone 1	19,724	green tons/yr	
Haul Work Days - Zone 1	240	days/yr [2]	
Daily Haul - Zone 1	82.2	green tons/day	
Usable Biomass Fuel - Zone 1	41.1	BDT/day	
Chip Van Capacity	20	tons/truck	
Daily Truck Trips	4.1	trips/day	(one way)
Distance to Facility	20	miles	(one way)
Idling time at loading	5	minutes	
Idling time at unloading	5	minutes	
Daily Roundtrip Miles	164	miles/day	(round trip)

Haul Trips to TBI Facility - Zone 2

Annual Biomass - Zone 2	42,265	green tons/yr	
Haul Work Days - Zone 2	240	days/yr [2]	
Daily Haul - Zone 2	176.1	green tons/day	
Usable Biomass Fuel - Zone 2	88.1	BDT/day	
Chip Van Capacity	20	tons/truck	
Daily Truck Trips	4.4	trips/day	(one way)
Distance to Facility	40	miles	(one way)
Idling time at loading	5	minutes	
Idling time at unloading	5	minutes	
Daily Roundtrip Miles	352	miles/day	(round trip)

Field Collection Equipment

Chain Saw (25 hp)		
Bruks chipper (100 hp)	2	Number of Equipment (1 per site)
Ponsse Forwarder (175 hp)	2	Number of Equipment (1 per site)
Daily Use of Equipment	8	hrs/day

Other Information

Distance on unpaved road segments to reach piles	(fugitive PM emissions)	Assumption:	2	miles (1-way)
Crew size that will load piles onto trucks	(worker trip emissions)	Assumption:	6	workers

[1] TBI ATC Permit Application

[2] Based on an assumption of haul trucks operating 5 days per week and 48 weeks per year.

Construction Emission

CalEEMod Results

	ROG	NOx	CO	SO2	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	0.4250	0.5869	0.5685	1.07E-03	0.0259	0.0256	0.0515	0.0108	0.0244	0.0352	0.0000	91.1713	91.1713	0.0172	0.0000	91.6008
Maximum	0.4250	0.5869	0.5685	**1.07E-03**	0.0259	0.0256	0.0515	0.0108	0.0244	0.0352	0.0000	91.1713	91.1713	0.0172	0.0000	91.6008

Project Lifetime Assumpt 30 years
Amortized Construction (3.1 MTCO2/yr

See separate CalEEMod outputs for more details

Biomass Field Collection Activities

Representative Equipment List

Equipment Type	Comparable Equipment Type in OFFROAD2017 -ORION	Load Factor	Source/ Notes
Forwarder (285 hp)	Industrial - Other Material Handling Equipment	0.20	See Notes 1, 2
Chipper (500 hp)	Industrial - Other Material Handling Equipment	0.20	See Notes 1, 2
Field Tractor (217 hp)	OFF - Logging - Skidders	0.38	See Notes 1, 2

Notes

1 The Comparable Equipment Type in OFFROAD2017 -ORION identifies how the equipment type is listed in CARB's web-based OFFROAD2017-ORION model. Engine size based on equipment description in project description and available equipment in the market. These equipment categories are used in CalEEMod (See Note 2).

2 The load factors are based on assumptions for material handling equipment and off-highway trucks, as assumed in Table 3.3 of Appendix D of the CalEEMod User's Guide. Load factors for the forwarder and chipper were reduced by 50% of the default to account for their tandem operation. When the forwarder is in motion the chipper is not operating. When the chipper is in operation, the forwarder is not moving and providing power for hydraulics only.

3 Additional equipment and vehicles may include a fire engine present on site in the event that treatment activity ignites a fire. Emissions generated by this equipment are not included and expected to be nominal.

Sources

1 California Air Resources Board. 2017. OFFROAD2017-ORION. Available at https://www.arb.ca.gov/orion/. Accessed January 14, 2020.

Off-road Equipment Emission Rates

Equipment Type	Comparable Equipment Type in OFFROAD2017 -ORION	HP Bin	CO2	Fuel Usage
			g/hr	*gal/hr*
Forwarder (285 hp)	Industrial - Other Material Handling Equipment	300.00	10206.00	0.00
Chipper (500 hp)	Industrial - Other Material Handling Equipment	600.00	10206.00	0.00
JBC 4220 Tractor (217 hp)	OFF - Logging - Skidders	175.00	10206.00	0.00

Source: wksht Off-road Equip Emiss Rts. Using Model Year 2022 equipment

Off-Road Equipment rates

	value	units	source
Forwarder capacity	120000	kg	Ponsse Forwarder Wisent capacity
Forwarder capacity	132	tons	calculation
Daily loads	20	tons per truck	Project Description
Daily loads	148	wet tons	Project Description

Off-road Equipment Emissions

	Number of Equipment (1 at Zone 1, 2 at Zone 2)	Hours per day	CO2 *MT/year*	Fuel Usage *gal/year*	source
Forwarder (285 hp)	3	8	11.8	0.00	
Chipper (500 hp)	3	8	11.8	0.00	calculation
JBC 4220 Tractor (217 hp)	3	8	22.3	0.00	calculation
		Total Annual	**45.85**	**0.00**	

Biomass Field Worker Trip Exhaust Emissions

Commute Trips by Workers on Field Crew

	value	units	source
Number of workers on crew			
Number of crews	3	crews/day	assumption (2 in zone 2, 1 in zone 1)
Workers per crew	6	workers/day	assumption
Trip rate for crew workers	2	trips/day	assumption
Avg. worker commute trip length (1-way)	16.8	miles/trip	default worker trip length in construction module of CalEEMod

Daily VMT by crew workers per crew

Average daily	605	VMT/day	calculation

Mix of passenger vehicles used in employee commutes

breakdown of passenger car VMT in Tuolomne County (EMFAC 2021 Average Distributions)

	value	units	source
light duty autos - gasoline	641,600	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	3,351	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	27,999	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	16,211	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	131,418	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	24	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	58	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	64	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	490,289	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	1,338	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	1,141	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	2,724	VMT/day	wksht: On-Rd Veh Emiss Rates
Total, all passenger vehicle types	1,316,217	VMT/day	summation

relative portion of passenger car VMT by veh type	value	units	source
light duty autos - gasoline	48.7%	%	calculation
light duty autos - diesel	0.3%	%	calculation
light duty autos - electricity	2.1%	%	calculation
light duty autos - plug in hybrid	1.2%	%	calculation
light duty trucks 1 - gasoline	10.0%	%	calculation
light duty trucks 1 - diesel	0.0%	%	calculation
light duty trucks 1 - electricity	0.0%	%	calculation
light duty trucks 1 - plug in hybrid	0.0%	%	calculation
light duty trucks 2 - gasoline	37.2%	%	calculation
light duty trucks 2 - diesel	0.1%	%	calculation
light duty trucks 2 - electricity	0.1%	%	calculation
light duty trucks 2 - plug in hybrid	0.2%	%	calculation
Total, all passenger vehicle types	100.0%	%	summation

Biomass Field Worker Trip Exhaust Emissions

Emission Rates (running exhaust, running loss, brake wear, tire wear)

	CO2	CH4	N2O	CO2e	units	source
light duty autos - gasoline	297.141	0.005	0.008	299.582	g/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	251.832	0.002	0.040	263.714	g/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	0.000	0.000	0.000	0.000	g/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	152.195	0.001	0.001	152.436	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	360.914	0.017	0.022	367.963	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	417.926	0.013	0.066	437.874	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	0.000	0.000	0.000	0.000	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	139.933	0.001	0.001	140.159	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	376.188	0.006	0.011	379.641	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	337.305	0.001	0.053	353.178	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	0.000	0.000	0.000	0.000	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	146.559	0.001	0.001	146.797	g/mile	wksht: On-Rd Veh Emiss Rates
Composite emiss rates - all pass vehicles	**324.185**	**0.006**	**0.010**	**327.415**	**g/mile**	**Sumproduct calculation**

Worker Commute Emissions (exhaust, loss, wear, fugitives)

	CO2e
	MT/year
Total Daily (lb/day)	47.525
Total Annual (tons/year)	**47.525**

Source: calculations

	value	units	source
mass conversion rate	2,000	lb/ton	wksht: Unit Conversions
mass conversion rate	1,000,000	g/MT	wksht: Unit Conversions

Field-to-Pellet Mill Haul Trip Emissions

Basic Information	value		units		
Annual Biomass	19,724	green tons/yr		**(Zone 1)**	Calculation
Annual Biomass	42,265	green tons/yr		**(Zone 2)**	Calculation
Work Days	240	days/yr		**(Zone 1)**	
Daily Haul	82.2	green tons/day		**(Zone 1)**	Calculation
Work Days	240.0	days/yr		**(Zone 2)**	
Daily Haul	176.1	green tons/day		**(Zone 2)**	Calculation
Usable Biomass Fuel	41.1	BDT/day (Zone 1)			(0% moisture)
Usable Biomass Fuel	88.1	BDT/day (Zone 2)			(0% moisture)

Haul Trips to TBI Facility	value		units	
Chip Truck Capacity	20	tons/truck		
(Zone 1) Daily Truck Trips	4.1	trips/day		
(Zone 2) Daily Truck Trips	4.4	trips/day		
(Zone 1) Distance to Facility	20	miles/trip		(one way)
(Zone 2) Distance to Facility	40	miles/trip		(one way)
(Zone 1) Daily Roundtrip Miles	164	miles/day		(round trip)
(Zone 2) Daily Roundtrip Miles	352	miles/day		(round trip)

Idling Assumptions per truck trip	value		units	
Idling time at loading	5	minutes		**(Zone 1)**
Idling time at unloading	5	minutes		**(Zone 1)**
Idling time at loading	5	minutes		**(Zone 2)**
Idling time at unloading	5	minutes		**(Zone 2)**

Haul Truck Emission Rates

		CO2	CH4	N2O	CO2e	units
T6 instate heavy - diesel - MY 2023	running exhaust, running loss, brake wear, tire wear	1084.2	0.0	0.2	1135.1	g/mile
T6 instate heavy - diesel - MY 2023	idling	1.285	0.000	0.000	1.345	g/min

Source: wksht: 2023 On-Rd Veh Emiss Rates

Field-to-Pellet Mill Haul Trip Emissions

Zone 1									
VMT associated with chipped biomass					**Haul Truck Emissions (exhaust, loss, wear)**	**CO2**	**CH4**	**N2O**	**CO2e**
	Daily VMT	value	units		Chipped biomass fuel	MT/year	MT/year	MT/year	MT/year
	Miles within MCAB	164	VMT/day	calculation	Trip emissions in MCAB	42.77	8.59E-06	6.74E-03	44.78
					Loading/Unloading	0.013	4.82E-08	2.00E-06	0.013
					Total Hauling	**42.78**	**8.64E-06**	**6.74E-03**	**44.79**
Zone 2									
VMT associated with chipped biomass					**Haul Truck Emissions (exhaust, loss, wear)**	**CO2**	**CH4**	**N2O**	**CO2e**
	Daily VMT	value	units		Chipped biomass fuel	MT/year	MT/year	MT/year	MT/year
	Miles within MCAB	352	VMT/day	calculation	Trip emissions in MCAB	91.65	1.84E-05	1.44E-02	95.95
					Loading/Unloading	0.013	4.82E-08	2.00E-06	0.013
					Total Hauling	**91.66**	**1.84E-05**	**1.44E-02**	**95.97**
					Total Annual (tons/year)	**134.45**	**2.71E-05**	**2.12E-02**	**140.76**

	value	units	source
mass conversion rate	453.59	g/lb	wksht: Unit Conversions
mass conversion rate	1,000,000	g/MT	wksht: Unit Conversions

Pellet Mill Worker Trip Exhaust Emissions

Commute Trips by Workers on Field Crew

	value	units	source
Number of workers on crew			
Number of crews	1	crews/day	assumption (one per zone)
Workers per crew	25	workers/day	assumption
Trip rate for crew workers	2	trips/day	assumption
Avg. worker commute trip length (1-way)	16.8	miles/trip	default worker trip length in construction module of CalEEMod

Daily VMT by crew workers per crew

Average daily	840	VMT/day	calculation

Mix of passenger vehicles used in employee commutes

breakdown of passenger car VMT in Tuolomne County (EMFAC 2021 Average Distributions)

	value	units	source
light duty autos - gasoline	641,600	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	3,351	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	27,999	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	16,211	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	131,418	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	24	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	58	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	64	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	490,289	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	1,338	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	1,141	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	2,724	VMT/day	wksht: On-Rd Veh Emiss Rates
Total, all passenger vehicle types	1,316,217	VMT/day	summation

relative portion of passenger car VMT by veh type	value	units	source
light duty autos - gasoline	48.7%	%	calculation
light duty autos - diesel	0.3%	%	calculation
light duty autos - electricity	2.1%	%	calculation
light duty autos - plug in hybrid	1.2%	%	calculation
light duty trucks 1 - gasoline	10.0%	%	calculation
light duty trucks 1 - diesel	0.0%	%	calculation
light duty trucks 1 - electricity	0.0%	%	calculation
light duty trucks 1 - plug in hybrid	0.0%	%	calculation
light duty trucks 2 - gasoline	37.2%	%	calculation
light duty trucks 2 - diesel	0.1%	%	calculation
light duty trucks 2 - electricity	0.1%	%	calculation
light duty trucks 2 - plug in hybrid	0.2%	%	calculation
Total, all passenger vehicle types	100.0%	%	summation

Pellet Mill Worker Trip Exhaust Emissions

Emission Rates (running exhaust, running loss, brake wear, tire wear)

	CO2	CH4	N2O	CO2e	units	source
light duty autos - gasoline	297.141	0.005	0.008	299.582	g/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	251.832	0.002	0.040	263.714	g/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	0.000	0.000	0.000	0.000	g/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	152.195	0.001	0.001	152.436	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	360.914	0.017	0.022	367.963	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	417.926	0.013	0.066	437.874	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	0.000	0.000	0.000	0.000	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	139.933	0.001	0.001	140.159	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	376.188	0.006	0.011	379.641	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	337.305	0.001	0.053	353.178	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	0.000	0.000	0.000	0.000	g/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	146.559	0.001	0.001	146.797	g/mile	wksht: On-Rd Veh Emiss Rates
Composite emiss rates - all pass vehicles	**324.185**	**0.006**	**0.010**	**327.415**	**g/mile**	**Sumproduct calculation**

Worker Commute Emissions (exhaust, loss, wear, fugitives)

	CO2e
	MT/year
Total Annual (tons/year)	**91.58**
	Source: calculations

	value	units	source
mass conversion rate	1,000,000	g/MT	wksht: Unit Conversions

TBI Wood Pellet Mill Emissions

Pellet Mill Input Specifications

mass of biomass combusted on-site	value	units	source/notes
	9,293	bdt/year	BDT content of biomass combusted on-site. Provided by Force Energy
	12%	percent moisture in dried biomass	Provided by Force Energy
	10,560	dried tons combusted/year	Tonnage of dried biomass combusted per year, calculated from BDT assuming a 12% moisture content.
	8,000	hours/year	Provided by Force Energy
	1.32	tons/hour	Tonnage of dried biomass combusted per hour, calculated from total tonnage per year and hours per year.

Emission Factor	value	units	source/notes
CO2 emission factor	1640.00	kg/ton	See Source 1 (12% moisture) (pg. 4)
CH4 emission factor	0.09	g/kg	See Source 1 (pg. 15)
N2O emission factor	0.06	g/kg	See Source 1 (pg. 15)
Global Warming Potential for Conversion to CO2e			
global warming potential of CH4	25	unitless	Conversion
global warming potential of N2O	298	unitless	Conversion
CO2-e Emission Factor	1658.26	kg/dry ton	composite calculation

Conversion Rates		value	units	source/notes
	mass conversion rate	1.102	ton/MT	Conversion
	mass conversion rate	1,000	kg/MT	Conversion
	mass conversion rate	907	kg/ton	Conversion

GHG Emissions, maximum annual	value	units	source/notes
CO2-e emissions, maximum annual	**17,512**	MT/year	

Pellet Mill-to-Offsite Haul Trips

Basic Information	value		units	
Annual Wood Pellets Manufactured	30,000	tons/yr		TBI Data Request Response
Annual Ash By-Product Produced	700	tons/yr		TBI Data Request Response
Work Days	240	days/yr		5 days per week
Daily Wood Pellet Delivery	125.0	tons/day		calculation
Daily Ash Delivery	2.9	tons/day		calculation

Biomass Delivery Trips (idling only)	value		units	
Truck Capacity	240	tons/truck		assumption
Daily Truck Trips	8.5	trips/day		calculated
Idling Assumptions per truck trip	value		units	
Idling time at unloading	5	minutes		

Wood Pellet Delivery Trips	value		units	
Truck Capacity	20	tons/truck		assumption
Daily Truck Trips	6.3	trips/day		calculated
Distance to Facility	50	miles/trip		(one way) Note 1
Daily Roundtrip Miles	625	miles/day		(round trip)
Idling Assumptions per truck trip	value		units	
Idling time at loading	5	minutes		

Ash Haul Trips	value		units	
Truck Capacity	20	tons/truck		assumption
Daily Truck Trips	0.15	trips/day		calculated
Distance to Facility	1	miles/trip		TBI Data Request Response (one way)
Daily Roundtrip Miles	0.29	miles/day		(round trip)
Idling Assumptions per truck trip	value		units	
Idling time at loading	5	minutes		

VMT associated with delivery of Wood Pellets manufactured from biomass and hauling of ash

	value	units	
Biomass unloading	43	minutes/day	
Wood Pellet loading	31	minutes/day	
Ash Loading	1	minutes/day	
Wood Pellet Delivery	625	VMT/day	calculation
Ash Hauling	0.29	VMT/day	calculation

Haul Truck Emission Rates							
		CO2	CH4	N2O	CO2e	units
T6 instate heavy - diesel - MY 2023	running exhaust, running loss, brake wear, tire wear	1084.228	2.18E-04	1.71E-01	1,135.1	g/mile
T6 instate heavy - diesel - MY 2023	idling	1.285	4.89E-06	2.02E-04	1.3	g/min
		Source: wksht: 2023 On-Rd Veh Emiss Rates				

Haul Truck Emissions (exhaust, loss, wea	CO2	CH4	N2O	CO2e
Biomass unloading	54.69	2.08E-04	8.62E-03	57.26
Wood Pellet loading	40.16	1.53E-04	6.33E-03	42.05
Ash Loading	0.94	3.57E-06	1.48E-04	0.98
Wood Pellet Delivery (trip emissions)	677,642.20	1.36E-01	106.76	709,460.92
Ash Hauling (trip emissions)	316.23	6.35E-05	0.04982	331.08
Total Daily (g/day)	**678,054.22**	**0.136**	**106.828**	**709,892.29**
	CO2	CH4	N2O	CO2e
Biomass unloading	0.01313	5.00E-08	2.07E-06	0.01
Wood Pellet loading	0.00964	3.67E-08	1.52E-06	0.01
Ash Loading	0.00022	8.56E-10	3.54E-08	0.00
Wood Pellet Delivery (trip emissions)	162.63413	3.27E-05	2.56E-02	170.27
Ash Hauling (trip emissions)	0.07590	1.52E-08	1.20E-05	0.08
Total Annual (MT/year)	**162.733**	**3.28E-05**	**2.56E-02**	**170.37**

	value	units	source
mass conversion rate	1,000,000	g/MT	wksht: Unit Conversions
mass conversion rate	453.59	g/lb	wksht: Unit Conversions

Notes

1 This trip distance is based on the approximate driving distance from Sonora, CA to Modesto, CA as the nearest urban area (for product distribution).

Pellet Mill Material Handling Operations

Representative Equipment List

Equipment Type	Comparable Equipment Type in OFFROAD2017 -ORION	Engine Size (hp)	Horsepower Bin	Load Factor	source/notes
Yard Tractor	ConstMin - Rubber Tired Loaders	125	175	0.4	See Notes 1, 2
Chip Reloader	Industrial - Other Material Handling Equipment	68	50	0.4	See Notes 1, 2
Bin Trucks	ConstMin - Off-Highway Trucks	380-430	300	0.4	See Notes 1, 2

Notes

1 The Comparable Equipment Type in OFFROAD2017 -ORION identifies how the equipment type is listed in CARB's web-based OFFROAD2017-ORION model. Engine size based on equipment description in project description and available equipment in the market. (https://www.bruks-siwertell.com/chipping/mobile-chippers/mobile-chipper-8062-pt-truck)

2 The load factors are based on assumptions for material handling equipment and off-highway trucks, as assumed in Table 3.3 of Appendix D of the CalEEMod User's Guide.

Sources

1 California Air Resources Board. 2017. OFFROAD2017-ORION. Available at https://www.arb.ca.gov/orion/. Accessed January 14, 2020.

