DRAFT

INITIAL STUDY/NEGATIVE DECLARATION
ORGANIC MATERIALS TO ENERGY
DEMONSTRATION PROJECT

Prepared for:

Goleta Sanitary District
1 William Moffett Place
Goleta, California 93117
Contact: Steve Wagner

Prepared by:

DUDEK
621 Chapala Street
Santa Barbara, California 93101
Contact: Jane Gray

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
AFS	American Fisheries Society
BLM	Bureau of Land Management
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CH_4	methane
CHP	combined heat and power generator
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of Santa Barbara
ECAP	Energy and Climate Action Plan
GHG	greenhouse gas
GSD	Goleta Sanitary District
GWP	global warming potential
HIC	chronic hazards index
HRA	health risk assessment
IS	Initial Study
IUCN	International Union for Conservation of Nature and Natural Resources
Lystek	Lystek International Limited
MEIR	maximally exposed individual receptor
MEIW	maximally exposed individual worker
MT	metric ton
N/A	not applicable
N_2O	nitrous oxide
NABCI	North American Bird Conservation Initiative
ND	Negative Declaration
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
PM_{10}	coarse particulate matter
$PM_{2.5}$	fine particulate matter
PMI	point of maximum impact
Project	Organic Materials to Energy Demonstration Project
RE	Renewable Energy
RTP	Regional Transportation Plan
SB	Santa Barbara
SBCAG	Santa Barbara County Association of Governments
SBCAPCD	Santa Barbara County Air Pollution Control District
SCS	Sustainable Communities Strategy
SO_x	sulfur oxides
TAC	toxic air contaminant

Acronym/Abbreviation	Definition
UCSB	University of California, Santa Barbara
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WBWG	Western Bat Working Group
WR	Waste Reduction
WWTP	wastewater treatment plant

1 INTRODUCTION

1.1 Project Overview

The Goleta Sanitary District (GSD) proposes the Organic Materials to Energy Demonstration Project (Project) at its location in unincorporated Santa Barbara County (County). GSD's property is adjacent to the City of Santa Barbara Municipal Airport to the west, the City of Goleta to the north and east, and the Goleta Slough and Pacific Ocean to the south (see Figure 1, Project Location). The Project is intended to primarily receive and process materials from a location at the University of California, Santa Barbara (UCSB), located approximately 1.5 miles west of the Project site; manage the resulting end products; and generate electricity on a small scale. The Project would involve GSD as the host Project location, Lystek International Limited (Lystek) as the equipment supplier and operator, and UCSB as the initial/primary source of organic materials.

The organic material to be processed by the Project would include a variety of waste material (e.g., source-separated organic material/food waste; pre-consumer organic material/food waste; and dewatered biosolids, liquid organic materials, and other similar organic materials from the agricultural, waste, and food-processing sectors). The end-products of the process would include a pathogen-free and nutrient-rich fertilizer that would be appropriate for land applications and composting or to enhance anaerobic digester efficiency.

1.2 California Environmental Quality Act Compliance

In accordance with Section 15073 of the California Environmental Quality Act (CEQA) Guidelines, this Initial Study/Negative Declaration (IS/ND) is being circulated to relevant local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on the IS/ND. GSD circulated the IS/ND to the State Clearinghouse for distribution and a 30-day public review. GSD will evaluate comments received on the Draft IS/ND and will prepare responses to address any substantial evidence that the Project could have a significant impact on the environment. If there is no substantial evidence, GSD as lead agency will adopt the IS/ND in compliance with CEQA.