Off-road Equipment Emission Rates (MY 2022)

Equipment Type	Comparable Equipment Type in OFFROAD2017 -ORION	CO2 *g/hr*
Yard Tractor	ConstMin - Rubber Tired Loaders	28841.47
Field Tractor	Industrial - Other Material Handling Equipment	10206.00
Bin Trucks	ConstMin - Off-Highway Trucks	10206.00

Source: wksht Off-road Equip Emiss Rts. Using Model Year 2022 equipment

Off-road Equipment Emissions			CO2	source
Total Daily Emissions	Number of Equipment	Minutes per day	*g/day*	
Yard Tractor	1.00	60	11536.59	calculation
Field Tractor	1.00	40	2721.60	calculation
Bin Trucks	1.00	90	6123.60	calculation
		Total	**20381.79**	calculation
	Days per year of Operation			
Yard Tractor	333			
Field Tractor	333			
Bin Trucks	333			
Total Annual Emissions	Number of Equipment	Hours per year	*MTCO2/year*	
Yard Tractor	1.00	333	3.84	calculation
Field Tractor	1.00	222	0.91	calculation
Bin Trucks	1.00	499.5	2.04	calculation
		Total	**6.79**	calculation

	value	units	source
mass conversion rate	1,000,000	g/MT	wksht: Unit Conversions

Pile Burning Emissions

			CO2-eq
Zone	Source	Tons of biomass per year	MT/year
1	Pile Burning (BDT)	12,821	21,583
2	Pile Burning (BDT)	27,473	46,249
	Total	40,293	**67,832**

Fire Average Emissions Factors (Flaming and Smoldering Average)

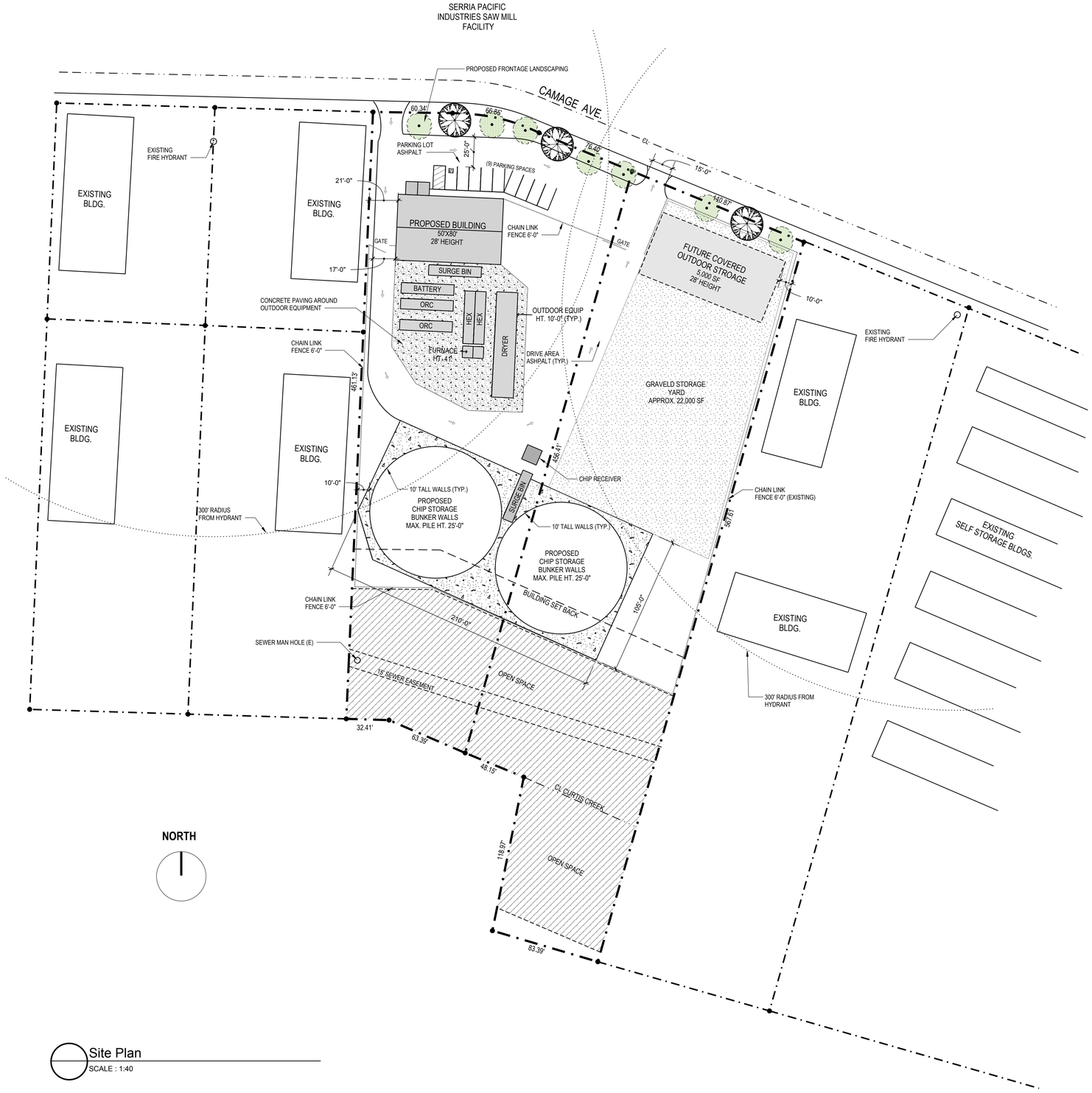
Prescribed Burn Vegetation Type	Pollutant Emission Factors (lb of emissions/ton of fuel consumed)			
	CO2	CH4	N2O	CO2e
Pile and Burn (slash)	3,207	16.6	0.3	3,711

Source: Urbanski, S. Wildland fire emissions, carbon, and climate: Emission factors. *Forest Ecology and Management* . 317: 51–60 (as presented in NWCG 2018, Table 4.1.1) https://www.nwcg.gov/sites/default/files/publications/pms420-3.pdf

mass conversions:	value	units
	1,000	kg/MT
	1,000,000	g/MT
	2,000	lb/ton
	2,204.62	lb/MT

Appendix B

Site Plan



Site Plan
SCALE : 1:40

PROJECT DATA

SCOPE:
PROPOSED PROJECT IS A WOOD PELLET PROCESSING FACILITY CONSISTING OF A 4,000 SF BUILDING, OUTDOOR EQUIPMENT, COVERED STORAGE, AND OUTDOOR STORAGE OF WOOD CHIPS AND FINISHED PRODUCTS.

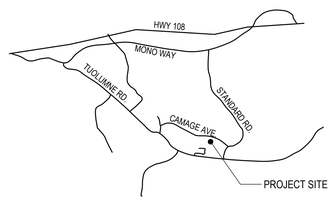
PROPERTY OWNER:	PIP SM, LLC 15256 CAMINO DEL PARQUE, SONORA, CA JOEL PLUIM 209.533.8962
END USER:	FORCE ENERGY CORPORATION CONTACT: ETIENNE PATENAUDE 403.830.1472

SITE INFORMATION:

APN:	061-150-46 & 061-150-47
ADDRESS:	TBD
PARCEL SIZE:	1.57 AC. & 1.70 AC. : TOTAL 3.24 ACRES
ZONING:	M-1 LIGHT INDUSTRIAL, O OPEN SPACE
WATER:	TUD
FIRE FLOW:	TUD, (2) FIRE HYDRANTS, SEE PLAN
SEWER:	TUD
POWER:	PG&E
JURISDICTION:	TUOLUMNE COUNTY COMMUNITY DEVELOPMENT DEPT. TEL 209.533.5633

LAND USE COMPLIANCE:

PROPOSED USE:	LIGHT INDUSTRUAL - WOOD PELLET MANUFACTURING FACILITY
CURRENT USE:	OUTDOOR STORAGE YARD
GRADING:	EXISTING GRADE IS FLAT (LESS THEN 4 %) WITH GRAVEL SURFACE MINOR GRADING WILL BE REQUIRED FOR BUILDING AND EQUIPMENT PADS AND DRAINGAGE
LANDSCAPING:	PROPOSED FRONTAGE LANDSCAPING = 3,300 SF EXISTING OPEN SPACE NATURAL LANDSCPAING= 35,345 SF TOTAL 38,645 SF PROPOSED 38,645 SF /141,134 SF = 27.3% > 10% REQUIRED
PROPOSED TRUCK TRAFFIC:	10-12 SEMI TRUCK LOADS PER DAY
PROPOSED EMPOLYEES:	3 OFFICE EMPOLYEES (8AM- 5PM) AND 3 PLANT EMPOLYEES (24 HOURS/ 7 DAYS) MAX. 6 EMPOLYEES PER SHIFT
PROPOSED PARKING:	LIGHT INDUSTRIAL: 1.5 PER EMPLOYEE X 6 = 9 SPACES PROVIDE 1 ACCESSIBLE AND 8 STANARD STALLS



VICINITY MAP

SIERRA NEVADA ENGINEERING + DESIGN
15256 Camino Del Parque
Sonora, California 95370
tel: (209) 532-7169
www.SierraNevadaEngineering.com

ADDRESS: TBD
APN: 061-150-46,47

FORCE ENERGY WOOD PELLET FACILITY

PIP CC,LLC.

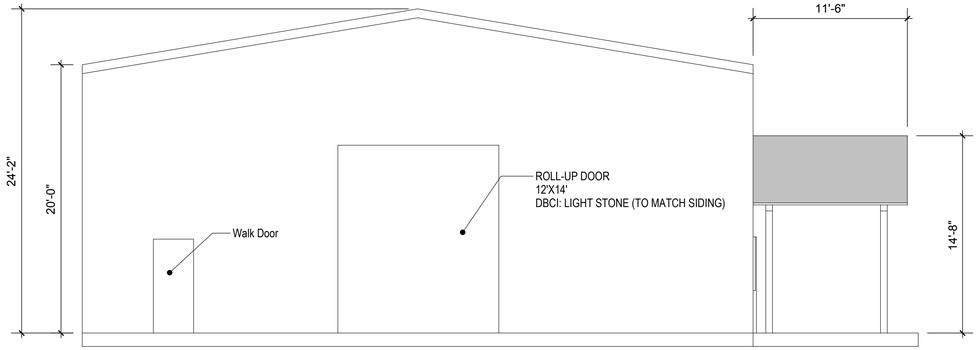
Document Date:
3/24/21

Document Phase:
SITE DEVELOPMENT PERMIT

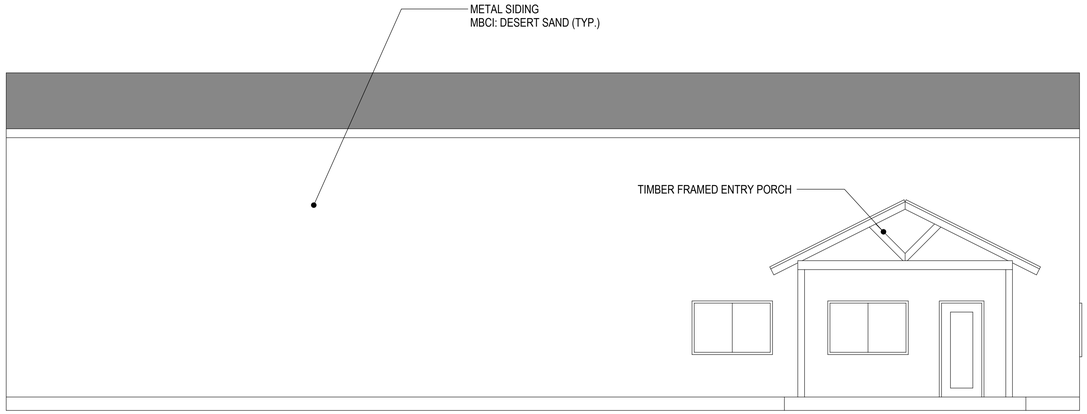
rev.	date	remark
1		

SITE PLAN

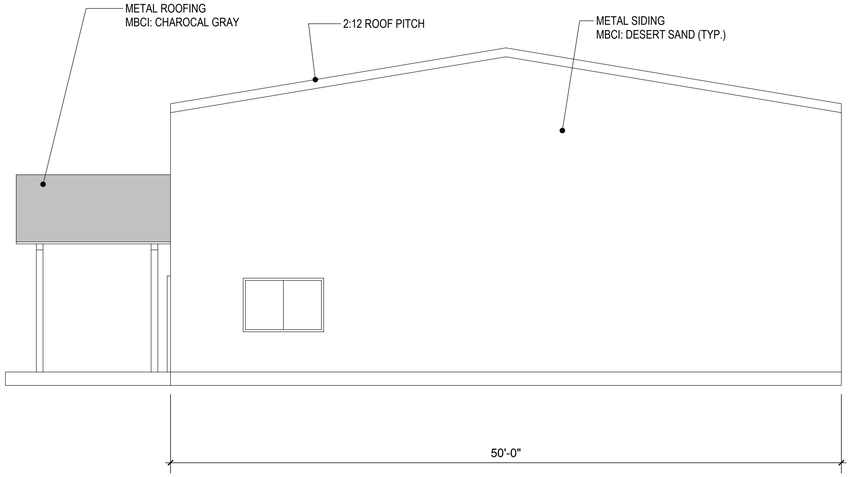
C1.0



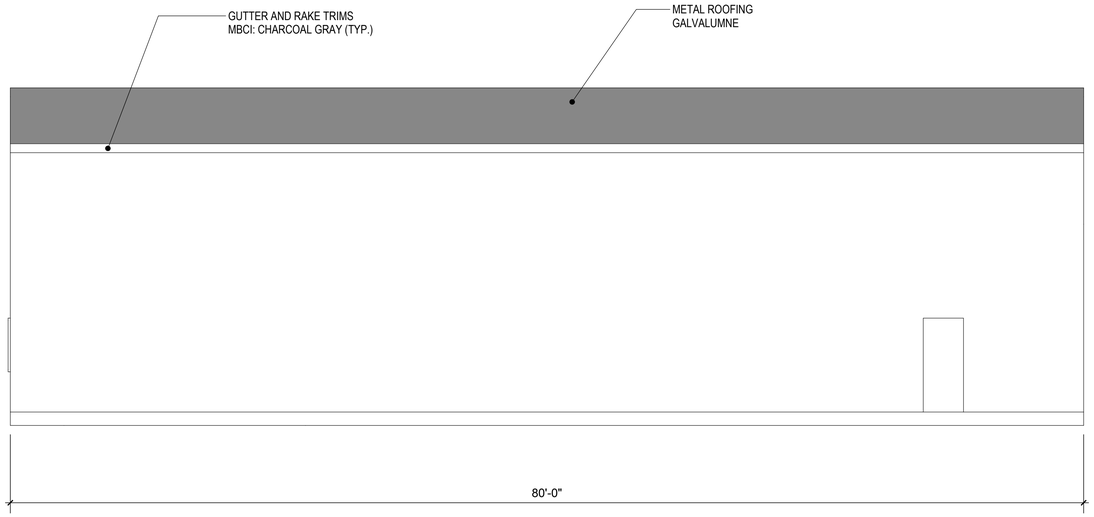
1 EAST ELEVATION
3/16"=1'-0"



2 NORTH ELEVATION
3/16"=1'-0"



3 WEST ELEVATION
3/16"=1'-0"



4 SOUTH ELEVATION
3/16"=1'-0"

SIERRA NEVADA ENGINEERING + DESIGN
15256 Camino Del Parque
Sonora, California 95370
tel: (209) 532-7169
www.SierraNevadaEngineering.com

ADDRESS: TBD
APN: 061-150-46,47

FORCE ENERGY WOOD PELLET FACILITY

PIP CC,LLC.

Document Date:
3/24/21

Document Phase:
SITE DEVELOPMENT PERMIT

rev.	date	remark
1		

RENDERINGS

A1.0

Appendix C

CalEEMod Construction Modeling Outputs

TBI Biomass Energy Construction

Tuolumne County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	4.00	1000sqft	0.09	4,000.00	0
Unrefrigerated Warehouse-No Rail	25.70	1000sqft	0.59	25,700.00	0
Other Non-Asphalt Surfaces	10.22	1000sqft	0.23	10,220.00	0
Parking Lot	9.00	Space	0.08	3,600.00	0
City Park	0.08	Acre	0.08	3,300.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	66
Climate Zone	1			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction modeling only. Operational emissions calculated separately.

Land Use - See Sierra Nevada site plan (3/24/21). Warehouse = two chip bunkers (100 ft dmtr each) + 5,000 sf future outdoor covered storage. Non-asphalt surf = concrete padding for equipment (per site plan). City park = landscaping.

Construction Phase - no demolition. Construction schedule condensed from default 10 months to 4 months per conversations with Applicant. Building construction days decreased from 200 to 60.

Off-road Equipment - Assume 1 additional crane to account for equipment assembly and installation.

Grading - Material import based on: 22,000sf gravel storage yard @ 8 in depth and 1.35 tons per CY.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	60.00
tblGrading	MaterialImported	0.00	733.00
tblLandUse	LandUseSquareFeet	3,484.80	3,300.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	72.00	20.00

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	0.4250	0.5869	0.5685	1.0700e-003	0.0259	0.0256	0.0515	0.0108	0.0244	0.0352	0.0000	91.1713	91.1713	0.0172	0.0000	91.6008
Maximum	**0.4250**	**0.5869**	**0.5685**	**1.0700e-003**	**0.0259**	**0.0256**	**0.0515**	**0.0108**	**0.0244**	**0.0352**	**0.0000**	**91.1713**	**91.1713**	**0.0172**	**0.0000**	**91.6008**

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	0.4250	0.5869	0.5685	1.0700e-003	0.0259	0.0256	0.0515	0.0108	0.0244	0.0352	0.0000	91.1712	91.1712	0.0172	0.0000	91.6007
Maximum	**0.4250**	**0.5869**	**0.5685**	**1.0700e-003**	**0.0259**	**0.0256**	**0.0515**	**0.0108**	**0.0244**	**0.0352**	**0.0000**	**91.1712**	**91.1712**	**0.0172**	**0.0000**	**91.6007**

	ROG	NOx	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	2-1-2022	4-30-2022	0.5933	0.5933
2	5-1-2022	7-31-2022	0.4165	0.4165
		Highest	0.5933	0.5933

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Energy	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	6.0962	6.0962	2.6000e-004	6.0000e-005	6.1216
Mobile	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446
Waste						0.0000	0.0000		0.0000	0.0000	5.9131	0.0000	5.9131	0.3495	0.0000	14.6495
Water						0.0000	0.0000		0.0000	0.0000	2.1789	10.9083	13.0873	0.2243	5.3900e-003	20.2997
Total	**0.1890**	**0.1350**	**0.4648**	**9.5000e-004**	**0.0801**	**1.1700e-003**	**0.0813**	**0.0216**	**1.1000e-003**	**0.0227**	**8.0921**	**103.2282**	**111.3203**	**0.5789**	**5.4500e-003**	**127.4163**

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	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Energy	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	6.0962	6.0962	2.6000e-004	6.0000e-005	6.1216
Mobile	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446
Waste						0.0000	0.0000		0.0000	0.0000	5.9131	0.0000	5.9131	0.3495	0.0000	14.6495
Water						0.0000	0.0000		0.0000	0.0000	2.1789	10.9083	13.0873	0.2243	5.3900e-003	20.2997
Total	**0.1890**	**0.1350**	**0.4648**	**9.5000e-004**	**0.0801**	**1.1700e-003**	**0.0813**	**0.0216**	**1.1000e-003**	**0.0227**	**8.0921**	**103.2282**	**111.3203**	**0.5789**	**5.4500e-003**	**127.4163**

	ROG	NOx	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

TBI Biomass Energy Construction - Tuolumne County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/1/2022	2/2/2022	5	2	
2	Grading	Grading	2/3/2022	2/8/2022	5	4	
3	Building Construction	Building Construction	2/9/2022	5/3/2022	5	60	
4	Paving	Paving	5/4/2022	5/17/2022	5	10	
5	Architectural Coating	Architectural Coating	5/18/2022	5/31/2022	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.31

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 44,550; Non-Residential Outdoor: 14,850; Striped Parking Area: 829 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	2	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	20.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	22	20.00	8.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0146	7.0900e-003	2.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.5115	1.5115	4.9000e-004	0.0000	1.5238
Total	**1.3100e-003**	**0.0146**	**7.0900e-003**	**2.0000e-005**	**5.8000e-003**	**6.2000e-004**	**6.4200e-003**	**2.9500e-003**	**5.7000e-004**	**3.5200e-003**	**0.0000**	**1.5115**	**1.5115**	**4.9000e-004**	**0.0000**	**1.5238**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	7.0000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0870	0.0870	1.0000e-005	0.0000	0.0871
Total	**1.0000e-004**	**8.0000e-005**	**7.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0870**	**0.0870**	**1.0000e-005**	**0.0000**	**0.0871**

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					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0146	7.0900e-003	2.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.5115	1.5115	4.9000e-004	0.0000	1.5238
Total	**1.3100e-003**	**0.0146**	**7.0900e-003**	**2.0000e-005**	**5.8000e-003**	**6.2000e-004**	**6.4200e-003**	**2.9500e-003**	**5.7000e-004**	**3.5200e-003**	**0.0000**	**1.5115**	**1.5115**	**4.9000e-004**	**0.0000**	**1.5238**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	7.0000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0870	0.0870	1.0000e-005	0.0000	0.0871
Total	**1.0000e-004**	**8.0000e-005**	**7.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0870**	**0.0870**	**1.0000e-005**	**0.0000**	**0.0871**

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					9.8600e-003	0.0000	9.8600e-003	5.0600e-003	0.0000	5.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1700e-003	0.0240	0.0119	3.0000e-005		1.0300e-003	1.0300e-003		9.5000e-004	9.5000e-004	0.0000	2.4763	2.4763	8.0000e-004	0.0000	2.4963
Total	**2.1700e-003**	**0.0240**	**0.0119**	**3.0000e-005**	**9.8600e-003**	**1.0300e-003**	**0.0109**	**5.0600e-003**	**9.5000e-004**	**6.0100e-003**	**0.0000**	**2.4763**	**2.4763**	**8.0000e-004**	**0.0000**	**2.4963**

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	1.0000e-004	3.3400e-003	8.9000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7911	0.7911	2.0000e-005	0.0000	0.7915
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	2.0000e-004	1.6000e-004	1.3900e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1739	0.1739	1.0000e-005	0.0000	0.1742
Total	**3.0000e-004**	**3.5000e-003**	**2.2800e-003**	**1.0000e-005**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.9650**	**0.9650**	**3.0000e-005**	**0.0000**	**0.9657**

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					9.8600e-003	0.0000	9.8600e-003	5.0600e-003	0.0000	5.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1700e-003	0.0240	0.0119	3.0000e-005		1.0300e-003	1.0300e-003		9.5000e-004	9.5000e-004	0.0000	2.4763	2.4763	8.0000e-004	0.0000	2.4963
Total	**2.1700e-003**	**0.0240**	**0.0119**	**3.0000e-005**	**9.8600e-003**	**1.0300e-003**	**0.0109**	**5.0600e-003**	**9.5000e-004**	**6.0100e-003**	**0.0000**	**2.4763**	**2.4763**	**8.0000e-004**	**0.0000**	**2.4963**

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	1.0000e-004	3.3400e-003	8.9000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7911	0.7911	2.0000e-005	0.0000	0.7915
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	2.0000e-004	1.6000e-004	1.3900e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1739	0.1739	1.0000e-005	0.0000	0.1742
Total	**3.0000e-004**	**3.5000e-003**	**2.2800e-003**	**1.0000e-005**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.9650**	**0.9650**	**3.0000e-005**	**0.0000**	**0.9657**

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	0.0579	0.4692	0.4244	7.9000e-004		0.0216	0.0216		0.0207	0.0207	0.0000	65.8797	65.8797	0.0132	0.0000	66.2091
Total	**0.0579**	**0.4692**	**0.4244**	**7.9000e-004**		**0.0216**	**0.0216**		**0.0207**	**0.0207**	**0.0000**	**65.8797**	**65.8797**	**0.0132**	**0.0000**	**66.2091**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0300e-003	0.0278	9.3900e-003	6.0000e-005	1.4100e-003	9.0000e-005	1.5000e-003	4.1000e-004	9.0000e-005	4.9000e-004	0.0000	5.6447	5.6447	1.7000e-004	0.0000	5.6491
Worker	7.6100e-003	5.9000e-003	0.0523	7.0000e-005	7.3600e-003	8.0000e-005	7.4400e-003	1.9600e-003	7.0000e-005	2.0300e-003	0.0000	6.5217	6.5217	4.9000e-004	0.0000	6.5338
Total	**8.6400e-003**	**0.0337**	**0.0617**	**1.3000e-004**	**8.7700e-003**	**1.7000e-004**	**8.9400e-003**	**2.3700e-003**	**1.6000e-004**	**2.5200e-003**	**0.0000**	**12.1664**	**12.1664**	**6.6000e-004**	**0.0000**	**12.1829**

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	0.0579	0.4692	0.4244	7.9000e-004		0.0216	0.0216		0.0207	0.0207	0.0000	65.8797	65.8797	0.0132	0.0000	66.2091
Total	**0.0579**	**0.4692**	**0.4244**	**7.9000e-004**		**0.0216**	**0.0216**		**0.0207**	**0.0207**	**0.0000**	**65.8797**	**65.8797**	**0.0132**	**0.0000**	**66.2091**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0300e-003	0.0278	9.3900e-003	6.0000e-005	1.4100e-003	9.0000e-005	1.5000e-003	4.1000e-004	9.0000e-005	4.9000e-004	0.0000	5.6447	5.6447	1.7000e-004	0.0000	5.6491
Worker	7.6100e-003	5.9000e-003	0.0523	7.0000e-005	7.3600e-003	8.0000e-005	7.4400e-003	1.9600e-003	7.0000e-005	2.0300e-003	0.0000	6.5217	6.5217	4.9000e-004	0.0000	6.5338
Total	**8.6400e-003**	**0.0337**	**0.0617**	**1.3000e-004**	**8.7700e-003**	**1.7000e-004**	**8.9400e-003**	**2.3700e-003**	**1.6000e-004**	**2.5200e-003**	**0.0000**	**12.1664**	**12.1664**	**6.6000e-004**	**0.0000**	**12.1829**

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	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9315
Paving	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.5400e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9315**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	6.4000e-004	5.6600e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7065	0.7065	5.0000e-005	0.0000	0.7078
Total	**8.2000e-004**	**6.4000e-004**	**5.6600e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.1000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7065**	**0.7065**	**5.0000e-005**	**0.0000**	**0.7078**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9314
Paving	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.5400e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9314**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	6.4000e-004	5.6600e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7065	0.7065	5.0000e-005	0.0000	0.7078
Total	**8.2000e-004**	**6.4000e-004**	**5.6600e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.1000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7065**	**0.7065**	**5.0000e-005**	**0.0000**	**0.7078**

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	0.3490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.3500**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	2.0000e-004	1.7400e-003	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2174	0.2174	2.0000e-005	0.0000	0.2178
Total	**2.5000e-004**	**2.0000e-004**	**1.7400e-003**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2174**	**0.2174**	**2.0000e-005**	**0.0000**	**0.2178**

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	0.3490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.3500**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	2.0000e-004	1.7400e-003	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2174	0.2174	2.0000e-005	0.0000	0.2178
Total	**2.5000e-004**	**2.0000e-004**	**1.7400e-003**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2174**	**0.2174**	**2.0000e-005**	**0.0000**	**0.2178**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446
Unmitigated	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.15	1.82	1.34	1,379	1,379
Manufacturing	15.28	5.96	2.48	46,825	46,825
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	43.18	43.18	43.18	166,809	166,809
Total	58.61	50.96	47.00	215,014	215,014

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
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6
Manufacturing	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Parking Lot	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	14.70	6.60	6.60	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
City Park	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Manufacturing	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Other Non-Asphalt Surfaces	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Parking Lot	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Unrefrigerated Warehouse-No Rail	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928

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	5.3470	5.3470	2.4000e-004	5.0000e-005	5.3679
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5.3470	5.3470	2.4000e-004	5.0000e-005	5.3679
NaturalGas Mitigated	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537
NaturalGas Unmitigated	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537

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					
City Park	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
Manufacturing	14040	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537
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
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**8.0000e-005**	**6.9000e-004**	**5.8000e-004**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.7492**	**0.7492**	**1.0000e-005**	**1.0000e-005**	**0.7537**

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					
City Park	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
Manufacturing	14040	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537
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
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**8.0000e-005**	**6.9000e-004**	**5.8000e-004**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.7492**	**0.7492**	**1.0000e-005**	**1.0000e-005**	**0.7537**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Manufacturing	17120	4.9804	2.3000e-004	5.0000e-005	4.9999
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	1260	0.3666	2.0000e-005	0.0000	0.3680
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**5.3470**	**2.5000e-004**	**5.0000e-005**	**5.3679**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Manufacturing	17120	4.9804	2.3000e-004	5.0000e-005	4.9999
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	1260	0.3666	2.0000e-005	0.0000	0.3680
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**5.3470**	**2.5000e-004**	**5.0000e-005**	**5.3679**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Unmitigated	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004

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	0.0349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1169					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Total	**0.1519**	**0.0000**	**4.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.8000e-004**	**8.8000e-004**	**0.0000**	**0.0000**	**9.3000e-004**

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	0.0349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1169					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Total	**0.1519**	**0.0000**	**4.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.8000e-004**	**8.8000e-004**	**0.0000**	**0.0000**	**9.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.0873	0.2243	5.3900e-003	20.2997
Unmitigated	13.0873	0.2243	5.3900e-003	20.2997

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.0953185	0.0971	0.0000	0.0000	0.0974
Manufacturing	0.925 / 0	1.7495	0.0302	7.3000e-004	2.7208
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
Unrefrigerated Warehouse-No Rail	5.94313 / 0	11.2407	0.1941	4.6600e-003	17.4814
Total		**13.0873**	**0.2243**	**5.3900e-003**	**20.2997**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.0953185	0.0971	0.0000	0.0000	0.0974
Manufacturing	0.925 / 0	1.7495	0.0302	7.3000e-004	2.7208
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
Unrefrigerated Warehouse-No Rail	5.94313 / 0	11.2407	0.1941	4.6600e-003	17.4814
Total		**13.0873**	**0.2243**	**5.3900e-003**	**20.2997**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	5.9131	0.3495	0.0000	14.6495
Unmitigated	5.9131	0.3495	0.0000	14.6495

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.01	2.0300e-003	1.2000e-004	0.0000	5.0300e-003
Manufacturing	4.96	1.0068	0.0595	0.0000	2.4944
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	24.16	4.9043	0.2898	0.0000	12.1501
Total		**5.9131**	**0.3495**	**0.0000**	**14.6495**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.01	2.0300e-003	1.2000e-004	0.0000	5.0300e-003
Manufacturing	4.96	1.0068	0.0595	0.0000	2.4944
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	24.16	4.9043	0.2898	0.0000	12.1501
Total		**5.9131**	**0.3495**	**0.0000**	**14.6495**

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

Appendix B:
Greenhouse Gas Study

Air Quality Study

for the

Biomass Utilization Fund,

Tuolomne BioEnergy Inc., Woody Biomass Pellet Manufacturing Facility

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Appendices

Tables

1 INTRODUCTION

Ascent Environmental (Ascent) has conducted a comprehensive air quality assessment for the Tuolumne Bioenergy Woody Biomass Pellet Manufacturing Facility (project) to determine the significance of the project's estimated emissions to support environmental review pursuant to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The project proposes to construct and operate a woody biomass pellet manufacturing facility in Sonora, CA. The biomass feedstocks would be sourced from low-market-value biomass piles from various forestry thinning and logging activities at sites within 40 miles of the project site. Without the project, these biomass piles would otherwise be likely subject to open pile burning.

This report presents the methodology and results of the estimated criteria air pollutant emissions, toxic air contaminants, and odors, including emissions offset through the avoidance of open pile burning of the same biomass feedstock. The offset pile burning and proposed pellet manufacturing facility would both be located within the Mountain Counties Air Basin. Thus, any regional increase or decrease in criteria air pollutant emissions from the project would occur within the same air basin and can be evaluated as a single net change in emissions.

2 PROJECT DESCRIPTION

The project proposes to construct and operate a woody biomass pellet manufacturing facility (pellet mill) on a 3.27 acre leased property in an industrial business park in Sonora, CA, located in Tuolumne County. According to the California Biomass Utilization Facility Feedstock Supply Report, the project would have access up to 44,000 bone dry tons (BDT) of biomass annually (Department of Housing and Community Development 2018: Table 5.3). The pellet mill is expected to produce between 29,000 and 31,000 tons of wood pellets per year, with a maximum production capacity of 31,200 tons per year. Approximately 9,293 BDT of additional biomass would be used to fuel the on-site combined heat and power (CHP) system proposed for the facility. In total, the facility would consume between 38,293 and 40,493 BDT of biomass. The CHP system will provide heat and electricity for biomass drying, the pellet mill, and other on-site energy needs (e.g., office space, outdoor lighting). The biomass on-site would also be handled via enclosed electrical receivers and conveyers and off-road material handling equipment. The pellet mill would have the ability to run 24 hours per day (up to 8,000 hours per year), 7 days per week, and 333 days per year. Haul trucks are assumed to operate 5 days per week and 42 weeks per year (240 days per year).

The project would source its biomass from small understory trees, shrubs, and limbs and branches left over from forest thinning and fire fuel reduction on U.S. Forest Service and private lands within 40 miles of the project site. In the absence of the project, under existing conditions, the 44,000 BDT of biomass is pile burned annually, generating criteria air pollutants and greenhouse gas (GHG) emissions. GHG emissions from the project are evaluated in a separate Greenhouse Gas Study for this project.

Under the project, the biomass piles would be collected and chipped at two different zones, located up to 20 miles (Zone 1) and 40 miles (Zone 2) from the project site. Deliveries would be made to the project site five days per week. At the project site, the chipped biomass would be dried in a biomass dryer, heated by the CHP system, until it reaches a 12 percent moisture content. About 24 percent of the dried biomass would be used to fuel the CHP system and the remaining biomass would be processed in the pellet mill to manufacture wood pellets. Most material handling will be done via electric conveyer belts and receivers. On-site material handling would also include the use of off-road equipment, such as a yard tractor with a hooklift trailer to dump bins into a receiver or stack and store pallets of finished bagged pellets. The manufactured wood pellets would then be shipped for retail distribution. Waste ash (approximately 700 tons per year) would also be disposed at a compost facility less than one mile from the project site.

The project would purchase all new off-road equipment and on-road trucks to support the operations.

3 ENVIRONMENTAL SETTING

The project site is located in Sonora, California, which is under the jurisdiction of the Tuolumne County Air Pollution Control District (TCAPCD) and is within the Mountain Counties Air Basin (MCAB). The MCAB includes all of Amador, Calaveras, El Dorado, Mariposa, Nevada, Placer, Plumas, Sierra, and Tuolumne Counties. Ambient concentrations of air pollutants are determined by the levels of emissions released by pollutant sources and the ability of the atmosphere to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight.

Concentrations of criteria air pollutants are used to indicate the quality of the ambient air. A brief description of key criteria air pollutants is provided below. Table 1 summarizes the emission source type and the foreseeable health impacts that result from exposure to concentrations of criteria air pollutants that exceed the applicable California Ambient Air Quality Standards (CAAQS) and national ambient air quality standards NAAQS.

Table 1 Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	secondary pollutant resulting from reaction of ROG and NO_X in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X results from the combustion of fuels	increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	incomplete combustion of fuels; motor vehicle exhaust	headache, dizziness, fatigue, nausea, vomiting, death	permanent heart and brain damage
Nitrogen dioxide (NO_2)	combustion devices; e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, death	chronic bronchitis, decreased lung function
Sulfur dioxide (SO_2)	coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	There is insufficient evidence linking SO_2 exposure to chronic health impacts.
Respirable particulate matter (PM_{10}), Fine particulate matter ($PM_{2.5}$)	fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO_2 and ROG	breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	alterations to the immune system, carcinogenesis
Lead	metal processing	reproductive/ developmental effects (fetuses and children)	numerous effects including neurological, endocrine, and cardiovascular effects

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 microns or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 microns or less; SO_2 = sulfur dioxide; CO = carbon monoxide

[1] Acute health effects refer to immediate illnesses caused by short-term exposures to criteria air pollutants at fairly high concentrations. An example of an acute health effect includes fatality resulting from short-term exposure to carbon monoxide levels in excess of 1,200 parts per million.

[2] Chronic health effects refer to cumulative effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations. An example of a chronic health effect includes the development of cancer from prolonged exposure to particulate matter at concentrations above the national ambient air quality standards.

Sources: U.S Environmental Protection Agency (EPA) 2018

OZONE

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed as a secondary pollutant through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels. ROGs and related compounds are also referred to as volatile organic compounds (VOCs), most commonly by EPA. EPA's and California Air Resources Board's (CARB) list of compounds recognized as VOC and ROG differ slightly. In general, most ROG emissions are included as a subset of VOCs. Thus, ROG is assumed to be a suitable substitute for VOC for the purposes of this analysis (CARB 2004).

Emissions of the ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. Emissions of ROG and NO_X decreased from 2000 to 2010 and are projected to continue decreasing from 2010 to 2035 (CARB 2013).

NITROGEN DIOXIDE

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local sources of NO_X emissions (EPA 2012).

PARTICULATE MATTER

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (CARB 2013). Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM_{10} emissions in the treatable landscape are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion.

Direct emissions of PM_{10} in California have increased slightly over the last 20 years, and are projected to increase very slightly through 2035. Emissions of $PM_{2.5}$ are dominated by several of the same sources as emissions of PM_{10}, but are more greatly influenced by combustion sources (CARB 2013).

CARBON MONOXIDE

CO is an odorless and invisible gas. It is a non-reactive pollutant that is a product of incomplete combustion of gasoline in automobile engines. CO is a localized pollutant, and the highest concentrations are found near the source. Ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic and are influenced by wind speed and atmospheric mixing. CO concentrations are highest in flat areas on still winter nights when temperature inversions trap the carbon monoxide near the ground. When inhaled at high concentrations, carbon monoxide reduces the oxygen-carrying capacity of the blood, which, in turn, results in reduced oxygen reaching parts of the body.

ATTAINMENT DESIGNATIONS

CARB and EPA designate each county (or portions of counties) within California as attainment, maintenance, or nonattainment based on the area's ability to maintain ambient air concentrations below the applicable standards (i.e., CAAQS, NAAQS). Areas are designated as attainment if ambient air concentrations of a criteria pollutant (or precursor) are below the NAAQS. Areas are designated as nonattainment if ambient air concentrations are above the NAAQS. Areas previously designated as nonattainment that subsequently demonstrated compliance with the NAAQS are designated as maintenance. Table 2 shows the attainment status for each criteria air pollutant with respect to the CAAQS and the NAAQS in Tuolumne County.

Table 2 Attainment Status Designations for Tuolumne County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone	Attainment (1-hour)[1]	Nonattainment (1-hour)
	Nonattainment (8-hour)[3] Classification=Moderate	Nonattainment (8-hour)
	Nonattainment (8-hour)[4] Classification= Marginal	
Respirable particulate matter (PM_{10})	Attainment (24-hour)	Unclassified (24-hour)
		Unclassified (Annual)
Fine particulate matter ($PM_{2.5}$)	Attainment (24-hour)	(No State Standard for 24-Hour)
	Attainment (Annual)	Unclassified (Annual)
Carbon monoxide (CO)	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Unclassified/Attainment (1-hour)	Attainment (1-hour)
	Unclassified/Attainment (Annual)	Attainment (Annual)
Sulfur dioxide (SO_2)[5]	Attainment (1-Hour)	Attainment (1-hour)
		Attainment (24-hour)
Lead (Particulate)	Attainment (3-month rolling avg.)	Attainment (30 day average)
Hydrogen Sulfide	No Federal Standard	Unclassified (1-hour)
Sulfates		Attainment (24-hour)
Visibly Reducing Particles		Unclassified (8-hour)
Vinyl Chloride		Unclassified (24-hour)

Notes:
[1] Air Quality meets federal 1-hour Ozone standard (77 FR 64036). EPA revoked this standard, but some associated requirements still apply.
[2] Per Health and Safety Code (HSC) § 40921.5(c), the classification is based on 1989 – 1991 data, and therefore does not change.
[3] 1997 Standard.
[4] 2015 Standard.
[5] 2010 Standard.
Source: CARB 2019a, EPA 2021

SENSITIVE RECEPTORS

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, outdoor playgrounds, places of worship, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants. Although the project site is located within an industrial land use area and there are no residential land uses, schools, or hospitals within 1,000 feet of the project boundary, there is one sensitive receptors

within 1,000 feet of the project boundary, an outdoor baseball park facility (Standard Park). The details of this receptor are summarized in Table 3.

Table 3 Sensitive Receptors within 1,000 feet of the Project Site

Receptor	Location (easting (m), northing (m))[1]	Distance from Project Site (ft)	Distance from Project Site (m)
Standard Park	735969.69, 4204699.56	270	80

Note: ft = feet, m = meters

[1] Based on Universal Transverse Mercator coordinates

Source: Compiled by Ascent Environmental., Inc. in 2021

4 REGULATORY BACKGROUND

At the federal level, the EPA implements the national air quality programs. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (CAA), enacted in 1970. The most recent major amendments were made by Congress in 1990. The CAA requires EPA to establish National Ambient Air Quality Standards (NAAQS). EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (i.e., respirable particulate matter [PM_{10}] and fine particulate matter [$PM_{2.5}$]), and lead (Pb). The primary standards protect public health, and the secondary standards protect public welfare. The CAA also requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Federal Clean Air Act Amendments (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA reviews all state SIPs to determine whether they conform to the mandates of the CAA and its amendments and whether implementing them will achieve air quality goals. If EPA determines a SIP to be inadequate, a Federal Implementation Plan that imposes additional control measures may be prepared for the nonattainment area. If the state fails to submit an approvable SIP or to implement the plan within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basins.

Specifically, Section 176 (C) of the CAA (42 U.S.C. 7506 [C]) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable SIP required under Section 110 (a) of the CAA (42 U.S.C. 7401 [a]) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulation implementing the conformity requirements would, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, EPA promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under the transportation conformity. The general conformity regulations apply to a proposed federal action in a nonattainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutant and precursor emissions caused by the proposed action equal or exceed certain *de minimis* amounts; thus, requiring the federal agency to make a determination of general conformity.

5 SIGNIFICANCE CRITERIA

As mentioned, a general conformity determination (GCD) is required if a federal action results in the generation of air pollutants for which the total of direct and indirect emissions equals or exceeds the *de minimis* thresholds as shown

below in Table 4. These emission rates are expressed in units of tons per year and are compared to the total of direct and indirect emissions caused by the project for each calendar year when construction activities would take place.

It should be noted that because ozone is a secondary pollutant (i.e., it is not emitted directly into the atmosphere, but formed in the atmosphere from the photochemical reactions in the presence of sunlight), its *de minimis* level is based on the primary emissions of precursor pollutants – NO_X and VOCs. If the net emissions of either NO_X or VOCs exceeds the *de minimis* level for ozone, the project is subject to a GCD. In addition, there are no *de minimis* levels for pollutants for which the MCAB is designated as an attainment area.