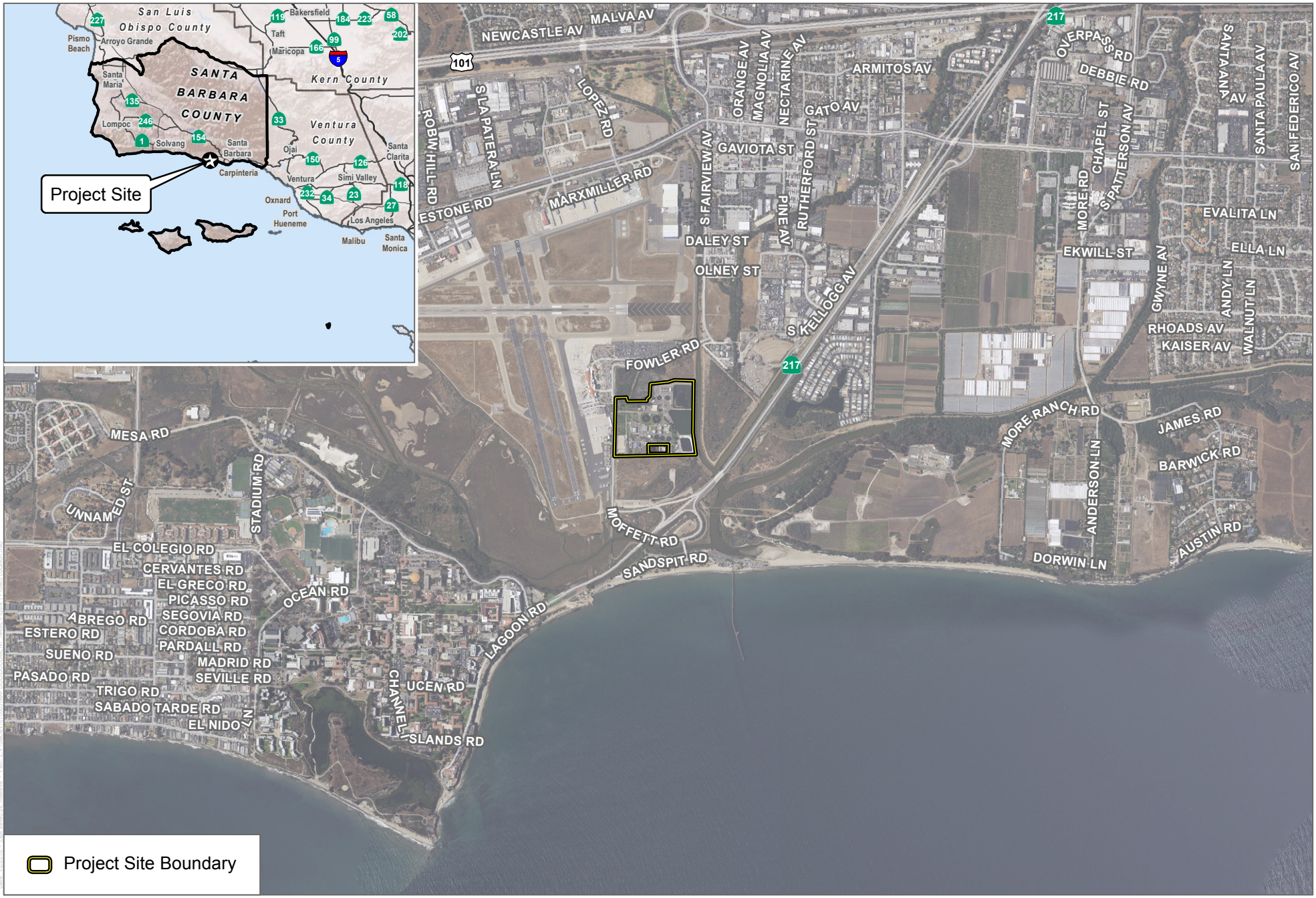
Written comments should be submitted to GSD by 5:00 p.m. on May 31, 2018. Submit comments to the following:

Goleta Sanitary District
Attention: Steve Wagner
1 William Moffett Place
Goleta, California 93117
or by email at swagner@goletasanitary.org

This IS/ND and any comments received during the public review process will be considered by the GSD Board of Directors at a public hearing on June 4, 2018, at GSD (1 William Moffett Place, Goleta, California 93117).

1.3 Project Planning Setting

The Project would be located at the existing GSD wastewater treatment plant (WWTP) at 1 William Moffett Place, Goleta, California 93117 (Figure 1). The area surrounding the Project site is primarily open space to the north, south, and east. To the west is the City of Santa Barbara Municipal Airport. Figure 1 shows an aerial of the Project location; Figure 2, Site Map, and Figure 3, Project Facilities, show site details; and Figure 4, Zoning and Land Use, shows current zoning in the area.



SOURCE: NAIP 2016

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Organic Materials to Energy Demonstration Project

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SOURCE: NAIP 2016

DUDEK

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FIGURE 2

Site Map

Organic Materials to Energy Demonstration Project

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SOURCE: NAIP 2016

DUDEK

0 30 60 Feet

FIGURE 3

Project Facilities

Organic Materials to Energy Demonstration Project

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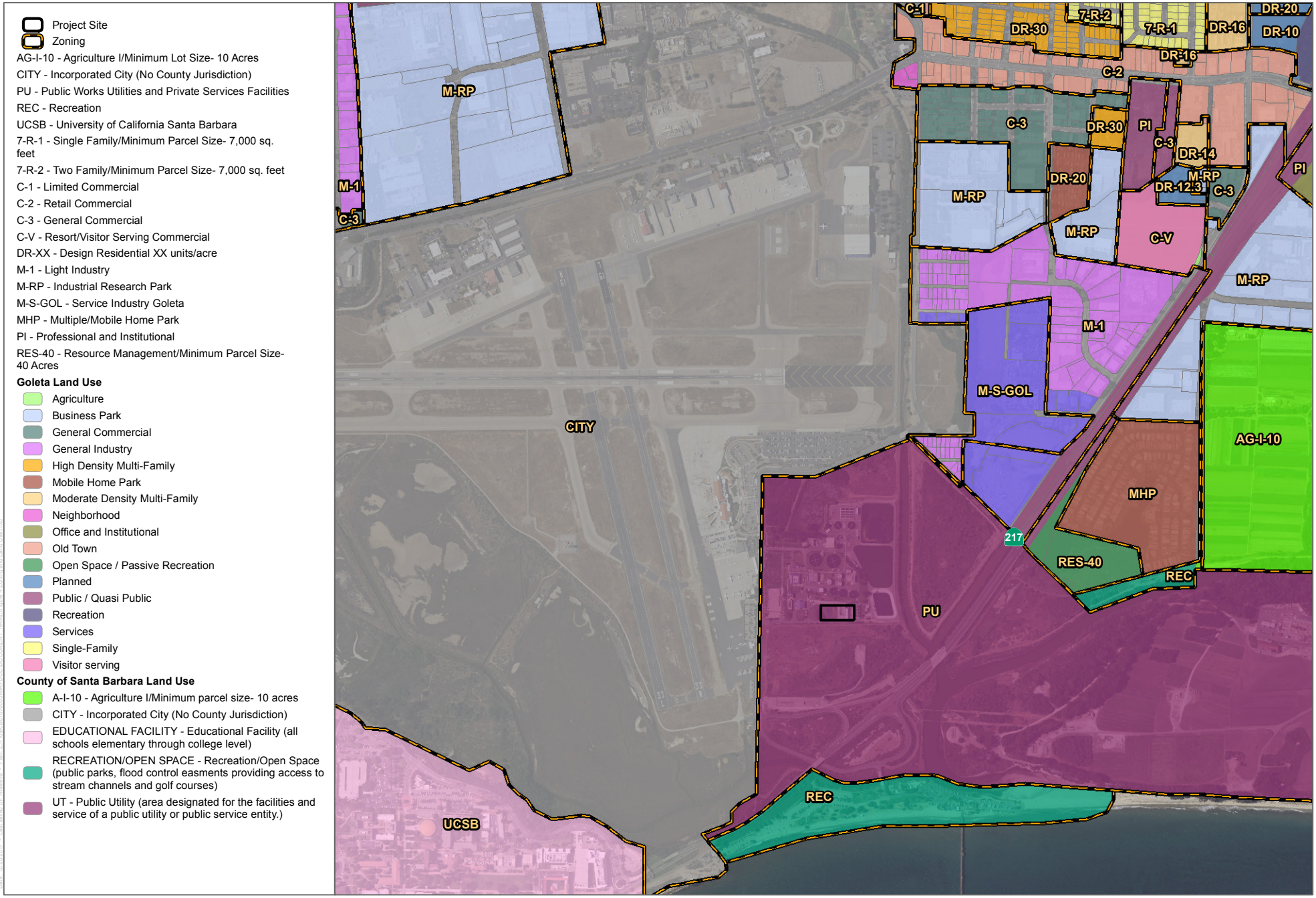