Table 4 De Minimis Thresholds for Determining Applicability of General Conformity Requirements for Federal Actions

Pollutant	Federal Classification	General Conformity De Minimis Levels (tons per year)
Ozone	Nonattainment (Marginal)	NA
VOC (as an ozone precursor)		50
NO_x (as an ozone precursor)		100

Notes: NA: Not Applicable

Source: EPA 2021

In addition, the TCAPCD has established specific thresholds for air quality impacts evaluated under CEQA. Pursuant to the State CEQA Guidelines, air quality impacts related to the project would be significant if the project would:

- conflict with or obstruct implementation of the applicable air quality plan;
- violate any air quality standard or contribute substantially to an existing or project air quality violation—for the purposes of the project locations, result in construction or operations of a project that generated emissions in excess of the following thresholds, except carbon monoxide, used by the TCAPCD:
  - reactive organic gases (ROG) – 1,000 pounds per day or 100 tons per year
  - nitrous oxides (NO_X) – 1,000 pounds per day or 100 tons per year
  - particulate matter with diameters generally 10 micrometers and smaller (PM_{10}) – 1,000 pounds per day or 100 tons per year
  - carbon monoxide (CO) – result in an affected intersection experiencing more than 31,600 vehicles per hour.
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed qualitative thresholds for ozone precursors);
- expose sensitive receptors to a substantial incremental increase in toxic air contaminants (TAC) emissions that exceed 10 in 1 million for carcinogenic risk (i.e., the risk of developing cancer) and/or a noncarcinogenic hazard index of 1.0 or greater; or
- create objectionable odors affecting a substantial number of people. (TCAPCD 2017)

6 CRITERIA AIR POLLUTANT EMISSIONS

6.1 CONSTRUCTION EMISSIONS

The project would construct the proposed woody biomass pellet manufacturing facility on a 3.27-acre lot. The existing lot is undeveloped and has minimal vegetative cover. Construction of the proposed facilities would require

site preparation and grading activities. Based on the project site plan, the project would construct a 4,000 square foot (sf) manufacturing facility, a 5,000-sf covered outdoor storage area, two 100-foot-diameter chip storage silos, outdoor standalone equipment (e.g., dryer, battery, bins, chip receivers, furnace), 10,200 sf of flatwork concrete, 3,300 sf of landscaped area, 3,600 sf of pavement, and a 22,000-sf graveled storage yard. According to TBI, the outdoor standalone equipment is assumed to come preassembled and would require cranes for equipment placement (TBI 2021). Construction is assumed to begin in February 2022. The project site plan is included in Appendix B.

Criteria air pollutant emissions from construction of the proposed project were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 (California Air Pollution Control Officers Association [CAPCOA] 2016a), which is consistent with analysis performed in the Greenhouse Gas Study. A newer version of CalEEMod (version 2020.4.0) was released on June 23, 2020, after the Greenhouse Gas Study was completed. Based on the information and assumptions described and per discussions with the applicant, CalEEMod estimated a construction duration period of approximately four months, with construction activities ending by June 2022. Construction activities were assumed to occur for 8 hours per day and 5 days per week. The proposed land uses were matched to the most similar land use types available in CalEEMod, which CalEEMod uses to estimate default modeling assumptions (e.g., the construction phasing durations, number of equipment, equipment hours per day, and worker trips). These assumptions are shown in the CalEEMod output remarks in Appendix C. Material hauling emissions during the grading phase were adjusted to account for the gravel that would be needed for the storage yard, assuming a depth of eight inches and an average weight of 1.35 tons per cubic yard of gravel (Inch Calculator 2021). Additional modeling details can be found in Appendix C.

Based on the modeling conducted, Tables 5 and 6 show the estimated criteria air pollutant emissions that would result from construction activities over the four-month construction period.

Table 5 Estimated Construction Criteria Air Pollutant Emissions (Daily)

Phase	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	CO (lb/day)
Site Preparation	1	15	7	8
Grading	1	14	6	7
Building Construction	2	17	1	16
Paving	1	7	1	10
Architectural Coating	70	1	0	2
Construction Maximum Daily Emissions	70	17	7	16
TCAPCD Significance Threshold	1,000	1,000	1,000	NA
De minimis Threshold[1]	NA	NA	NA	NA
Exceed Thresholds?	No	No	No	NA

Note: ROG = reactive organic gases, NO_X = oxides of nitrogen, PM_{10} = inhalable particle with diameters of 10 micrometers or smaller, CO = carbon monoxide, TCAPCD = Tuolumne County Air Pollution Control District, NA = not applicable

[1] *De minimis* thresholds are provided in tons per year only.

Source: Modeled by Ascent Environmental., Inc. in 2021

Table 6 Estimated Construction Criteria Air Pollutant Emissions (Annual)

Phase	ROG (lb/year)	NO_X (lb/year)	PM_{10} (lb/year)	CO (lb/year)
Site Preparation	3	29	13	16
Grading	5	55	23	28
Building Construction	133	1006	61	972
Paving	9	69	5	99

Architectural Coating	701	14	1	22
Construction Total (lb/year)	850	1174	103	1137
Construction Total (tons/year)	0.425	0.587	0.052	0.569
TCAPCD Significance Threshold (tons/year)	100	100	100	NA
De minimis Threshold (tons/year)	50	100	NA	NA
Exceed Thresholds?	No	No	No	NA

Note: ROG = reactive organic gases, NO_X = oxides of nitrogen, PM_{10} = inhalable particle with diameters of 10 micrometers or smaller, CO = carbon monoxide, TCAPCD = Tuolumne County Air Pollution Control District, NA = not applicable, lb = pounds.

Source: Modeled by Ascent Environmental., Inc. in 2021

As shown in Tables 5 and 6, criteria air pollutant emissions generated by project construction would not exceed TCAPCD's significance thresholds. Therefore, air quality impacts related to construction would be less than significant.

6.2 OPERATIONAL EMISSIONS

Operation of the proposed project would involve chipping at the forest biomass pile collection sites, hauling the chips to the pellet mill, drying and milling of the chips at the mill, and delivery of the wood pellets for retail sale. These activities would result in criteria air pollutant emissions from the operation of diesel chipping and biomass handling equipment, worker trips to the collection sites and pellet mill, diesel truck haul trips between the biomass collection sites, pellet mill, and retail distribution; and combustion of a portion of the biomass in a CHP system to provide heat and electricity to power the pellet mill and other accessory buildings and lighting. The proposed project would not use natural gas or grid-based electricity but would operate a standby generator for initial system start-up and emergencies. Pellet mill operations are assumed to occur 333 days per year and up to 8,000 hours per year, and the first full year of operation would begin in 2023. Haul trucks and field operations are assumed to operate 240 days per year, or 5 days per week and 48 weeks per year.

The modeling assumptions for the off-road mobile sources, on-road mobile sources, biomass combustion at the pellet mill, and offset emissions from avoided pile burning are described in the following sections. Detailed calculations and assumptions can be found in Appendix A.

6.2.1 Off-Road Mobile Sources

Off-road mobile sources used during project operations include diesel-fueled chippers, forwarders, tractors, and other material handling equipment. Based on information provided by TBI, equipment at the forest collection sites would include all new 500-horsepower (hp) Bruks chippers attached to 285-hp Ponsse forwarders and one 217-hp JBC 4220 field tractor (TBI 2021). During biomass collection, three chippers and three forwarders are assumed to operate, one set in Zone 1 and two sets in Zone 2, based on the amount of biomass available in each Zone (TBI 2021). This equipment would operate 8 hours per day and 333 days per year. During pellet mill operations, diesel off-road equipment, such as tractor, chip reloaders, and bin trucks, are assumed to handle material at various stages of the manufacturing process (TBI 2021). (Patenaude pers. comm., 2021a, 2021b).

All off-road equipment manufactured after 2014 is required to meet EPA's Tier 4 emissions standards. The proposed off-road equipment and corresponding horsepower ratings were matched with emission factors from EPA's *Nonroad Compression-Ignition Engines: Exhaust Emission Standards* for Tier 4 engines to quantify the criteria air pollutant emissions from off-road mobile sources (EPA 2016). The equipment load factors, which estimate the percent of time during which an engine is engaged during operations, were obtained from CalEEMod's default assumptions for material handling equipment and off-highway trucks (CAPCOA 2016b:Table 3.3). The forwarder/chipper combination is assumed to operate as two separate engines, but because of their tandem operations the load factors were assumed to be 50 percent of the default assumptions in CalEEmod. The activity and equipment assumptions, including the number of equipment, hours of operation per year, and load factors can be found in Table 1 of the

Greenhouse Gas Study for this project. Emission factors and calculated criteria air pollutant emissions are shown in Tables 7 through 9 below. Additional modeling information is available in Appendix A.

Table 7 Off-Road Equipment Power Ratings, Load Factors, and Emission Factors

Activity	Off-Road Equipment (hp)	Load Factor	ROG (lb/hr)	NO_X (lb/hr)	PM_{10} (lb/hr)	CO (lb/hr)
Forest Biomass Collection	Forwarder (285)	0.20	0.09	0.19	0.01	1.64
	Chipper (500)	0.20	0.16	0.33	0.02	2.88
	Field Tractor (68)	0.38	0.07	0.14	0.01	0.80
Pellet Mill Operations	Yard Tractor (125)	0.40	0.04	0.08	<0.01	1.03
	Field Tractor (68)	0.40	0.02	0.04	<0.01	0.56
	Bin Truck (400)	0.40	0.12	0.26	0.01	2.30

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide, lb/hr = pounds per hour, hp = horsepower

Source: CAPCOA 2016:Table 3.3, EPA 2016

Table 8 Estimated Off-Road Equipment Daily Emissions

Activity	Off-Road Equipment	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	CO (lb/day)
Forest Biomass Collection	Forwarder	0.43	0.90	0.04	7.87
	Chipper	0.75	1.58	0.08	13.81
	Field Tractor	0.62	1.30	0.07	7.33
Forest Biomass Collection Subtotal		1.80	3.78	0.19	29.01
Pellet Mill Operations	Yard Tractor	0.02	0.03	<0.01	0.41
	Field Tractor	0.01	0.01	<0.01	0.15
	Bin Truck	0.07	0.16	0.01	1.38
Mill Operations Subtotal		0.10	0.20	0.01	1.94
Total		1.89	3.98	0.20	30.95

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide, lb/day = pounds per day. Values may not sum exactly due to rounding.

Source: Modeled by Ascent Environmental. Inc., in 2021 based on information received from TBI (TBI 2021).

Table 9 Estimated Off-Road Equipment Annual Emissions

Activity	Off-Road Equipment	ROG (tons/year)	NO_X (tons/year)	PM_{10} (tons/year)	CO (tons/year)
Forest Biomass Collection[1]	Forwarder	0.05	0.11	0.01	0.94
	Chipper	0.09	0.19	0.01	1.66
	Field Tractor	0.07	0.16	0.01	0.88
Forest Biomass Collection Subtotal		0.22	0.45	0.02	3.48
Pellet Mill Operations[3]	Yard Tractor	<0.01	0.01	0.0003[2]	0.07
	Field Tractor	<0.01	<0.01	0.0001[2]	0.02
	Bin Truck	0.01	0.03	0.0013[2]	0.23
Mill Operations Subtotal		0.02	0.03	0.0017[2]	0.32
Total		0.23	0.49	0.02	3.80

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide, lb/day = pounds per day. Values may not sum exactly due to rounding.

[1] Calculated from daily emissions and assumption of 240 days per year, consistent with assumptions for haul truck days.

[2] Additional significant figures are shown for these values to substantiate the calculations for diesel particulate matter emissions discussed in Section 7: Toxic Air Contaminants

[3] Calculated from daily emissions and assumption of 333 days per year, consistent with assumptions for the pellet mill operations.

Source: Modeled by Ascent Environmental. Inc., in 2021 based on information received from TBI (TBI 2021).

6.2.2 On-Road Mobile Sources

On-road mobile sources include worker trips (to the forest biomass collection sites and the pellet mill) and diesel haul truck trips (between the forest biomass collection sites, the pellet mill, and retail sales distribution). For worker trips, each Zone is assumed to have 6 workers and the pellet mill is assumed to employ 25 workers (TBI 2021). Based on the default worker commute assumptions in CalEEMod, each worker's commute trip is assumed to be an average of 16.8 miles. The calculated vehicle miles traveled (VMT) for worker commute trips were then applied to the average criteria air pollutant emission factors for light duty vehicles in Tuolumne County for calendar year 2023, as derived from CARB's EMission FACtor model (EMFAC), version EMFAC 2021 (CARB 2021b).

Emissions from haul trucks include exhaust from on-road transportation and from idling during loading and unloading at each terminal site. Haul truck activities are divided into two categories: transportation from the biomass collection site to the pellet mill and transportation from the pellet mill to retail sales and ash disposal. The number of haul trips for each category was calculated based on the tonnage of material needed to be transported, the capacity of the trucks, and the trip lengths. The project is anticipated to haul up to 12,821 BDT of biomass from Zone 1 and up to 27,473 BDT from Zone 2 annually to the project site. BDT refers to the equivalent tonnage of the biomass at zero percent moisture. Assuming the collected green biomass has a moisture content of 35 percent, the haul trucks are assumed to carry up to 19,724 tons of green biomass from Zone 1 and up to 42,265 tons from Zone 2. In all cases, trucks are assumed to carry 20 tons per load. The trip lengths from Zone 1 and 2 to the project site were estimated to be 20 and 40 miles per trip, respectively, based on information provided by TBI. The trip length between the pellet mill and retail sales was estimated to be 50 miles, which is the approximate driving distance between the project site and Merced, CA, which is the closest urban center. Trips outside of this range were not included due to the speculative nature of further retail destinations and the tonnages shipped beyond this range. Trucks were assumed to idle for a maximum of five minutes at each site (biomass collection and pellet mill) to account for loading and unloading activities. Under its adopted Airborne Toxic Control Measure set forth in Title 13 of the California Code of Regulations, Section 2485, CARB requires that diesel-fueled commercial motor vehicles with gross vehicle weight ratings greater than 10,000 pounds not idles for longer than five minutes at any location (CARB 2021c).

To calculate the emissions from haul trucks, the calculated VMT and total idling time for haul truck trips were applied to the average criteria air pollutant emission factors for T6 in-state heavy duty diesel trucks in Tuolumne County for calendar year 2023 for 2022 truck model years, as derived from EMFAC 2021 (CARB 2021b). The project applicant has identified that all new vehicles would be purchased for this project, which would begin full operations in 2023 (Patenaude, pers comm., 2021b). Additional modeling information is available in Appendix A.

The on-road mobile source activity and vehicle trip assumptions, including trips per day, trip length, and VMT per year can be found in Table 2 of the Greenhouse Gas Study for this project. Criteria air pollutant emission factors and calculated emissions are shown in Tables 10 through 12.

Table 10 On-Road Mobile Source Emission Factors

Activity	ROG	NO_X	PM_{10}	CO
Commute Trips[1]				
Worker Trips (lb/mi)	5.69E-04	4.59E-04	9.77E-06	3.40E-03
Truck Haul Trips and Idling[2]				
Haul Trips (lb/mi)	1.74E-05	8.67E-03	4.32E-05	4.84E-03
Idling (g/min)	1.05E-04	7.16E-03	1.93E-06	4.99E-03

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide, lb/mi = pounds per mile, g/min = grams per minute.

[1] Commute trip average vehicle emission factors based on the LDA, LDT1, and LDT2 vehicle categories in EMFAC 2021.

[2] Haul truck emission factors based on the diesel "T6 instate heavy" vehicle category and 2022 model year in EMFAC 2021. EMFAC 2021 results reflect conditions for Tuolumne County for calendar year 2023.

Source: Modeled by Ascent Environmental., Inc. in 2021

Table 11 Estimated On-Road Mobile Source Daily Emissions

Activity	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	CO (lb/day)
Commute Trips				
Biomass Collection – Worker Trips	0.344	0.278	0.006	2.059
Pellet Mill – Worker Trips	0.478	0.386	0.008	2.859
Commute Trips Subtotal	0.822	0.664	0.014	4.918
Haul Trips				
Zone 1 Biomass Collection to Pellet Mill	0.003	1.424	0.007	0.796
Zone 2 Biomass Collection to Pellet Mill	0.006	3.052	0.015	1.706
Zone 1 Idling	<0.001	0.001	<0.001	0.001
Zone 2 Idling	<0.001	0.001	<0.001	0.001
Biomass Collection Subtotal	0.009	4.478	0.022	2.503
Idling	<0.001	0.001	<0.001	0.001
Pellet Mill to Ash Disposal	<0.001	0.003	<0.001	0.001
Pellet Mill to Retail Sales	0.011	5.416	0.027	3.027
Pellet Mill Trips Subtotal	0.011	5.420	0.027	3.029
Haul Trips Subtotal	0.020	9.898	0.049	5.532
TOTAL On-Road Mobile Sources	0.841	10.562	0.063	10.450

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide, lb/day = pounds per day. Values may not sum due to rounding.

Source: Modeled by Ascent Environmental., Inc. in 2021

Table 12 Estimated On-Road Mobile Source Annual Emissions

Activity	ROG (tons/year)	NO_X (tons/year)	PM_{10} (tons/year)	CO (tons/year)
Commute Trips				
Biomass Collection – Worker Trips	0.041	0.033	0.001	0.247
Pellet Mill – Worker Trips	0.057	0.046	0.001	0.343
Commute Trips Subtotal	0.099	0.080	0.002	0.590
Haul Trips				
Zone 1 Biomass Collection to Pellet Mill	<0.001	0.171	0.001	0.096
Zone 2 Biomass Collection to Pellet Mill	0.001	0.366	0.002	0.205
Zone 1 Idling	<0.001	<0.001	<0.001	<0.001
Zone 2 Idling	<0.001	<0.001	<0.001	<0.001
Biomass Collection Subtotal	0.001	0.537	0.003	0.300
Idling	<0.001	<0.001	<0.001	<0.001
Pellet Mill to Ash Disposal	<0.001	<0.001	<0.001	<0.001
Pellet Mill to Retail Sales	0.001	0.650	0.003	0.363
Pellet Mill Trips Subtotal	0.001	0.650	0.003	0.363
Haul Trips Subtotal	0.002	1.188	0.006	0.664
TOTAL On-Road Mobile Sources	0.101	1.267	0.008	1.254

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide. Values may not sum due to rounding.

Source: Modeled by Ascent Environmental., Inc. in 2021

6.2.3 Pellet Mill Operations (Biomass Combustion and Fugitive Dust)

The proposed project operations at the pellet mill would result in criteria air pollutant emissions from the on-site combustion of 9,293 BDT of biomass per year and in fugitive dust from the processing of 31,000 BDT of biomass for pellet production. Accounting for 12 percent moisture content in oven-dried biomass, this equates to 10,560 tons per year used for combustion and 35,227 tons per year used in pellet production. With respect to combustion, oven-dried tonnage contrasts with bone dry tonnage in that BDT is a metric of the fuel contained within biomass, as any moisture cannot be combusted. Criteria air pollutant emissions from the on-site combustion of biomass were calculated based on emission factors and average operating hours of the SuperBrix Teo-IV6000 furnace, as recommended by the applicant as a proxy for the proposed pellet mill CHP system (Patenaude, pers. comm., 2021c). The mill's furnace will have a maximum consumption rate of 1.32 tons of dried wood (12 percent moisture content) per hour and operates 24 hours per day. Fugitive PM dust emissions from pellet mill production are filtered through a series of cyclones and baghouses, resulting in an efficiency where up to 99.999 percent of particles larger than 3 microns are filtered out (Patenaude, pers. comm., 2021d).

Based on values provided by the applicant, the furnace would emit 2.17 pounds of NO_X, 0.30 pounds of SO_2, and 0.95 pounds of PM_{10} per hour. Although TCAPCD does not have thresholds for SO_2, these values are provided for TAC quantification purposes. This hot exhaust is vented through a heat exchanger then a belt dryer that dries the pellets. The dryer functions as a filter for the PM emissions as the exhaust is slowed and particulates fall from the exhaust stream. Fugitive dust from pellet mill production are also filtered through separate baghouses and result in additional 0.22 pounds of PM_{10} per hour. The resulting total PM_{10} emissions from the furnace and baghouse are estimated to be 1.17 pounds per hour . Thus, assuming a maximum of 24 hours of operation per day and 8,000 hours per years, pellet

mill operations would consume 1.32 tons per hour and result in maximum daily emissions of 52.0 pounds of NO_X, 28.1 pounds of PM_{10}, and 5.4 pounds of SO_2 per day, and annual emissions of 8.7 tons of NO_X, 4.7 tons of PM_{10}, 0.9 tons of SO_2. ROG and CO emissions were not detected in the emissions tests for SuperBrix and are excluded from Table 13. These calculations are shown in additional detail in Appendix A and summarized in Table 13. (Patenaude, pers. comm., 2021c, 2021d).

Table 13 Pellet Mill Criteria Air Pollutant Emissions Summary

Emissions Source[1]	NO_X	PM_{10}	SO_2[3]
Furnace Hourly (lb/hr)	2.17	0.95	0.30
Baghouse Hourly (lb/hr)[2]	-	0.22	-
Total Hourly (lb/hr)	2.17	1.17	0.30
Total Daily (lb/day)	52.02	28.10	7.19
Total Annual (tons/year)	8.67	4.68	1.20

Note: NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, SO_2 = sulfur dioxide, lb = pounds, hr = hour. Values may not sum due to rounding.

[1] Daily and hourly emissions are based on operating times of 24 hours per day and 8,000 hours per year. ROG and CO emissions were not detected in the emissions tests for SuperBrix and are excluded from this table. (Patenaude, pers. comm., 2021b, 2021c)

[2] The baghouse emits PM emissions only.

[3] SO_2 values provided here for TAC calculation purposes only.

Source: Modeled by Ascent Environmental., Inc. in 2021

Combustion of the wood pellets manufactured by the proposed project is not included in this analysis. This is largely because specifying the air basin in which these wood pellets would be combusted would be speculative, as they could occur anywhere in the country after they have been sold for retail distribution. The air basin where combustion of wood pellets could occur is an important consideration in estimation of air pollutant emissions and the determination of significance for such emissions. This is because the ambient concentrations of air pollutant emissions are determined by conditions unique to each air basin (e.g., meteorological and topographical conditions). This results in different attainment designations for the California ambient air quality standards and the national ambient air quality standards as well as distinct thresholds set by air districts to determine when air quality standards have been violated. The regulatory framework in air basins outside California may also differ in how ambient air quality standards are set and project impacts are assessed. Therefore, it would be speculative for this analysis to attempt to characterize air emissions and associated impacts from combustion of wood pellets after retail sale. In addition, the project would not result in net new consumption of wood pellets but would rather replace pellets that may be sourced from less sustainable resources (e.g., virgin timber).

6.2.4 Offset Pile Burning

Under a No Project alternative, the biomass collected for the proposed project would otherwise likely be burned in piles at the forest collection sites. Based on a report released by the National Wildfire Coordinating Group (NWCG 2020), average pile burning generates 11.6 pounds of ROG, 4.1 pounds of NO_X, 17.1 pounds of $PM_{2.5}$, and 169 pounds of CO per ton of fuel consumed (NWCG 2020: Table 4.1.1, Peterson, pers. comm., 2021). Based on the total annual tons of fuel consumed (40,293 BDT per year), the project would preclude 234 tons of ROG, 83 tons of NO_X, 381 tons of PM_{10}, and 3,405 tons of CO emissions per year that would otherwise occur from pile burning. Assuming pile burning would occur 100 days per year, based on the approximate average number of days that are classified as burn windows elsewhere in the Sierra Nevada, the project would avoid maximum daily emissions of 4,674 pounds of ROG, 1,652 pounds of NO_X, 7,611 pounds of PM_{10} and 68,095 pounds of CO per day (Striplin et. al., 2020).

6.2.5 Total Operational Emissions

Under the project operations, criteria air pollutant emissions would be generated by off-road equipment, on-road haul trucks and worker trips, and combustion of biomass at the pellet mill. Criteria air pollutant emissions would also be avoided because the same biomass material delivered to the project site would no longer be piled and burned in the forest. A summary of the emissions levels associated with these activities is provided in Tables 14 and 15. See Appendix A for detailed parameters and calculations.

Table 14 Operational Emissions Summary (Daily)

Emissions Source	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	CO (lb/day)
Off-Road Equipment	1.89	3.98	0.20	30.95
Worker Commute	0.82	0.66	0.01	4.92
Haul Trips	0.02	9.90	0.05	5.53
Biomass Combustion at the Pellet Mill	-	52.02	28.10	-
Total Emissions from Pellet Mill	2.73	66.56	28.36	41.40
Avoided Emissions from Burning of Biomass Piles	4,673.99	1,652.01	7,611.16	68,095.17
Net Change in Emissions	-4,671.26	-1,585.45	-7,582.80	-68,053.77
TCAPCD Threshold	1,000	1,000	1,000	NA
De minimis Threshold[1]	NA	NA	NA	NA
Threshold Exceeded?	No	No	No	NA

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide, lb/day = pounds per day. Values may not sum due to rounding.

[1] *De minimis* thresholds are provided in tons per year only.

Source: Modeled by Ascent Environmental., Inc. in 2021

Table 15 Operational Emissions Summary (Annual)

Emissions Source	ROG (tons/year)	NO_X (tons/year)	PM_{10} (tons/year)	CO (tons/year)
Off-Road Equipment	0.23	0.49	0.02	3.80
Worker Commute	0.10	0.08	0.00	0.59
Haul Trips	0.00	1.19	0.01	0.66
Biomass Combustion at the Pellet Mill	-	8.67	4.68	-
Total Emissions from Pellet Mill	0.33	10.42	4.72	5.06
Avoided Emissions from Burning of Biomass Piles	233.70	82.60	380.56	3,404.76
Net Change in Emissions	-233.37	-72.18	-375.84	-3,399.70
TCAPCD Threshold	100	100	100	NA
De minimis Threshold	50	100	NA	NA
Threshold Exceeded?	No	No	No	NA

Note: ROG = reactive organic gases, NO_X = nitrous oxide; PM_{10} = particulate matter with diameters generally 10 micrometers and smaller, CO = carbon monoxide, lb/day = pounds per day. Values may not sum due to rounding.

Source: Modeled by Ascent Environmental., Inc. in 2021

As shown in Tables 14 and 15, implementation of the project would result in a net reduction in all four criteria air pollutants of concern. This is primarily because the open burning of biomass piles generates more emissions than the combustion of biomass at the pellet mill and other supporting activities. In addition, the direct emissions from project

operation would be well below TCAPCD and *de minimis* thresholds. The estimates in Tables 14 and 15 do not account for emissions associated with the fate of wood pellets sold by the pellet mill. Under existing conditions, it is assumed that the biomass that would be used by the project would be piled and burned on site. As part of this project, it is certain that the biomass would be utilized as an energy source both by the pellet mill as dried biomass and by the end consumers as wood pellets. Thus, the effect of utilizing biomass from this site on the project would result in a net decrease in criteria air pollutant emissions because pile burning of this biomass would be avoided, and project operations would not exceed TCAPCD significance thresholds and *de minimis* thresholds.

In addition, as shown in Table 2, the Mountain Counties Air Basin is in attainment or unclassified for CO, NO_X, $PM_{2.5}$, PM_{10}, sulfur oxides, sulfates, and lead for both the CAAQS and NAAQS and is in attainment for ozone for the CAAQS but in marginal non-attainment for ozone for the NAAQS, of which ROG and NOx are precursors (CARB 2019a and EPA 2021). As shown in Tables 14 and 15, the project would result in a net reduction in both ROG and NO_X emissions in the basin. Thus, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment.

The project would not exceed TCAPCD significance thresholds nor exceed the federal *de minimis* thresholds and would result in a net reduction in ozone precursors in the air basin, which is in marginal non-attainment for ozone. As such, the project would not require a GCD and impacts related to criteria air pollutants would be less than significant.

6.2.6 Carbon Monoxide

Project operations would result in an increase in truck and light duty vehicles on nearby roadways. As discussed in Section 4.2.2 and detailed in Table 2 of the Greenhouse Gas Study for this project, the combined additional trips generated by the project would not exceed 121 trips per day across both haul and worker commute trips. Thus, the project would not result in an affected intersection experiencing more than 31,600 vehicles per hour, and project impacts related to carbon monoxide would be less than significant.

7 TOXIC AIR CONTAMINANTS

According to the California Almanac of Emissions and Air Quality (CARB 2013), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most prevalent being diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Diesel PM poses the greatest health risk among these 10 TACs mentioned. It is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to diesel PM (CARB 2019b). The potential cancer risk from inhaling diesel PM is greater than the potential for all other diesel PM–related health impacts (i.e., noncancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2003:K-1). The project would result in exhaust emissions of diesel PM from off-road equipment and haul truck trips as well as TACs from the combustion of wood within the proposed CHP system.

Because health effects are related to both the proximity of the emissions sources to sensitive receptors as well as the duration of exposure to the pollutant, the health risks should be evaluated at separate locations at which these TAC emissions would occur: near the biomass collection sites, along haul routes, and near the pellet mill.

7.1 BIOMASS COLLECTION SITES

Mechanical treatments of forested lands would generally involve the greatest number of large, heavy-duty off-road diesel equipment such as forwarders and chippers in comparison to other project activities. Diesel-powered on-road trucks would also be used to haul biomass products to and from the pellet mill. Diesel-powered material handling off-road equipment would be used on-site at the pellet mill.

Diesel PM emissions from the collection of biomass in forested land would occur at two separate sites at Zones 1 and 2, approximately 20 and 40 miles away from the project site, respectively. The exact location of these biomass collection sites would change over the course of time as the biomass is collected but are assumed to remain within the same "zones." Due to their remote locations and shifting locations, it is assumed that the biomass collection operations would occur more than one mile from the nearest sensitive receptor and would not take place near any sensitive receptors for an extended period of time. Thus, diesel PM generated during biomass collection would not expose any person to an incremental increase in cancer risk greater than 10 in one million or a Hazard Index of 1.0 or greater.

7.2 HAUL ROUTES

Diesel PM emissions from hauling activities would occur along roadways between biomass collection sites, the pellet mill, retail destinations, and ash disposal locations. Some these roadways may be adjacent to residential and other sensitive receptors. Diesel PM emissions would be dispersed along the roadways travelled by the haul trucks but would concentrate as the roads converge at the project site. (Idling emissions are considered separately along with the pellet mill on-site diesel usage.) CARB's Air Quality and Land Use Handbook states that sensitive land uses should not be sited within 1,000 feet of a distribution center that accommodates more than 100 trucks per day (CARB 2005: 15). This standard can be applied to the proposed project as it also generates heavy duty diesel truck trips similar to a distribution center. The project would not generate more than 11 truck trips per day. Thus, diesel PM generated during hauling activities would not expose any person to an incremental increase in cancer risk greater than 10 in one million or a Hazard Index of 1.0 or greater.

7.3 PELLET MILL

TAC emissions from the pellet mill itself would occur both from the diesel PM from the operation of off-road material handling equipment and from the combustion emissions from the CHP system. The Project site is also located within 1,000 feet of two sensitive receptors, as shown in Table 3

As shown in Table 8, operations at the pellet mill would result in 0.03 tons, or 69.72 pounds, of PM_{10} per year from diesel exhaust from off-road equipment and haul truck idling. Haul truck idling events accounts for less than 0.1 percent of diesel PM emissions on-site. TACs would also be generated from the combustion of biomass in the pellet mill's cyclonic chamber furnace. However, TAC emissions factors from cyclonic combustion of biomass are not well documented. As a proxy, TAC emissions from biomass combustion at the mill were estimated using San Joaquin Valley Air Pollution Control District's (SJVAPCD) TAC calculator for biomass combustion systems using sawmill waste as fuel (SJVAPCD 2016). Although SJVAPCD represents a different air district, the biomass TAC calculator itself is based on CARB's 1999 state-level evaluation of TACs from biomass and other combustion sources (CARB 1999). Sawmill waste has similar moisture content (between 8 to 10 percent) use similar forest-based biomass as the forest-thinning waste to be used in the proposed mill. The biomass TAC calculator is based on tests from fluidized combustion beds (FCB), FCBs have similar emissions controls as the proposed cyclonic chamber furnace. Both combustion methods are used to burn solid fuels such as biomass and coal. Fluidized beds reduce combustion-related emissions by suspending fuel particles on a bed through which air is blown through vertically to provide more oxygen for combustion for a more complete and even burn. Similarly, cyclonic chambers also combust solid fuel particles through suspension, but in a conical chamber where air is blown into the chamber and mixed with the fuel in a cyclonic manner. Although the calculator is based on source tests from FBCs, the main difference with the emissions controls of fluidized beds, is the addition of limestone and dolomite, which primarily reduces NO_X and SO_2 emissions. NO_X and SO_2 emissions are accounted for separately based on the available SuperBrix emission factors. Thus, the biomass TAC calculator was used to estimate all other TAC pollutants generated by biomass combustion. For the calculator inputs, it was assumed that 1.32 tons per hour and 10,560 tons per year of dried biomass (at 12 moisture content) would be consumed. The results of the diesel PM and biomass TAC estimates are shown in Table 16.

Table 16 Pellet Mill TAC Emissions and Health Risk Prioritization Score Calculator Inputs

Substance	CAS#	Annual Emissions (lb/year)[1]	Maximum Hourly (lb/hour)[1]
Diesel engine exhaust, particulate matter (Diesel PM)	9901	3.37E+00	3.00E-03
Sulfur Dioxide[2]	7446095	2.40E+03	3.00E-01
Benz[a]anthracene	56553	2.16E-04	2.71E-08
Benzo[a]pyrene	50328	1.73E-04	2.16E-08
Benzo[b]fluoranthene	205992	1.32E-03	1.65E-07
Benzo[k]fluoranthene	207089	3.17E-04	3.96E-08
Chrysene	218019	2.48E-03	3.10E-07
Dibenz[a,h]anthracene	53703	1.73E-04	2.16E-08
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	1746016	3.05E-07	3.81E-11
1,2,3,7,8-Pentachlorodibenzo-P-dioxin	40321764	3.46E-07	4.33E-11
1,2,3,4,7,8-Hexachlorodibenzo-P-dioxin	39227286	4.60E-07	5.76E-11
1,2,3,6,7,8-Hexachlorodibenzo-P-dioxin	57653857	6.74E-07	8.42E-11
1,2,3,7,8,9-Hexachlorodibenzo-P-dioxin	19408743	5.04E-07	6.30E-11
1,2,3,4,6,7,8-Heptachlorodibenzo-P-dioxin	35822469	7.29E-06	9.11E-10
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-dioxin	3268879	7.06E-05	8.83E-09
Formaldehyde	50000	3.86E+00	4.83E-04
2,3,7,8-Tetrachlorodibenzofuran	51207319	1.36E-06	1.70E-10
1,2,3,7,8-Pentachlorodibenzofuran	57117416	6.62E-07	8.28E-11
2,3,4,7,8-Pentachlorodibenzofuran	57117314	1.09E-06	1.36E-10
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	8.02E-07	1.00E-10
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	1.18E-06	1.48E-10
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	2.93E-07	3.66E-11
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	3.19E-06	3.99E-10
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	1.45E-05	1.81E-09
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	9.47E-07	1.18E-10
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	1.70E-05	2.13E-09
Indeno[1,2,3-cd]pyrene	193395	2.61E-04	3.26E-08
Naphthalene	91203	3.16E+00	3.95E-04
PCBs {Polychlorinated biphenyls}	1336363	8.57E-04	1.07E-07

Note: lb = pounds. CHP = combined heat and power. CAS# = Chemical Abstract Service registry number

[1] The Prioritization Calculator requires inputs in these units. The maximum hourly emissions were based on the 1.32 tons of dry biomass consumed per hour, 24-hour operation of the CHP system, and an 8-hour workday for the off-road equipment operations. Substances without health risk values are excluded from this list. Diesel PM emission rates were based on results shown in Tables 8 and 9.

[2] SO_2 emissions based on emissions from furnace only, as shown in Table 13. Health risks from SO_2 are limited to acute factors only and have an insignificant effect on the total health risks shown in Table 17. Associated risks from on-site off-road diesel equipment are considered negligible and not included.

Source: Modeled by Ascent Environmental., Inc. in 2021

In the absence of a health risk screening tool from the TCAPCD, to gauge the necessity of preparing a health risk assessment (HRA), Ascent used SJVAPCD's screening tool: Prioritization Calculator (SJVACPD 2020). Although the Prioritization Calculator was developed for projects within the SJVAPCD, the project is located adjacent to the SJVAPCD and shares similar meteorological conditions due to its location close to the Central Valley. Thus, the

Prioritization Calculator is considered to be appropriate to use for the proposed project. The Prioritization Calculator is also a conservative screening tool as it is based on a 70-year cancer risk scenario and worst-case meteorological conditions (CAPCOA 2016c).

SJVACPD recommends that projects with a prioritization score of 10 or greater should be considered significant, and SJVAPCD recommends that a refined HRA be prepared for these projects. The calculator was used to provide a conservative estimate of the health risks from plant operations (SJVAPCD 2020). The calculator provides conservative unitless health risk scores and screening factors based on the proximity to nearby sensitive receptors. Table 16 shows the annual and maximum hourly TAC emissions that would be emitted from the pellet mill which were input into the prioritization calculator. Table 17 shows the results of the screening exercise.

Table 17 Pellet Mill TAC Emissions: Health Risk Prioritization Score Calculator Results

Receptor Proximity (m)	Cancer Score	Chronic Score	Acute Score	Maximum Score	Screening Factor	Exceeds Screening Factor?
0< R<100	9.41	0.11	0.01	9.41	10	No
100<R<250	2.35	0.03	0.00	2.35	10	No
250<R<500	0.38	0.00	0.00	0.38	10	No
500<R<1000	0.10	0.00	0.00	0.10	10	No
1000<R<1500	0.03	0.00	0.00	0.03	10	No
1500<R<2000	0.02	0.00	0.00	0.02	10	No

Note: R = receptor, m = meter

Source: Modeled by Ascent Environmental., Inc. in 2021 using the San Joaquin Valley Air Pollution Control District Prioritization Calculator (SJVAPCD 2020)

As shown in Table 17 and with the understanding that risks decrease with distance from the emissions source, the TAC emission concentrations from the pellet mill operations would not exceed the SJVAPCD screening factors at any receptor location. As mentioned, the closest sensitive receptor to the project is Standard Park, located within 80 feet from the project boundary. The maximum risk score at this location would not exceed the prioritization screening score of 10. Additionally, these results are conservative based on the worst-case assumptions within the Prioritization Calculator. Actual health risks will likely be lower at Standard Park, especially with intermittent use of the facility. Based on these results, the project meets the screening criteria of the prioritization calculator and health risks associated with TAC emissions from the project site would be less than significant and any additional health risk assessments would not be required.

8 ODOR

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., smells from fast food restaurants). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition

only occurs with an alteration in the intensity. Odor sources of concern include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, and food packaging plants.

The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the proximity and sensitivity of exposed individuals. The project may generate odors at all three affected locations: biomass collection site, hauling, and the pellet mill. At all three locations, odors would result from diesel exhaust. Biomass collection activities are generally in less populated, rural, or undeveloped areas, where human receptors are sparse. Odors from diesel haul trips would be quickly dissipated, there would be no more than 20 trips per day on any given roadway, trucks would not concentrate at any single location, and trucks would also be limited to idling for no longer than five minutes at any location. At the pellet mill, storage of the delivered and dried biomass could also generate odors, especially if any of the wood mass had had a bacterial infection (Lignomat 2006). However, the degree to which these odors would be generated from the mill is uncertain due to the variability of the biomass origins and the duration and condition of outdoor storage prior to drying and combustion that could accelerate or inhibit any infections. However, these biomass piles are not anticipated to be stored for extended periods of time as the plant continually processes the delivered wood chips. As discussed, combustion of the dried biomass chips at the mill would result in negligible ROG emissions. Given that odors are primarily organic compounds, it is unlikely that the CHP system would generate noticeable odors during operation. This impact would be less than significant.

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Air Quality Study Appendix A

Air Quality Calculations

Input Assumptions

inputs/assumptions
calculations

Biomass Consumption Assumptions

Annual Biomass - Zone 1	12,821	bone dry tons/yr
Annual Biomass - Zone 2	27,473	bone dry tons/yr
Total Bone Dry Tons (Average annual)	40,293	bone dry tons/yr
Biomass Used for Pellet Production	31,000	bone dry tons/yr
Biomass Used for Combustion	9,293	bone dry tons/yr
Green Wood Moisture Content	35%	[1]
Green tons: Bone Dry tons ratio	1.54	Calculation
Total Green Tons	61,989	green tons/yr
Mill Work Days	333	days/yr

Haul Trips to TBI Facility - Zone 1

Annual Biomass - Zone 1	19,724	green tons/yr	
Haul Work Days - Zone 1	240	days/yr [2]	
Daily Haul - Zone 1	82.2	green tons/day	
Usable Biomass Fuel - Zone 1	41.1	BDT/day	
Chip Van Capacity	20	tons/truck	
Daily Truck Trips	4.1	trips/day	(one way)
Distance to Facility	20	miles	(one way)
Idling time at loading	5	minutes	
Idling time at unloading	5	minutes	
Daily Roundtrip Miles	164	miles/day	(round trip)

Haul Trips to TBI Facility - Zone 2

Annual Biomass - Zone 2	42,265	green tons/yr	
Haul Work Days - Zone 2	240	days/yr [2]	
Daily Haul - Zone 2	176.1	green tons/day	
Usable Biomass Fuel - Zone 2	88.1	BDT/day	
Chip Van Capacity	20	tons/truck	
Daily Truck Trips	4.4	trips/day	(one way)
Distance to Facility	40	miles	(one way)
Idling time at loading	5	minutes	
Idling time at unloading	5	minutes	
Daily Roundtrip Miles	352	miles/day	(round trip)

Field Collection Equipment

Chain Saw (25 hp)		
Bruks chipper (100 hp)	2	Number of Equipment (1 per site)
Ponsse Forwarder (175 hp)	2	Number of Equipment (1 per site)
Daily Use of Equipment	8	hrs/day

Other Information

Distance on unpaved road segments to reach piles	(fugitive PM emissions)	Assumption:	2	miles (1-way)
Crew size that will load piles onto trucks	(worker trip emissions)	Assumption:	6	workers

[1] TBI ATC Permit Application

[2] Based on an assumption of haul trucks operating 5 days per week and 48 weeks per year.

CalEEMod Construction Output

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Maximum (lb/day)	70.05	16.71	16.30	0.03	5.90	0.72	6.53	2.98	0.69	3.55
Maximum (tons/year)	0.43	0.59	0.57	1.07E-03	0.03	0.03	0.05	0.01	0.02	0.04

Biomass Field Collection Activities

Representative Equipment List

Equipment Type	Comparable Equipment Type in OFFROAD2017 -ORION	Load Factor	Source/ Notes
Forwarder (285 hp)	Industrial - Other Material Handling Equipment	0.20	See Notes 1, 2
Chipper (500 hp)	Industrial - Other Material Handling Equipment	0.20	See Notes 1, 2
Field Tractor (200 hp)	OFF - Logging - Skidders	0.38	See Notes 1, 2

Notes

1 The Comparable Equipment Type in OFFROAD2017 -ORION identifies how the equipment type is listed in CARB's web-based OFFROAD2017-ORION model. Engine size based on equipment description in project description and available equipment in the market. These equipment categories are used in CalEEMod (See Note 2).

2 The load factors are based on assumptions for material handling equipment and off-highway trucks, as assumed in Table 3.3 of Appendix D of the CalEEMod User's Guide. Load factors for the forwarder and chipper were reduced by 50% of the default to account for their tandem operation. When the forwarder is in motion the chipper is not operating. When the chipper is in operation, the forwarder is not moving and providing power for hydraulics only.

3 Additional equipment and vehicles may include a fire engine present on site in the event that treatment activity ignites a fire. Emissions generated by this equipment are not included and expected to be nominal.

Sources

1 California Air Resources Board. 2017. OFFROAD2017-ORION. Available at https://www.arb.ca.gov/orion/. Accessed January 14, 2020.