SOURCE: NAIP 2016, County of Santa Barbara, City of Goleta

DUDEK

0 600 1,200 Feet

FIGURE 4

Zoning and Land Use

Organic Materials to Energy Demonstration Project

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2 PROJECT DESCRIPTION

GSD is proposing the Project at the GSD WWTP site in unincorporated Santa Barbara County. The Project is intended to receive and process organic materials, manage the resulting end-products, and generate electricity on a small scale. In the County and surrounding area, there is significant production of organic material. The majority of this material is currently sent to a landfill, with a small percentage sent to composting. The intent of the Project is to demonstrate that organic material can be efficiently processed into a nearly contaminate-free feedstock for conversion into energy, and the resulting end-products can be used for beneficial uses.

The Project would rely on a combination of advanced technologies for processing and treating the variety of expected organic materials. These technologies would include Smicon depackaging equipment; advance anaerobic digesters to process at higher solid contents; dewatering units; and Lystek's patented low-temperature, alkali, high-speed shearing technology to stabilize the material, create a pumpable liquid, and neutralize pathogens. An advanced process control system would automate and monitor the entire process, provide redundancy and emergency shut down capability, and provide periodic manual inspections.

Equipment needed for the Project would be mounted on up to three skids or trailers and delivered to the site by standard 18-wheel tractor/trailer/flatbed combinations. Initial construction of the system would require approximately 10 truck trips over 2 weeks.

Organic material used by the Project would come from existing source-separated waste streams and pre-consumer outlets and UCSB food preparation and services halls. No hazardous material would be accepted at the Project site. The organic material would be transported to the Project site at GSD's WWTP on a weekly basis at the rate of up to two trips per week by standard garbage trucks (typically 10-wheel) that carry a roll-off-size waste container. Once on site, the material would be unloaded into a 20-foot-wide by 30-foot-deep receiving bunker with 4-foot-high sidewalls, and processing would begin within 48 hours. The receiving of organic materials would occur at scheduled times of day and week. Trained personnel would be on site when organic materials are received and when the final fertilizer product is collected.

Processing of materials delivered to the site would begin with the separation of organic material from inorganic material using depackaging equipment provided by Smicon, a company that specializes in organic material handling equipment. This equipment would be an enclosed unit and housed on a single skid or trailer approximately 100 feet from the receiving bunker. Waste from the depackaging process, including inorganic packaging material and a thick mash (solid content greater than 25%) with a high contaminant level, would be collected and stored in covered waste containers and deposited off site to a landfill on a weekly basis. If odors become

an issue, which is unanticipated, the removal would increase to twice per week. The purified organic material (between 15% and 30% solid with a less than 1% contamination fraction) would be stored in closed containers for delivery to the digester units.