Off-road Equipment Emission Rates

Equipment Type	HP	kW	ROG	NOx	PM10	CO
			g/kW-hr			
Forwarder (285 hp)	285	213	0.190	0.400	0.020	3.500
Chipper (500 hp)	500	373	0.190	0.400	0.020	3.500
JBC 4220 Tractor (217 hp)	217	162	0.190	0.400	0.020	3.500

Source: EPA Non-Road Compression Ignition Factors for Tier 4 Engines (https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf)

Equipment Type	HP	kW	ROG	NOx	PM10	CO
			lb/hr			
Forwarder (285 hp)	285	213	0.09	0.19	0.01	1.64
Chipper (500 hp)	500	373	0.16	0.33	0.02	2.88
JBC 4220 Tractor (217 hp)	217	162	0.07	0.14	0.01	0.80

Source: Calculated

Off-Road Equipment rates

	value	units	source
Forwarder capacity	120000	kg	Ponsse Forwarder Wisent capacity
Forwarder capacity	132	tons	calculation
Daily loads	20	tons per truck	Project Description
Daily loads	148	wet tons	Project Description

Off-road Equipment Emissions

	Number of Equipment (1 at Zone 1, 2 at Zone 2)	Hours per day	ROG	NOx	PM10	CO	source
			lb/day	*lb/day*	*lb/day*	*lb/day*	
Forwarder (285 hp)	3	8	0.43	0.90	0.04	7.87	
Chipper (500 hp)	3	8	0.75	1.58	0.08	13.81	calculation
JBC 4220 Tractor (217 hp)	3	8	0.62	1.30	0.07	7.33	calculation
		Total Daily	**1.80**	**3.78**	**0.19**	**29.01**	

	Number of Equipment (1 at Zone 1, 2 at Zone 2)	Hours per day	ROG	NOx	PM10	CO	source
			tons/year	*tons/year*	*tons/year*	*tons/year*	
Forwarder (285 hp)	3	8	0.05	0.11	0.01	0.94	
Chipper (500 hp)	3	8	0.09	0.19	0.01	1.66	calculation
JBC 4220 Tractor (217 hp)	3	8	0.07	0.16	0.01	0.88	calculation
		Total Annual	**0.22**	**0.45**	**0.02**	**3.48**	

Biomass Field Worker Trip Exhaust Emissions

Commute Trips by Workers on Field Crew

	value	units	source
Number of workers on crew			
Number of crews	3	crews/day	assumption (2 in zone 2, 1 in zone 1)
Workers per crew	6	workers/day	assumption
Trip rate for crew workers	2	trips/day	assumption
Avg. worker commute trip length (1-way)	16.8	miles/trip	default worker trip length in construction module of CalEEMod

Daily VMT by crew workers per crew

Average daily	605	VMT/day	calculation

Mix of passenger vehicles used in employee commutes

breakdown of passenger car VMT in Tuolomne County (EMFAC 2021 Average Distributions)

	value	units	source
light duty autos - gasoline	641,600	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	3,351	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	27,999	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	16,211	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	131,418	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	24	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	58	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	64	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	490,289	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	1,338	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	1,141	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	2,724	VMT/day	wksht: On-Rd Veh Emiss Rates
Total, all passenger vehicle types	1,316,217	VMT/day	summation

relative portion of passenger car VMT by veh type	value	units	source
light duty autos - gasoline	48.7%	%	calculation
light duty autos - diesel	0.3%	%	calculation
light duty autos - electricity	2.1%	%	calculation
light duty autos - plug in hybrid	1.2%	%	calculation
light duty trucks 1 - gasoline	10.0%	%	calculation
light duty trucks 1 - diesel	0.0%	%	calculation
light duty trucks 1 - electricity	0.0%	%	calculation
light duty trucks 1 - plug in hybrid	0.0%	%	calculation
light duty trucks 2 - gasoline	37.2%	%	calculation
light duty trucks 2 - diesel	0.1%	%	calculation
light duty trucks 2 - electricity	0.1%	%	calculation
light duty trucks 2 - plug in hybrid	0.2%	%	calculation
Total, all passenger vehicle types	100.0%	%	summation

Biomass Field Worker Trip Exhaust Emissions

Emission Rates (running exhaust, running loss, brake wear, tire wear)

	ROG	NOX	PM10	CO	units	source
light duty autos - gasoline	4.73E-04	3.09E-04	8.85E-06	2.77E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	1.11E-04	1.02E-03	6.89E-05	1.26E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	0.00E+00	0.00E+00	2.69E-06	0.00E+00	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	7.63E-05	3.50E-05	4.50E-06	6.20E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	1.50E-03	1.09E-03	1.62E-05	8.13E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	6.20E-04	3.18E-03	5.57E-04	3.94E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	0.00E+00	0.00E+00	2.72E-06	0.00E+00	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	5.61E-05	3.03E-05	3.39E-06	5.64E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	5.03E-04	5.25E-04	9.38E-06	3.30E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	6.93E-05	5.05E-04	3.19E-05	6.66E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	0.00E+00	0.00E+00	3.50E-06	0.00E+00	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	5.98E-05	3.15E-05	3.94E-06	5.90E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
Composite emiss rates - all pass vehicles	**5.69E-04**	**4.59E-04**	**9.77E-06**	**3.40E-03**	**lb/mile**	**Sumproduct calculation**

Worker Commute Emissions (exhaust, loss, wear, fugitives)

	ROG	NOX	PM10	CO
Total Daily (lb/day)	**0.344**	**0.278**	**0.006**	**2.059**
Total Annual (tons/year)	**0.041**	**0.033**	**0.001**	**0.247**

Source: calculations

	value	units	source
mass conversion rate	2,000	lb/ton	wksht: Unit Conversions

Field-to-Pellet Mill Haul Trip Emissions

Basic Information	value		units		
Annual Biomass	19,724	green tons/yr		**(Zone 1)**	Calculation
Annual Biomass	42,265	green tons/yr		**(Zone 2)**	Calculation
Work Days	240	days/yr		**(Zone 1)**	
Daily Haul	82.2	green tons/day		**(Zone 1)**	Calculation
Work Days	240.0	days/yr		**(Zone 2)**	
Daily Haul	176.1	green tons/day		**(Zone 2)**	Calculation
Usable Biomass Fuel	41.1	BDT/day (Zone 1)			(0% moisture)
Usable Biomass Fuel	88.1	BDT/day (Zone 2)			(0% moisture)

Haul Trips to TBI Facility	value		units	
Chip Truck Capacity	20	tons/truck		
(Zone 1) Daily Truck Trips	4.1	trips/day		
(Zone 2) Daily Truck Trips	4.4	trips/day		
(Zone 1) Distance to Facility	20	miles/trip		(one way)
(Zone 2) Distance to Facility	40	miles/trip		(one way)
(Zone 1) Daily Roundtrip Miles	164	miles/day		(round trip)
(Zone 2) Daily Roundtrip Miles	352	miles/day		(round trip)

Idling Assumptions per truck trip	value		units	
Idling time at loading	5	minutes		**(Zone 1)**
Idling time at unloading	5	minutes		**(Zone 1)**
Idling time at loading	5	minutes		**(Zone 2)**
Idling time at unloading	5	minutes		**(Zone 2)**

Field-to-Pellet Mill Haul Trip Emissions

Zone 1

VMT associated with chipped biomass				**Haul Truck Emissions (exhaust, loss, wear)**	**ROG**	**NOX**	**PM10**	**CO**
Daily VMT	value	units		Chipped biomass fuel	lb/day	lb/day	lb/day	lb/day
Miles within MCAB	164	VMT/day	calculation	Trip emissions in MCAB	0.0029	1.4244	0.0071	0.7960
				Loading/Unloading	0.0000	0.0006	0.0000	0.0005
				Total Hauling	**0.0029**	**1.4251**	**0.0071**	**0.7965**

Zone 2

VMT associated with chipped biomass				**Haul Truck Emissions (exhaust, loss, wear)**	**ROG**	**NOX**	**PM10**	**CO**
Daily VMT	value	units		Chipped biomass fuel	lb/day	lb/day	lb/day	lb/day
Miles within MCAB	352	VMT/day	calculation	Trip emissions in MCAB	0.0061	3.0523	0.0152	1.7057
				Loading/Unloading	0.0000	0.0007	0.0000	0.0005
				Total Hauling	**0.0061**	**3.0530**	**0.0152**	**1.7062**

Zone 1

VMT associated with chipped biomass				**Haul Truck Emissions (exhaust, loss, wear)**	**ROG**	**NOX**	**PM10**	**CO**
Daily VMT	value	units		Chipped biomass fuel	tons/year	tons/year	tons/year	tons/year
Miles within MCAB	164	VMT/day	calculation	Trip emissions in MCAB	0.0003	0.1709	0.0009	0.0955
				Loading/Unloading	0.0000	0.0001	0.0000	0.0001
				Total Hauling	**0.0003**	**0.1710**	**0.0009**	**0.0956**

Zone 2

VMT associated with chipped biomass				**Haul Truck Emissions (exhaust, loss, wear)**	**ROG**	**NOX**	**PM10**	**CO**
Daily VMT	value	units		Chipped biomass fuel	tons/year	tons/year	tons/year	tons/year
Miles within MCAB	352	VMT/day	calculation	Trip emissions in MCAB	0.0007	0.3663	0.0018	0.2047
				Loading/Unloading	0.0000	0.0001	0.0000	0.0001
				Total Hauling	**0.0007**	**0.3664**	**0.0018**	**0.2047**

	ROG	**NOX**	**PM10**	**CO**
Total Daily (lb/days)	**0.01**	**4.48**	**0.02**	**2.50**
Total Annual (tons/year)	**0.0011**	**0.5374**	**0.0027**	**0.3003**

Haul Truck Emission Rates

		ROG	NOX	PM10	CO	units
T6 instate heavy - diesel - MY 2023	running exhaust, running loss, brake wear, tire wear	1.74E-05	8.67E-03	4.32E-05	4.84E-03	lb/mi
T6 instate heavy - diesel - MY 2023	idling	1.05E-04	7.16E-03	1.93E-06	4.99E-03	g/min

Source: wksht: 2023 On-Rd Veh Emiss Rates

	value	units	source
mass conversion rate	2,000	lb/ton	wksht: Unit Conversions
mass conversion rate	453.59	g/lb	wksht: Unit Conversions

Pellet Mill Worker Trip Exhaust Emissions

Commute Trips by Workers on Field Crew

	value	units	source
Number of workers on crew			
Number of crews	1	crews/day	assumption (one per zone)
Workers per crew	25	workers/day	assumption
Trip rate for crew workers	2	trips/day	assumption
Avg. worker commute trip length (1-way)	16.8	miles/trip	default worker trip length in construction module of CalEEMod

Daily VMT by crew workers per crew

Average daily	840	VMT/day	calculation

Mix of passenger vehicles used in employee commutes

breakdown of passenger car VMT in Tuolomne County (EMFAC 2021 Average Distributions)

	value	units	source
light duty autos - gasoline	641,600	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	3,351	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	27,999	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	16,211	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	131,418	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	24	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	58	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	64	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	490,289	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	1,338	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	1,141	VMT/day	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	2,724	VMT/day	wksht: On-Rd Veh Emiss Rates
Total, all passenger vehicle types	1,316,217	VMT/day	summation

relative portion of passenger car VMT by veh type	value	units	source
light duty autos - gasoline	48.7%	%	calculation
light duty autos - diesel	0.3%	%	calculation
light duty autos - electricity	2.1%	%	calculation
light duty autos - plug in hybrid	1.2%	%	calculation
light duty trucks 1 - gasoline	10.0%	%	calculation
light duty trucks 1 - diesel	0.0%	%	calculation
light duty trucks 1 - electricity	0.0%	%	calculation
light duty trucks 1 - plug in hybrid	0.0%	%	calculation
light duty trucks 2 - gasoline	37.2%	%	calculation
light duty trucks 2 - diesel	0.1%	%	calculation
light duty trucks 2 - electricity	0.1%	%	calculation
light duty trucks 2 - plug in hybrid	0.2%	%	calculation
Total, all passenger vehicle types	100.0%	%	summation

Pellet Mill Worker Trip Exhaust Emissions

Emission Rates (running exhaust, running loss, brake wear, tire wear)

	ROG	NOX	PM10	CO	units	source
light duty autos - gasoline	4.73E-04	3.09E-04	8.85E-06	2.77E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - diesel	1.11E-04	1.02E-03	6.89E-05	1.26E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - electricity	0.00E+00	0.00E+00	2.69E-06	0.00E+00	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty autos - plug in hybrid	7.63E-05	3.50E-05	4.50E-06	6.20E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - gasoline	1.50E-03	1.09E-03	1.62E-05	8.13E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - diesel	6.20E-04	3.18E-03	5.57E-04	3.94E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - electricity	0.00E+00	0.00E+00	2.72E-06	0.00E+00	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 1 - plug in hybrid	5.61E-05	3.03E-05	3.39E-06	5.64E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - gasoline	5.03E-04	5.25E-04	9.38E-06	3.30E-03	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - diesel	6.93E-05	5.05E-04	3.19E-05	6.66E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - electricity	0.00E+00	0.00E+00	3.50E-06	0.00E+00	lb/mile	wksht: On-Rd Veh Emiss Rates
light duty trucks 2 - plug in hybrid	5.98E-05	3.15E-05	3.94E-06	5.90E-04	lb/mile	wksht: On-Rd Veh Emiss Rates
Composite emiss rates - all pass vehicles	**5.69E-04**	**4.59E-04**	**9.77E-06**	**3.40E-03**	**lb/mile**	**Sumproduct calculation**

Worker Commute Emissions (exhaust, loss, wear, fugitives)

	ROG	NOX	PM10	CO
Total Daily (lb/day)	**0.478**	**0.386**	**0.008**	**2.859**
Total Annual (tons/year)	**0.057**	**0.046**	**0.001**	**0.343**

Source: calculations

	value	units	source
mass conversion rate	2,000	lb/ton	wksht: Unit Conversions

TBI Wood Pellet Mill Emissions

Pellet Mill Input Specifications

mass of biomass combusted on-site	value	units	source/notes
	9,293	bdt/year	BDT content of biomass combusted on-site. Provided by Force Energy
	12%	percent moisture in dried biomass	Provided by Force Energy
	10,560	dried tons combusted/year	Tonnage of dried biomass combusted per year, calculated from BDT assuming a 12% moisture content.
	8,000	hours/year	Provided by Force Energy
	1.32	tons/hour	Tonnage of dried biomass combusted per hour, calculated from total tonnage per year and hours per year.

Emissions Rates for Cyclone Furnace/Dryer and Baghouse Filters

Emissions per hour			
ROG	non detectable	lb/hr	Provided by Force Energy.
NOx	2.17	lb/hr	Provided by Force Energy. Based on 1.81 lb NOx/metric tons of biomass.
PM10 (cyclone furnace)	0.95	lb/hr	Provided by Force Energy.
PM10 (baghouse filters)	0.22	lb/hr	Provided by Force Energy. (Hammermills: 0.18 lb/hr, Pellet Cooler: 0.06 lb/hr, Screener: 0.003 lb/hr)
CO	non detectable	lb/hr	Provided by Force Energy.
SO2	0.30	lb/hr	Provided by Force Energy. Based on 0.25 lb SO2/metric tons of biomass.
Emissions per day (24 hour operation)			
ROG	non detectable	lb/day	Calculated
NOx	52.0198	lb/day	Calculated
PM10 (cyclone furnace)	22.7496	lb/day	Calculated
PM10 (baghouse filters)	5.3520	lb/day	Calculated
CO	non detectable	lb/day	Calculated
SO2	7.1851	lb/day	Calculated

Calculated Emission Factors	ROG	NOx	PM10	CO	SO2
lb/ton of dry wood chip	0	1.64	0.89	0	0.23

Conversion Rates	value	units	source/notes
mass conversion rate	2000	lb/ton	Conversion

	ROG	NOX	PM10	CO	SO2
Total Daily (lb/day)	**0.00**	**52.02**	**28.10**	**0.00**	**7.19**
Total Annual (tons/year)	**0.00**	**8.67**	**4.68**	**0.00**	**1.20**

Pellet Mill-to-Offsite Haul Trips

Basic Information	value		units	
Annual Wood Pellets Manufactured	30,000	tons/yr		TBI Data Request Response
Annual Ash By-Product Produced	700	tons/yr		TBI Data Request Response
Work Days	240	days/yr		5 days per week
Daily Wood Pellet Delivery	125.0	tons/day		calculation
Daily Ash Delivery	2.9	tons/day		calculation

Biomass Delivery Trips (idling only)	value		units	
Truck Capacity	240	tons/truck		assumption
Daily Truck Trips	8.5	trips/day		calculated
Idling Assumptions per truck trip	value		units	
Idling time at unloading	5	minutes		

Wood Pellet Delivery Trips	value		units	
Truck Capacity	20	tons/truck		assumption
Daily Truck Trips	6.3	trips/day		calculated
Distance to Facility	50	miles/trip		(one way) Note 1
Daily Roundtrip Miles	625	miles/day		(round trip)
Idling Assumptions per truck trip	value		units	
Idling time at loading	5	minutes		

Ash Haul Trips	value		units	
Truck Capacity	20	tons/truck		assumption
Daily Truck Trips	0.15	trips/day		calculated
Distance to Facility	1	miles/trip		TBI Data Request Response (one way)
Daily Roundtrip Miles	0.29	miles/day		(round trip)
Idling Assumptions per truck trip	value		units	
Idling time at loading	5	minutes		

VMT associated with delivery of Wood Pellets manufactured from biomass and hauling of ash

	value	units	
Biomass unloading	43	minutes/day	
Wood Pellet loading	31	minutes/day	
Ash Loading	1	minutes/day	
Wood Pellet Delivery	625	VMT/day	calculation
Ash Hauling	0.29	VMT/day	calculation

Haul Truck Emission Rates

		ROG	NOx	PM10	CO	units
T6 instate heavy - diesel - MY 2023	running exhaust, running loss, brake wear, tire wear	1.74E-05	8.67E-03	4.32E-05	4.84E-03	lb/mi
T6 instate heavy - diesel - MY 2023	idling	1.05E-04	7.16E-03	1.93E-06	4.99E-03	g/min

Source: wksht: 2023 On-Rd Veh Emiss Rates

Haul Truck Emissions (exhaust, loss, wea	**ROG**	**NOx**	**PM10**	**CO**
Biomass unloading	0.00001	0.00067	0.00000	0.00047
Wood Pellet loading	0.00001	0.00049	0.00000	0.00034
Ash Loading	0.00000	0.00001	0.00000	0.00001
Wood Pellet Delivery (trip emissions)	0.01086	5.41631	0.02699	3.02685
Ash Hauling (trip emissions)	0.00001	0.00253	0.00001	0.00141
Total Daily (lb/day)	**0.011**	**5.420**	**0.027**	**3.029**
	ROG	**NOx**	**PM10**	**CO**
Biomass unloading	0.00000	0.00008	0.00000	0.00006
Wood Pellet loading	0.00000	0.00006	0.00000	0.00004
Ash Loading	0.00000	0.00000	0.00000	0.00000
Wood Pellet Delivery (trip emissions)	0.00130	0.64996	0.00324	0.36322
Ash Hauling (trip emissions)	0.00000	0.00030	0.00000	0.00017
Total Annual (tons/year)	**0.001**	**0.650**	**0.003**	**0.363**

	value	units	source
mass conversion rate	2,000	lb/tons	wksht: Unit Conversions
mass conversion rate	453.59	g/lb	wksht: Unit Conversions

Notes

1 This trip distance is based on the approximate driving distance from Sonora, CA to Modesto, CA as the nearest urban area (for product distribution).

Pellet Mill Material Handling Operations

Representative Equipment List

Equipment Type	Comparable Equipment Type in OFFROAD2017 -ORION	Engine Size (hp)	Horsepower Bin	Load Factor	source/notes
Yard Tractor	ConstMin - Rubber Tired Loaders	125	175	0.4	See Notes 1, 2
Chip Reloader	Industrial - Other Material Handling Equipment	68	75	0.4	See Notes 1, 2
Bin Trucks	ConstMin - Off-Highway Trucks	380-430	300	0.4	See Notes 1, 2

Notes

1 The Comparable Equipment Type in OFFROAD2017 -ORION identifies how the equipment type is listed in CARB's web-based OFFROAD2017-ORION model. Engine size based on equipment description in project description and available equipment in the market. These equipment categories are used in CalEEMod (See Note 2).

2 The load factors are based on assumptions for material handling equipment and off-highway trucks, as assumed in Table 3.3 of Appendix D of the CalEEMod User's Guide. CARB defines load factor as "the average operational level of an engine in a given application as a fraction or percentage of the engine manufacturer's maximum rated horsepower. " https://ww2.arb.ca.gov/sites/default/files/classic/regact/2010/offroadlsi10/offroadappd.pdf

Sources

1 California Air Resources Board. 2017. OFFROAD2017-ORION. Available at https://www.arb.ca.gov/orion/. Accessed January 14, 2020.