Once purified, the organic material would be used as feedstock for the anaerobic digester units, which would be housed on a skid or trailer next to the dewatering equipment and Lystek reactors. The digester units would be stainless steel, vertical, cylindrical sealed tanks with a center mixing unit (blade). Inlets to the units would include the slurry feedstock, heat/steam, and water. Discharges would be liquid effluent, vapor biogas, and digestate. The digesters would operate at approximately 100°F and would include a gas pressure release valve for excessive pressure buildup, although this is not anticipated to be used on a regular basis. The purified organic material would be fed into the digester units at a prescribed rate to replicate a full size anaerobic digester system. The digesters would be monitored and operated to various degrees of digestion to simulate normal biological treatment processes.

The digester units would generate biogas (primarily methane at approximately 60% and carbon dioxide at approximately 40%) through the anaerobic digestion process. Each batch cycle of feedstock processing would last at least 60 days, and biogas would be generated on an ongoing basis during this time. The biogas would be routinely removed from the digester and delivered to a small-capacity electrical conversion unit (either a fuel-cell, micro-turbine, or similar type equipment), which would be located on a skid or trailer. Biogas would be sent to a potable flare, Solar Spark Passive Vent Flare Model CF-5, under three possible scenarios: when the biogas flowrate is insufficient for the electrical conversion unit, when the biogas flowrate exceeds the needs of the electrical conversion unit, or when the electrical conversion unit is inoperable.

At the completion of each batch processing cycle, the effluent from the digester units would be fed into a small-scale mobile dewatering unit (either a belt press or centrifuge, or similar device). Polymers that are commonly used in the wastewater industry would be added in the dewatering process to assist in dewatering the effluent to a final biosolids product. The liquid concentrate product of dewatering would be fed back into the GSD WWTP for final processing. The resulting biosolids would be fed into the patented Lystek technology system for finishing.

The Lystek process uses high shear mechanical mixing with alkali and temperature adjustment for the biosolids feedstock to achieve a homogenous end-product. The process relies on physical/chemical principles with heat input by injecting low-pressure steam into the reactor to achieve the processing function. The material is stabilized at a minimum temperature of 70°C for 30 minutes (or 75°C for 20 minutes). No biological process steps are involved. The alkali used in the process would come from a non-hazardous material, such as a lime product (powder or quick-lime pellets), or a liquid form such as potassium hydroxide, stored in an enclosed storage

unit that is used to adjust the pH to approximately 9.5 or 10. The product of the Lystek process would be a nutrient-rich, pathogen-free fertilizer that meets the U.S. Environmental Protection Agency standard as a Class A-EQ (Exceptional Quality) biofertilizer that is suitable for land application, composting, or digestion enhancement.

Design Capacity and Feedstock Generators

The ultimate design capacity of the Project would be no more than 5 tons of processed organic material per day. This could be further broken down to the various processing components as follows:

- Incoming organic material could be received at a maximum of 20 tons per day; however, this quantity of material is expected to be delivered no more than 2 days per week.
- The Smicon depackaging unit is rated to process up to 5 tons of feedstock per hour. At the expected delivery rate described above, the unit would operate for approximately 8 hours per week. In the event that slightly larger volumes of feedstock are received (due to the variability of source-separated organics), the depackaging unit could operate for the required time to process incoming material.
- The anaerobic digesters are anticipated to be fed at the rate of no more than 2 tons per day. The rate may be slightly higher during periods of initial loading. Due to the high variability of processing times, the feed rate could be up to 4 tons per day on given occasions.
- The dewatering unit would be able to process up to 5 tons per hour. The actual operating time would depend on the quality of the digester effluent and the amount of polymer added to assist in dewatering.
- The Lystek reactors would be able to process up to 2 tons per hour of finished biosolids. This processing rate may change during the processing period due to the rate of steam addition (adding heat), and the biosolids cake and water.

Site Design and Facilities

The Project infrastructure, components, and facility services would generally consist of the following:

- Two skids or trailers mounted with the digester, reactor, and electrical conversion units (one skid with the digesters, the dewatering equipment, and Lystek reactors, and the other skid with the electrical conversion unit and supporting accessories)
- One skid- or trailer-mounted Smicon depackaging unit
- One portable flare, Solar Spark Passive Vent Flare Model CF-5

- One receiving bunker for incoming material
- Various storage containers for residuals, un-finished, and finished material
- Piping and utility connections to/from the existing GSD facility as needed (electrical, water, return feed)
- A back-up generator unit (if needed during operation)

Project components would primarily be located to the east of the existing GSD dewatering building. This area is an existing paved area with stormwater drainage and proximity to existing site utilities.

Biosolids Pad Reconstruction

The Project would require repaving an existing biosolids pad. Completion of this would occur in two steps: (1) demolition of the existing paved area, and (2) installation of the improved surface. The demolition phase is anticipated to take 1 week, and the installation phase is anticipated to take 3 weeks, for a total of 4 weeks of construction activities.

Demolition Phase

1. The existing concrete and asphalt paved areas adjacent to the drying pad area to be improved would be sawcut, and the portions located within the site would be removed and stockpiled on site.
2. Existing safety bollards would be removed and salvaged for reuse.
3. Existing vertical concrete walls would be removed to 1 foot below finished grade.
4. Existing pavement on the bottom of the basin would be broken up and left in place.
5. Existing drain lines would be cut, capped, and abandoned in place or extended as required.
6. Existing concrete and asphalt pavement from step 1 would be used as fill.

Installation Phase

1. Concrete for new footings/vertical wall would be poured in place.
2. Approximately 1,500 cubic yards of fill would be imported to fill the existing basins to subgrade.
3. The subgrade would be compacted with a roller compactor.

4. Approximately 500 cubic yards of base would be imported, placed, and compacted on the subgrade.
5. Approximately 500 cubic yards of concrete would be poured in place to construct a new pad area.
6. The safety bollards and bucking wall would be installed.

Site Fencing

The entire GSD site is enclosed with a chain-link fence and gates. Lockable gates are provided along the access roads. No new roadways would be constructed as a result of the Project. Access to the Project site is regulated, and only authorized personnel are permitted in the general area of the Project facilities.

Operations and Monitoring

An operations manual would be developed for the Project, and personnel would be trained according to the procedures in the manual. A copy of the operations manual would be available for reference in a central location on the Project site at all times. The operations manual would be periodically updated and revised as required.

Monitoring programs would be developed and employed to ensure that best management practices are being effectively used to protect the surrounding environment and the Project site. On-site records would be maintained of materials received, stored, processed, and transferred. Records would be retained on the Project site and made available upon request during the Project term period.

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3 SUMMARY OF FINDINGS

This IS/ND prepared for the Project has found that there are no potential impacts or impacts that must be mitigated.

3.1 Environmental Factors Potentially Affected

There are no environmental factors potentially affected.

3.2 Environmental Determination

An environmental determination has been made on the basis of the analysis contained and incorporated by reference in this IS/ND that the Project would not have a significant effect on the environment. Therefore, an ND has been prepared.

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4 INITIAL STUDY CHECKLIST

1. Project title:

Organic Materials to Energy Demonstration Project (Project)

2. Lead agency name and address:

Goleta Sanitary District
1 William Moffett Place
Goleta, California 93117

3. Contact person and phone number:

Steve Wagner, General Manager
805.967.4519

4. Project location:

Goleta Sanitary District WWTP
1 William Moffett Place
Goleta, California 93117

5. Project sponsor's name and address:

Goleta Sanitary District
1 William Moffett Place
Goleta, California 93117

6. General plan designation:

Public Utility (UT)

7. Zoning:

Utility

8. Description of project:

The Project would be located at the GSD WWTP in unincorporated Santa Barbara County. The Project is intended to receive and process organic materials, manage the resulting end-products, and generate electricity on a small scale.