Tier 4 Off-road Equipment Emission Rates

Equipment Type	HP	kW	ROG	NOx	PM10	CO
			g/kW-hr			
Yard Tractor	125	93	0.190	0.400	0.020	5.000
Chip Reloader	68	51	0.190	0.400	0.020	5.000
Bin Trucks	400	298	0.190	0.400	0.020	3.500

Source: EPA Non-Road Compression Ignition Factors for Tier 4 Engines (https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf)

Equipment Type	HP	kW	ROG *lb/hr*	NOX *lb/hr*	PM10 *lb/hr*	CO *lb/hr*
Yard Tractor	125	93	0.0390	0.0822	0.0041	1.0275
Chip Reloader	68	51	0.0212	0.0447	0.0022	0.5590
Bin Truck	400	298	0.1249	0.2630	0.0132	2.3016

Source: Calculated

Tier 4 Off-road Equipment Emissions

			ROG	NOX	PM10	CO	source
Total Daily Emissions	Number of Equipment	Minutes per day	*lb/day*	*lb/day*	*lb/day*	*lb/day*	
Yard Tractor	1.00	60	0.0156	0.0329	0.0016	0.4110	calculation
Chip Reloader	1.00	40	0.0057	0.0119	0.0006	0.1491	calculation
Bin Truck	1.00	90	0.0750	0.1578	0.0079	1.3809	calculation
		Total	**0.0962**	**0.2026**	**0.0101**	**1.9410**	calculation
	Days per year of Operation						
Yard Tractor	333						
Chip Reloader	333						
Bin Truck	333						
Total Annual Emissions	Number of Equipment	Hours per year	*tons/year*	*tons/year*	*tons/year*	*tons/year*	
Yard Tractor	1.00	333	0.0026	0.0055	0.0003	0.0684	calculation
Chip Reloader	1.00	222	0.0009	0.0020	0.0001	0.0248	calculation
Bin Truck	1.00	499.5	0.0125	0.0263	0.0013	0.2299	calculation
		Total	**0.0160**	**0.0337**	**0.0017**	**0.3232**	calculation

	value	units	source
mass conversion rate	2,000	lb/ton	wksht: Unit Conversions

Pile Burning Emissions

Number of days of pile burning per year: 100 Average number of days

Zone	Source	Tons of biomass per year	Tons of biomass per day	Emission Units	ROG	NOx	PM10	CO
1	Pile Burning (BDT)	12,821	128.21	lb/day	1,487.18	525.64	2,421.73	21,666.65
2	Pile Burning (BDT)	27,473	274.73	lb/day	3,186.81	1,126.37	5,189.43	46,428.53
	Total Daily (lb/day)	40,293		lb/day	**4,673.99**	**1,652.01**	**7,611.16**	**68,095.17**
	Total Annual (tons/year)	40,293		ton/year	**233.70**	**82.60**	**380.56**	**3,404.76**

Fire Average Emissions Factors (Flaming and Smoldering Average)

Prescribed Burn Vegetation Type	Pollutant Emission Factors (lb of emissions/ton of fuel consumed) ROG	NOx	PM2.5	PM10 [1]	CO
Pile and Burn (slash)	11.6	4.1	17.1	18.9	169.0

Source: Urbanski, S. Wildland fire emissions, carbon, and climate: Emission factors. *Forest Ecology and Management* . 317: 51–60 (as presented in NWCG 2018, Table 4.1.1) https://www.nwcg.gov/sites/default/files/publications/pms420-3.pdf

[1] Note: No emission factor for PM 10 given in Urbanski article. Used the ratio of PM10 to PM2.5 in average pile burning to derive a PM10 emission factor

Derived PM10 Emissions Factor

Pile and Burn (slash) Average Pile PM2.5 (kg/Mg)	8.6
Pile and Burn (slash) Average Pile PM10 (kg/Mg)	9.5
Ratio of PM10 to PM2.5 (calculated)	1.10

Source: Battye W., and Battye R. 2002. Development of Emissions Inventory Methods for Wildland Fire. Table 22. Prepared for U.S. EPA. https://www.epa.gov/sites/default/files/2020-10/documents/development_of_emissions_inventory_methods_for_wildland_fire.pdf

mass conversions:	value	units
	2,000	lb/ton

Name	Biomass (Saw Mill Waste) External Combustion								
Applicability	Use this spreadsheet for Biomass (Saw Mill Waste) External Combustion (Boilers, Power Plants). Entries required in yellow areas, output in grey areas.								
Author or updater	Matthew Cegielski		*Last Update*	February 22, 2016					
Facility:									
ID#:									
Project #:									
Inputs	Ton/hr	Ton/yr	**Formula**						
Biomass usage rate	1.32E+00	10,560.0	Emissions are calculated by the multiplication of the Biomass Rates and Emission Factors.						

Substances	CAS#	Emission Factor lbs/ton*	LB/HR	LB/YR
Acenaphthene	**83329**	7.04E-07	9.29E-07	7.43E-03
Acenaphthylene	**208968**	2.67E-05	3.52E-05	2.82E-01
Anthracene	**120127**	5.68E-07	7.50E-07	6.00E-03
Benzo(a)anthracene	**56553**	2.05E-08	2.71E-08	2.16E-04
Benzo(a)pyrene	**50328**	1.64E-08	2.16E-08	1.73E-04
Benzo(b)fluoranthene	**205992**	1.25E-07	1.65E-07	1.32E-03
Benzo(e)pyrene	**192972**	1.20E-07	1.58E-07	1.27E-03
Benzo[g,h,i] perylene	**191242**	5.94E-08	7.84E-08	6.27E-04
Benzo[k] Fluoranthene	**207089**	3.00E-08	3.96E-08	3.17E-04
Chrysene	**218019**	2.35E-07	3.10E-07	2.48E-03
Dibenz(A,H)Anthracene	**53703**	1.64E-08	2.16E-08	1.73E-04
Dioxin 4D	**1746016**	2.89E-11	3.81E-11	3.05E-07
Dioxin 5D 12378	**40321764**	3.28E-11	4.33E-11	3.46E-07
Dioxin 6D 123478	**39227286**	4.36E-11	5.76E-11	4.60E-07
Dioxin 6D 123678	**57653857**	6.38E-11	8.42E-11	6.74E-07
Dioxin 6D 123789	**19408743**	4.77E-11	6.30E-11	5.04E-07
Dioxin 7D	**35822469**	6.90E-10	9.11E-10	7.29E-06
Dioxin 8D	**3268879**	6.69E-09	8.83E-09	7.06E-05
Fluoranthene	**206440**	6.73E-06	8.88E-06	7.11E-02
Fluorene	**86737**	1.32E-06	1.74E-06	1.39E-02
Formaldehyde	**50000**	3.66E-04	4.83E-04	3.86E+00
Furan 4F	**51207319**	1.29E-10	1.70E-10	1.36E-06
Furan 5F 12378	**57117416**	6.27E-11	8.28E-11	6.62E-07
Furan 5F 23478	**57117314**	1.03E-10	1.36E-10	1.09E-06
Furan 6F 123478	**70648269**	7.59E-11	1.00E-10	8.02E-07
Furan 6F 123678	**57117449**	1.12E-10	1.48E-10	1.18E-06
Furan 6F 123789	**72918219**	2.77E-11	3.66E-11	2.93E-07
Furan 6F 234678	**60851345**	3.02E-10	3.99E-10	3.19E-06
Furan 7F 1234678	**67562394**	1.37E-09	1.81E-09	1.45E-05
Furan 7F 1234789	**55673897**	8.97E-11	1.18E-10	9.47E-07
Furan 8F	**39001020**	1.61E-09	2.13E-09	1.70E-05
Indeno [1,2,3-cd] pyrene	**193395**	2.47E-08	3.26E-08	2.61E-04
Napthalene	**91203**	2.99E-04	3.95E-04	3.16E+00
Phenanthrene	**85018**	1.92E-05	2.53E-05	2.03E-01
Pyrene	**129000**	4.78E-06	6.31E-06	5.05E-02
Total PCB	**1336363**	8.11E-08	1.07E-07	8.57E-04

References:

* The emission factors are from Subgroup 1 (Saw Mill Waste), Mean Value section of Table 19 (pg. 123) in the Fluidized Bed Combustor Combustion portion of the 1999 CARB Report, *Development of Toxics Emission Factors from Source Test Data Collected Under the Air Toxics Hot Spots Program.*
PCB's from reference could not be identified to a specific CAS#, individual values totaled for Total PCB

Pollutants required for toxic reporting: TACs w/o Risk Factor. Current as of update date.

Name: Tuolumne BioEnergy Inc **Prioritization Calculator**

Applicability	Use to provide a Prioritization score based on the emission potency method. Entries required in yellow areas, output in gray areas.
Author or updater	Matthew Cegielski *Last Update* November 2, 2020
Facility:	Tuolumne BioEnergy Inc
ID#:	Rural Community Assistance Corporation Biomass Utilization Fund (BUF), No. 1
Project #:	
Unit and Process#	
Operating Hours hr/yr	8,760.00

Receptor Proximity and Proximity Factors		Cancer Score	Chronic Score	Acute Score	Max Score
0< R<100	**1.000**	8.43E+00	1.96E-02	1.32E-02	8.43E+00
100≤R<250	**0.250**	2.11E+00	4.89E-03	3.29E-03	2.11E+00
250≤R<500	**0.040**	3.37E-01	7.83E-04	5.27E-04	3.37E-01
500≤R<1000	**0.011**	9.27E-02	2.15E-04	1.45E-04	9.27E-02
1000≤R<1500	**0.003**	2.53E-02	5.87E-05	3.95E-05	2.53E-02
1500≤R<2000	**0.002**	1.69E-02	3.92E-05	2.64E-05	1.69E-02
2000<R	**0.001**	8.43E-03	1.96E-05	1.32E-05	8.43E-03

Receptor proximity is in meters. Priortization scores are calculated by multiplying the total scores summed below by the proximity factors. Record the Max score for your receptor distance. If the substance list for the unit is longer than the number of rows here or if there are multiple processes use additional worksheets and sum the totals of the Max Scores.

0

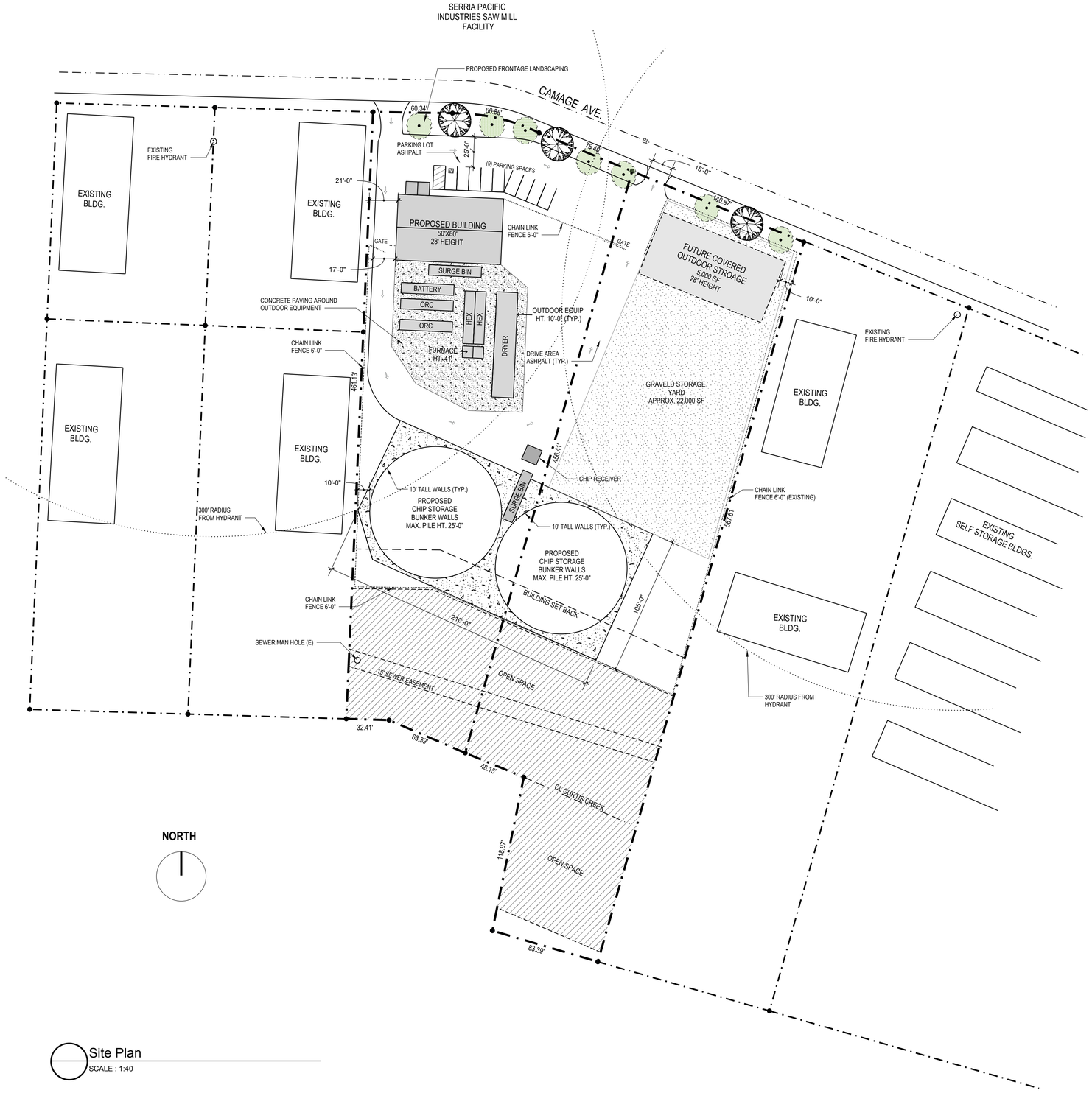
Enter the unit's CAS# of the substances emitted and their amounts.

Prioritzation score for each substance generated below. Totals on last row.

Substance	CAS#	Annual Emissions (lbs/yr)	Maximum Hourly (lbs/hr)	Average Hourly (lbs/hr)	Cancer	Chronic	Acute
Diesel engine exhaust, particulate matter (Diesel PM)	**9901**	3.37	3.00E-03	3.85E-04	7.78E+00	1.15E-02	0.00E+00
Benz[a]anthracene	**56553**	2.16E-04	2.71E-08	2.47E-08	1.83E-04	0.00E+00	0.00E+00
Benzo[a]pyrene	**50328**	1.73E-04	2.16E-08	1.98E-08	1.47E-03	0.00E+00	0.00E+00
Benzo[b]fluoranthene	**205992**	1.32E-03	1.65E-07	1.51E-07	1.12E-03	0.00E+00	0.00E+00
Benzo[k]fluoranthene	**207089**	3.17E-04	3.96E-08	3.62E-08	2.68E-04	0.00E+00	0.00E+00
Chrysene	**218019**	2.48E-03	3.10E-07	2.83E-07	2.10E-04	0.00E+00	0.00E+00
Dibenz[a,h]anthracene	**53703**	1.73E-04	2.16E-08	1.98E-08	1.60E-03	0.00E+00	0.00E+00
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	**1746016**	3.05E-07	3.81E-11	3.48E-11	8.93E-02	1.31E-04	0.00E+00
1,2,3,7,8-Pentachlorodibenzo-P-dioxin	**40321764**	3.46E-07	4.33E-11	3.95E-11	1.01E-01	1.48E-04	0.00E+00
1,2,3,4,7,8-Hexachlorodibenzo-P-dioxin	**39227286**	4.60E-07	5.76E-11	5.26E-11	1.35E-02	1.97E-05	0.00E+00
1,2,3,6,7,8-Hexachlorodibenzo-P-dioxin	**57653857**	6.74E-07	8.42E-11	7.69E-11	1.97E-02	2.88E-05	0.00E+00
1,2,3,7,8,9-Hexachlorodibenzo-P-dioxin	**19408743**	5.04E-07	6.30E-11	5.75E-11	1.47E-02	2.16E-05	0.00E+00
1,2,3,4,6,7,8-Heptachlorodibenzo-P-dioxin	**35822469**	7.29E-06	9.11E-10	8.32E-10	2.13E-02	3.12E-05	0.00E+00
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-dioxin	**3268879**	7.06E-05	8.83E-09	8.06E-09	5.98E-03	9.31E-06	0.00E+00
Formaldehyde	**50000**	3.86E+00	4.83E-04	4.41E-04	1.79E-01	7.35E-03	1.32E-02
2,3,7,8-Tetrachlorodibenzofuran	**51207319**	1.36E-06	1.70E-10	1.56E-10	3.99E-02	5.83E-05	0.00E+00
1,2,3,7,8-Pentachlorodibenzofuran	**57117416**	6.62E-07	8.28E-11	7.56E-11	5.61E-03	8.72E-06	0.00E+00
2,3,4,7,8-Pentachlorodibenzofuran	**57117314**	1.09E-06	1.36E-10	1.24E-10	9.21E-02	1.43E-04	0.00E+00
1,2,3,4,7,8-Hexachlorodibenzofuran	**70648269**	8.02E-07	1.00E-10	9.15E-11	2.35E-02	3.43E-05	0.00E+00
1,2,3,6,7,8-Hexachlorodibenzofuran	**57117449**	1.18E-06	1.48E-10	1.35E-10	3.46E-02	5.06E-05	0.00E+00
1,2,3,7,8,9-Hexachlorodibenzofuran	**72918219**	2.93E-07	3.66E-11	3.34E-11	8.56E-03	1.25E-05	0.00E+00
2,3,4,6,7,8-Hexachlorodibenzofuran	**60851345**	3.19E-06	3.99E-10	3.64E-10	9.33E-02	1.37E-04	0.00E+00
1,2,3,4,6,7,8-Heptachlorodibenzofuran	**67562394**	1.45E-05	1.81E-09	1.65E-09	4.23E-02	6.19E-05	0.00E+00
1,2,3,4,7,8,9-Heptachlorodibenzofuran	**55673897**	9.47E-07	1.18E-10	1.08E-10	2.77E-03	4.05E-06	0.00E+00
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	**39001020**	1.70E-05	2.13E-09	1.94E-09	1.44E-03	2.24E-06	0.00E+00
Indeno[1,2,3-cd]pyrene	**193395**	2.61E-04	3.26E-08	2.98E-08	2.21E-04	0.00E+00	0.00E+00
Naphthalene	**91203**	3.16E+00	3.95E-04	3.60E-04	8.27E-01	6.01E-03	0.00E+00
PCBs {Polychlorinated biphenyls}	**1336363**	8.57E-04	1.07E-07	9.78E-08	3.76E-03	0.00E+00	0.00E+00
Sulfur Dioxide	**7446095**	2.40E+03	3.00E-01	2.73E-01	0.00E+00	0.00E+00	6.82E-01
				Totals	**8.43E+00**	**1.96E-02**	**1.32E-02**

Air Quality Study Appendix B

Site Plan



Site Plan
SCALE : 1:40

PROJECT DATA

SCOPE:
PROPOSED PROJECT IS A WOOD PELLET PROCESSING FACILITY CONSISTING OF A 4,000 SF BUILDING, OUTDOOR EQUIPMENT, COVERED STORAGE, AND OUTDOOR STORAGE OF WOOD CHIPS AND FINISHED PRODUCTS.

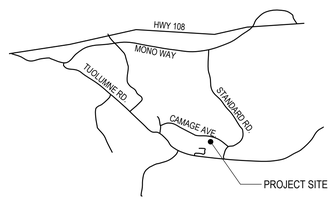
PROPERTY OWNER:	PIP SM, LLC 15256 CAMINO DEL PARQUE, SONORA, CA JOEL PLUIM 209.533.8962
END USER:	FORCE ENERGY CORPORATION CONTACT: ETIENNE PATENAUDE 403.830.1472

SITE INFORMATION:

APN:	061-150-46 & 061-150-47
ADDRESS:	TBD
PARCEL SIZE:	1.57 AC. & 1.70 AC. : TOTAL 3.24 ACRES
ZONING:	M-1 LIGHT INDUSTRIAL, O OPEN SPACE
WATER:	TUD
FIRE FLOW:	TUD, (2) FIRE HYDRANTS, SEE PLAN
SEWER:	TUD
POWER:	PG&E
JURISDICTION:	TUOLUMNE COUNTY COMMUNITY DEVELOPMENT DEPT. TEL 209.533.5633

LAND USE COMPLIANCE:

PROPOSED USE:	LIGHT INDUSTRUAL - WOOD PELLET MANUFACTURING FACILITY
CURRENT USE:	OUTDOOR STORAGE YARD
GRADING:	EXISTING GRADE IS FLAT (LESS THEN 4 %) WITH GRAVEL SURFACE MINOR GRADING WILL BE REQUIRED FOR BUILDING AND EQUIPMENT PADS AND DRAINGAGE
LANDSCAPING:	PROPOSED FRONTAGE LANDSCAPING = 3,300 SF EXISTING OPEN SPACE NATURAL LANDSCPAING= 35,345 SF TOTAL 38,645 SF PROPOSED 38,645 SF /141,134 SF = 27.3% > 10% REQUIRED
PROPOSED TRUCK TRAFFIC:	10-12 SEMI TRUCK LOADS PER DAY
PROPOSED EMPOLYEES:	3 OFFICE EMPOLYEES (8AM- 5PM) AND 3 PLANT EMPOLYEES (24 HOURS/ 7 DAYS) MAX. 6 EMPOLYEES PER SHIFT
PROPOSED PARKING:	LIGHT INDUSTRIAL: 1.5 PER EMPLOYEE X 6 = 9 SPACES PROVIDE 1 ACCESSIBLE AND 8 STANARD STALLS



VICINITY MAP

SIERRA NEVADA ENGINEERING + DESIGN
15256 Camino Del Parque
Sonora, California 95370
tel: (209) 532-7169
www.SierraNevadaEngineering.com

ADDRESS: TBD
APN: 061-150-46,47

FORCE ENERGY WOOD PELLET FACILITY

PIP CC,LLC.

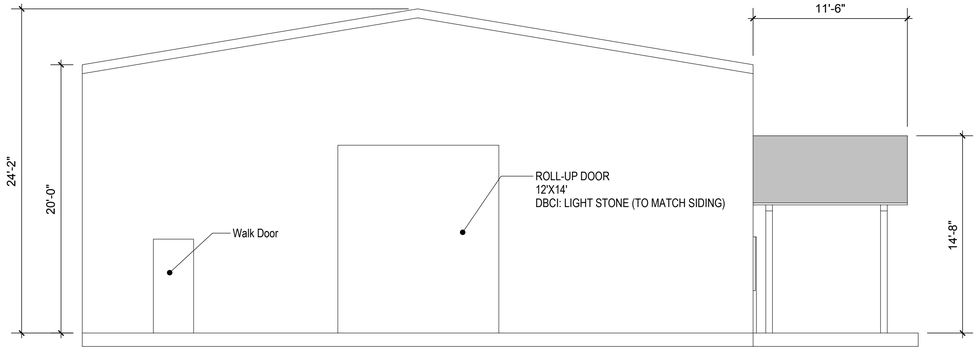
Document Date:
3/24/21

Document Phase:
SITE DEVELOPMENT PERMIT

rev.	date	remark
1		

SITE PLAN

C1.0



1 EAST ELEVATION
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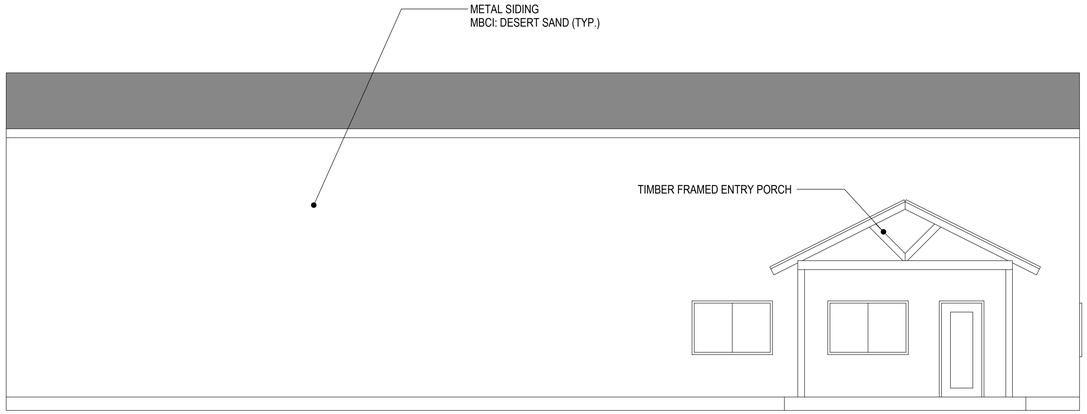

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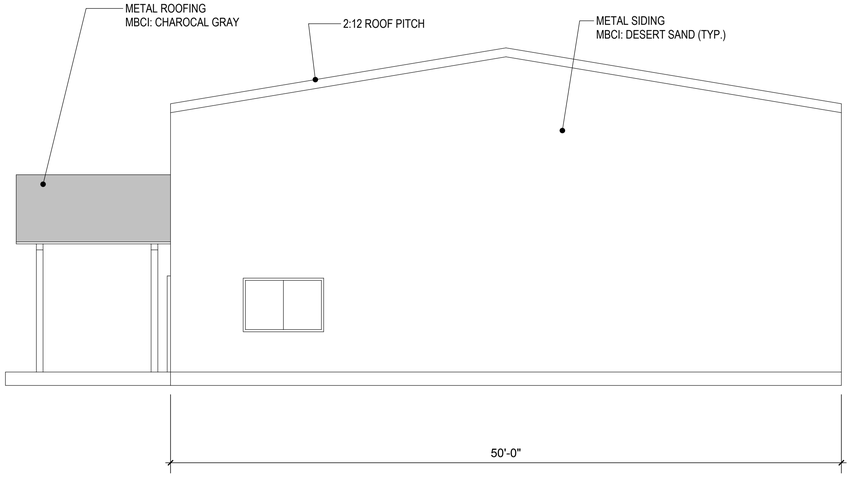

3 WEST ELEVATION
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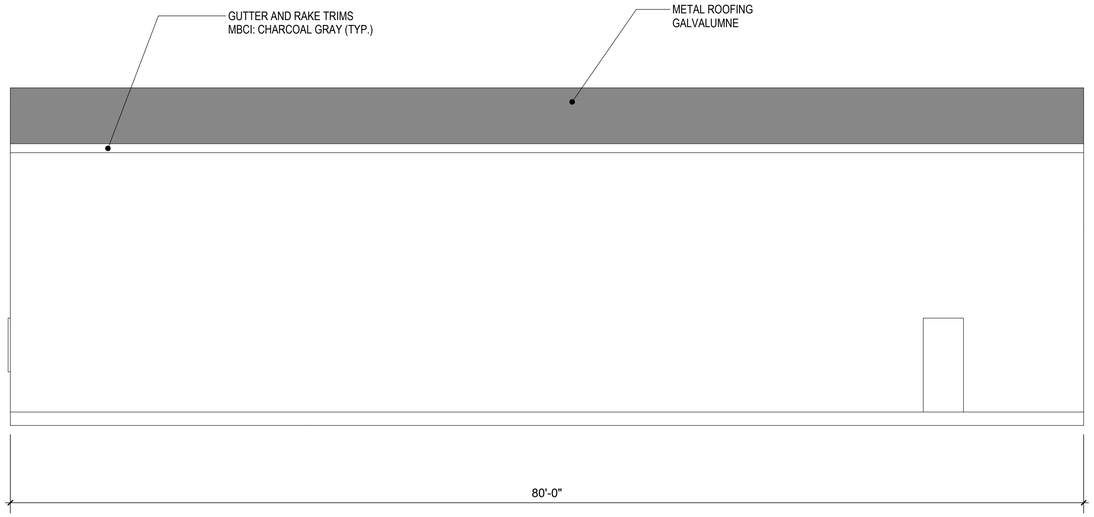

4 SOUTH ELEVATION
3/16"=1'-0"

SIERRA NEVADA ENGINEERING + DESIGN
15256 Camino Del Parque
Sonora, California 95370
tel: (209) 532-7169
www.SierraNevadaEngineering.com

ADDRESS: TBD
APN: 061-150-46,47

FORCE ENERGY WOOD PELLET FACILITY

PIP CC,LLC.

Document Date:
3/24/21

Document Phase:
SITE DEVELOPMENT PERMIT

rev.	date	remark
1		

RENDERINGS

A1.0

Air Quality Study Appendix C

CalEEMod Construction Modeling Outputs

TBI Biomass Energy Construction

Tuolumne County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	4.00	1000sqft	0.09	4,000.00	0
Unrefrigerated Warehouse-No Rail	25.70	1000sqft	0.59	25,700.00	0
Other Non-Asphalt Surfaces	10.22	1000sqft	0.23	10,220.00	0
Parking Lot	9.00	Space	0.08	3,600.00	0
City Park	0.08	Acre	0.08	3,300.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	66
Climate Zone	1			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction modeling only. Operational emissions calculated separately.

Land Use - See Sierra Nevada site plan (3/24/21). Warehouse = two chip bunkers (100 ft dmtr each) + 5,000 sf future outdoor covered storage. Non-asphalt surf = concrete padding for equipment (per site plan). City park = landscaping.

Construction Phase - no demolition. Construction schedule condensed from default 10 months to 4 months per conversations with Applicant. Building construction days decreased from 200 to 60.

Off-road Equipment - Assume 1 additional crane to account for equipment assembly and installation.

Grading - Material import based on: 22,000sf gravel storage yard @ 8 in depth and 1.35 tons per CY.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	60.00
tblGrading	MaterialImported	0.00	733.00
tblLandUse	LandUseSquareFeet	3,484.80	3,300.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	72.00	20.00

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	0.4250	0.5869	0.5685	1.0700e-003	0.0259	0.0256	0.0515	0.0108	0.0244	0.0352	0.0000	91.1713	91.1713	0.0172	0.0000	91.6008
Maximum	**0.4250**	**0.5869**	**0.5685**	**1.0700e-003**	**0.0259**	**0.0256**	**0.0515**	**0.0108**	**0.0244**	**0.0352**	**0.0000**	**91.1713**	**91.1713**	**0.0172**	**0.0000**	**91.6008**

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	0.4250	0.5869	0.5685	1.0700e-003	0.0259	0.0256	0.0515	0.0108	0.0244	0.0352	0.0000	91.1712	91.1712	0.0172	0.0000	91.6007
Maximum	**0.4250**	**0.5869**	**0.5685**	**1.0700e-003**	**0.0259**	**0.0256**	**0.0515**	**0.0108**	**0.0244**	**0.0352**	**0.0000**	**91.1712**	**91.1712**	**0.0172**	**0.0000**	**91.6007**

	ROG	NOx	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	2-1-2022	4-30-2022	0.5933	0.5933
2	5-1-2022	7-31-2022	0.4165	0.4165
		Highest	0.5933	0.5933

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Energy	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	6.0962	6.0962	2.6000e-004	6.0000e-005	6.1216
Mobile	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446
Waste						0.0000	0.0000		0.0000	0.0000	5.9131	0.0000	5.9131	0.3495	0.0000	14.6495
Water						0.0000	0.0000		0.0000	0.0000	2.1789	10.9083	13.0873	0.2243	5.3900e-003	20.2997
Total	**0.1890**	**0.1350**	**0.4648**	**9.5000e-004**	**0.0801**	**1.1700e-003**	**0.0813**	**0.0216**	**1.1000e-003**	**0.0227**	**8.0921**	**103.2282**	**111.3203**	**0.5789**	**5.4500e-003**	**127.4163**

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	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Energy	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	6.0962	6.0962	2.6000e-004	6.0000e-005	6.1216
Mobile	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446
Waste						0.0000	0.0000		0.0000	0.0000	5.9131	0.0000	5.9131	0.3495	0.0000	14.6495
Water						0.0000	0.0000		0.0000	0.0000	2.1789	10.9083	13.0873	0.2243	5.3900e-003	20.2997
Total	**0.1890**	**0.1350**	**0.4648**	**9.5000e-004**	**0.0801**	**1.1700e-003**	**0.0813**	**0.0216**	**1.1000e-003**	**0.0227**	**8.0921**	**103.2282**	**111.3203**	**0.5789**	**5.4500e-003**	**127.4163**

	ROG	NOx	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

TBI Biomass Energy Construction - Tuolumne County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/1/2022	2/2/2022	5	2	
2	Grading	Grading	2/3/2022	2/8/2022	5	4	
3	Building Construction	Building Construction	2/9/2022	5/3/2022	5	60	
4	Paving	Paving	5/4/2022	5/17/2022	5	10	
5	Architectural Coating	Architectural Coating	5/18/2022	5/31/2022	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.31

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 44,550; Non-Residential Outdoor: 14,850; Striped Parking Area: 829 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	2	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	20.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	22	20.00	8.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0146	7.0900e-003	2.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.5115	1.5115	4.9000e-004	0.0000	1.5238
Total	**1.3100e-003**	**0.0146**	**7.0900e-003**	**2.0000e-005**	**5.8000e-003**	**6.2000e-004**	**6.4200e-003**	**2.9500e-003**	**5.7000e-004**	**3.5200e-003**	**0.0000**	**1.5115**	**1.5115**	**4.9000e-004**	**0.0000**	**1.5238**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	7.0000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0870	0.0870	1.0000e-005	0.0000	0.0871
Total	**1.0000e-004**	**8.0000e-005**	**7.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0870**	**0.0870**	**1.0000e-005**	**0.0000**	**0.0871**

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					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0146	7.0900e-003	2.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.5115	1.5115	4.9000e-004	0.0000	1.5238
Total	**1.3100e-003**	**0.0146**	**7.0900e-003**	**2.0000e-005**	**5.8000e-003**	**6.2000e-004**	**6.4200e-003**	**2.9500e-003**	**5.7000e-004**	**3.5200e-003**	**0.0000**	**1.5115**	**1.5115**	**4.9000e-004**	**0.0000**	**1.5238**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	7.0000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0870	0.0870	1.0000e-005	0.0000	0.0871
Total	**1.0000e-004**	**8.0000e-005**	**7.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0870**	**0.0870**	**1.0000e-005**	**0.0000**	**0.0871**

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					9.8600e-003	0.0000	9.8600e-003	5.0600e-003	0.0000	5.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1700e-003	0.0240	0.0119	3.0000e-005		1.0300e-003	1.0300e-003		9.5000e-004	9.5000e-004	0.0000	2.4763	2.4763	8.0000e-004	0.0000	2.4963
Total	**2.1700e-003**	**0.0240**	**0.0119**	**3.0000e-005**	**9.8600e-003**	**1.0300e-003**	**0.0109**	**5.0600e-003**	**9.5000e-004**	**6.0100e-003**	**0.0000**	**2.4763**	**2.4763**	**8.0000e-004**	**0.0000**	**2.4963**

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	1.0000e-004	3.3400e-003	8.9000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7911	0.7911	2.0000e-005	0.0000	0.7915
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	2.0000e-004	1.6000e-004	1.3900e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1739	0.1739	1.0000e-005	0.0000	0.1742
Total	**3.0000e-004**	**3.5000e-003**	**2.2800e-003**	**1.0000e-005**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.9650**	**0.9650**	**3.0000e-005**	**0.0000**	**0.9657**

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					9.8600e-003	0.0000	9.8600e-003	5.0600e-003	0.0000	5.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1700e-003	0.0240	0.0119	3.0000e-005		1.0300e-003	1.0300e-003		9.5000e-004	9.5000e-004	0.0000	2.4763	2.4763	8.0000e-004	0.0000	2.4963
Total	**2.1700e-003**	**0.0240**	**0.0119**	**3.0000e-005**	**9.8600e-003**	**1.0300e-003**	**0.0109**	**5.0600e-003**	**9.5000e-004**	**6.0100e-003**	**0.0000**	**2.4763**	**2.4763**	**8.0000e-004**	**0.0000**	**2.4963**

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	1.0000e-004	3.3400e-003	8.9000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7911	0.7911	2.0000e-005	0.0000	0.7915
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	2.0000e-004	1.6000e-004	1.3900e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1739	0.1739	1.0000e-005	0.0000	0.1742
Total	**3.0000e-004**	**3.5000e-003**	**2.2800e-003**	**1.0000e-005**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.9650**	**0.9650**	**3.0000e-005**	**0.0000**	**0.9657**

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	0.0579	0.4692	0.4244	7.9000e-004		0.0216	0.0216		0.0207	0.0207	0.0000	65.8797	65.8797	0.0132	0.0000	66.2091
Total	**0.0579**	**0.4692**	**0.4244**	**7.9000e-004**		**0.0216**	**0.0216**		**0.0207**	**0.0207**	**0.0000**	**65.8797**	**65.8797**	**0.0132**	**0.0000**	**66.2091**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0300e-003	0.0278	9.3900e-003	6.0000e-005	1.4100e-003	9.0000e-005	1.5000e-003	4.1000e-004	9.0000e-005	4.9000e-004	0.0000	5.6447	5.6447	1.7000e-004	0.0000	5.6491
Worker	7.6100e-003	5.9000e-003	0.0523	7.0000e-005	7.3600e-003	8.0000e-005	7.4400e-003	1.9600e-003	7.0000e-005	2.0300e-003	0.0000	6.5217	6.5217	4.9000e-004	0.0000	6.5338
Total	**8.6400e-003**	**0.0337**	**0.0617**	**1.3000e-004**	**8.7700e-003**	**1.7000e-004**	**8.9400e-003**	**2.3700e-003**	**1.6000e-004**	**2.5200e-003**	**0.0000**	**12.1664**	**12.1664**	**6.6000e-004**	**0.0000**	**12.1829**

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	0.0579	0.4692	0.4244	7.9000e-004		0.0216	0.0216		0.0207	0.0207	0.0000	65.8797	65.8797	0.0132	0.0000	66.2091
Total	**0.0579**	**0.4692**	**0.4244**	**7.9000e-004**		**0.0216**	**0.0216**		**0.0207**	**0.0207**	**0.0000**	**65.8797**	**65.8797**	**0.0132**	**0.0000**	**66.2091**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0300e-003	0.0278	9.3900e-003	6.0000e-005	1.4100e-003	9.0000e-005	1.5000e-003	4.1000e-004	9.0000e-005	4.9000e-004	0.0000	5.6447	5.6447	1.7000e-004	0.0000	5.6491
Worker	7.6100e-003	5.9000e-003	0.0523	7.0000e-005	7.3600e-003	8.0000e-005	7.4400e-003	1.9600e-003	7.0000e-005	2.0300e-003	0.0000	6.5217	6.5217	4.9000e-004	0.0000	6.5338
Total	**8.6400e-003**	**0.0337**	**0.0617**	**1.3000e-004**	**8.7700e-003**	**1.7000e-004**	**8.9400e-003**	**2.3700e-003**	**1.6000e-004**	**2.5200e-003**	**0.0000**	**12.1664**	**12.1664**	**6.6000e-004**	**0.0000**	**12.1829**

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	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9315
Paving	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.5400e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9315**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	6.4000e-004	5.6600e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7065	0.7065	5.0000e-005	0.0000	0.7078
Total	**8.2000e-004**	**6.4000e-004**	**5.6600e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.1000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7065**	**0.7065**	**5.0000e-005**	**0.0000**	**0.7078**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9314
Paving	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.5400e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9314**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	6.4000e-004	5.6600e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7065	0.7065	5.0000e-005	0.0000	0.7078
Total	**8.2000e-004**	**6.4000e-004**	**5.6600e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.1000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7065**	**0.7065**	**5.0000e-005**	**0.0000**	**0.7078**

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	0.3490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.3500**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	2.0000e-004	1.7400e-003	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2174	0.2174	2.0000e-005	0.0000	0.2178
Total	**2.5000e-004**	**2.0000e-004**	**1.7400e-003**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2174**	**0.2174**	**2.0000e-005**	**0.0000**	**0.2178**

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	0.3490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.3500**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	2.0000e-004	1.7400e-003	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2174	0.2174	2.0000e-005	0.0000	0.2178
Total	**2.5000e-004**	**2.0000e-004**	**1.7400e-003**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2174**	**0.2174**	**2.0000e-005**	**0.0000**	**0.2178**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446
Unmitigated	0.0371	0.1343	0.4638	9.5000e-004	0.0801	1.1200e-003	0.0812	0.0216	1.0500e-003	0.0226	0.0000	86.2228	86.2228	4.8700e-003	0.0000	86.3446

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.15	1.82	1.34	1,379	1,379
Manufacturing	15.28	5.96	2.48	46,825	46,825
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	43.18	43.18	43.18	166,809	166,809
Total	58.61	50.96	47.00	215,014	215,014

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
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6
Manufacturing	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Parking Lot	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	14.70	6.60	6.60	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
City Park	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Manufacturing	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Other Non-Asphalt Surfaces	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Parking Lot	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928
Unrefrigerated Warehouse-No Rail	0.494917	0.045179	0.208299	0.152927	0.045754	0.006973	0.019174	0.011899	0.003300	0.001230	0.006642	0.001778	0.001928

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	5.3470	5.3470	2.4000e-004	5.0000e-005	5.3679
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5.3470	5.3470	2.4000e-004	5.0000e-005	5.3679
NaturalGas Mitigated	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537
NaturalGas Unmitigated	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537

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					
City Park	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
Manufacturing	14040	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537
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
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**8.0000e-005**	**6.9000e-004**	**5.8000e-004**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.7492**	**0.7492**	**1.0000e-005**	**1.0000e-005**	**0.7537**

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					
City Park	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
Manufacturing	14040	8.0000e-005	6.9000e-004	5.8000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7492	0.7492	1.0000e-005	1.0000e-005	0.7537
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
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**8.0000e-005**	**6.9000e-004**	**5.8000e-004**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.7492**	**0.7492**	**1.0000e-005**	**1.0000e-005**	**0.7537**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Manufacturing	17120	4.9804	2.3000e-004	5.0000e-005	4.9999
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	1260	0.3666	2.0000e-005	0.0000	0.3680
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**5.3470**	**2.5000e-004**	**5.0000e-005**	**5.3679**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Manufacturing	17120	4.9804	2.3000e-004	5.0000e-005	4.9999
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	1260	0.3666	2.0000e-005	0.0000	0.3680
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**5.3470**	**2.5000e-004**	**5.0000e-005**	**5.3679**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Unmitigated	0.1519	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004

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	0.0349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1169					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Total	**0.1519**	**0.0000**	**4.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.8000e-004**	**8.8000e-004**	**0.0000**	**0.0000**	**9.3000e-004**

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	0.0349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1169					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.3000e-004
Total	**0.1519**	**0.0000**	**4.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.8000e-004**	**8.8000e-004**	**0.0000**	**0.0000**	**9.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.0873	0.2243	5.3900e-003	20.2997
Unmitigated	13.0873	0.2243	5.3900e-003	20.2997

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.0953185	0.0971	0.0000	0.0000	0.0974
Manufacturing	0.925 / 0	1.7495	0.0302	7.3000e-004	2.7208
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
Unrefrigerated Warehouse-No Rail	5.94313 / 0	11.2407	0.1941	4.6600e-003	17.4814
Total		**13.0873**	**0.2243**	**5.3900e-003**	**20.2997**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.0953185	0.0971	0.0000	0.0000	0.0974
Manufacturing	0.925 / 0	1.7495	0.0302	7.3000e-004	2.7208
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
Unrefrigerated Warehouse-No Rail	5.94313 / 0	11.2407	0.1941	4.6600e-003	17.4814
Total		**13.0873**	**0.2243**	**5.3900e-003**	**20.2997**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	5.9131	0.3495	0.0000	14.6495
Unmitigated	5.9131	0.3495	0.0000	14.6495

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.01	2.0300e-003	1.2000e-004	0.0000	5.0300e-003
Manufacturing	4.96	1.0068	0.0595	0.0000	2.4944
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	24.16	4.9043	0.2898	0.0000	12.1501
Total		**5.9131**	**0.3495**	**0.0000**	**14.6495**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.01	2.0300e-003	1.2000e-004	0.0000	5.0300e-003
Manufacturing	4.96	1.0068	0.0595	0.0000	2.4944
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	24.16	4.9043	0.2898	0.0000	12.1501
Total		**5.9131**	**0.3495**	**0.0000**	**14.6495**

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