The Project would rely on a combination of advanced technologies for processing and treating the variety of expected organic materials. These technologies would include Smicon depackaging equipment; advance anaerobic digesters to process at higher solid contents; dewatering units; and Lystek's patented low-temperature, alkali, high-speed shearing technology to stabilize the material, create a pumpable liquid, and neutralize pathogens. An advanced process control system would automate and monitor the entire process, provide redundancy and emergency shut-down capability, and provide periodic manual inspections.

Organic material used by the Project would come from existing source-separated waste streams and pre-consumer outlets and UCSB food preparation and services halls. No hazardous material would be accepted on the Project site. The organic material would be transported to the Project site at GSD's WWTP on a weekly basis at the rate of two trips per week by standard garbage trucks (typically 10-wheel) that carry a roll-off-size waste container.

Project infrastructure would include up to three skid-mounted units, one with the digesters, dewatering equipment, and Lystek reactors; another with the electrical conversion unit and supporting accessories; and the third with the Smicon depackaging unit. All three would be delivered to the Project site fully constructed. Various storage containers would also be delivered to the site and used to hold the residuals and un-finished and finished material. A receiving bunker for incoming material would be located at the current biosolids pad, which would be repaved as part of the Project. The receiving bunker would be located to the south of the biosolids truck-loading station and constructed of prefabricated concrete blocks. The bunker would be approximately 20 feet wide by 30 feet deep with 4-foot-high sidewalls.

The Project would require repaving of a biosolids pad. Completion of this would occur in two steps: (1) demolition of the existing paved area, and (2) installation of the improved surface. The demolition phase is anticipated to take 1 week, and the installation phase is anticipated to take 3 weeks, for a total 4 weeks of construction activities.

The existing concrete- and asphalt-paved areas adjacent to the drying pad area to be improved would be sawcut, and the portions located within the Project site would be removed and stockpiled on site. Existing safety bollards would be removed and salvaged for reuse. Existing vertical concrete walls would be removed to 1 foot below finished grade. Existing pavement on the bottom of the basin would be broken up and left in place. Existing drain lines would be cut, capped, and abandoned in place or extended as required. Existing concrete and asphalt pavement sawcut from the drying pad area would be used as fill. Subsequently, construction would commence. This would entail concrete being poured in place for new footings/vertical wall. Approximately 1,500 cubic yards of

fill would be imported to fill the existing basins to subgrade. The subgrade would be compacted with a roller compactor, and approximately 500 cubic yards of base would be imported, placed, and compacted on subgrade. Approximately 500 cubic yards of concrete would be poured in place to construct a new pad area, and safety bollards and bucking wall would be installed.

9. Surrounding land uses and setting:

The Project site is located in unincorporated Santa Barbara County adjacent to the City of Santa Barbara Municipal Airport to the west, the City of Goleta to the north and east, and the Goleta Slough and Pacific Ocean to the south (see Figure 1). The Project would be located at the existing GSD WWTP (see Figure 2) on an existing asphalt surface. The area surrounding the Project site is primarily open space to the north, south, and east. To the west is the City of Santa Barbara Municipal Airport.

10. Other public agencies whose approval is required:

Based on a thorough review of existing permits for the current GSD operation, permits from the Santa Barbara County Air Pollution Control District (SBCAPCD) would be needed for construction (Authority to Construct) and operation (Permit to Operate) of the facility as it is currently proposed.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code, Section 21080.3.1? If so, has consultation begun?

GSD operates an existing WWTP with existing permits and has an underlying zoning of Public Utility (PU) and a land use designation of Public Utility (UT) (see Figure 4). The Project is allowed under the existing zoning and land use as a matter of right. The Project would be a demonstration project that would have a finite period of associated operation. There would be no ground disturbance other than repaving a previously constructed and disturbed drying bed. No excavation is proposed. Units associated with the Project would be driven onto the site on existing pavement, located on an existing asphalt surface currently used as a storage area, and connected to existing aboveground utilities.

Pursuant to Section 21080.31 of the California Public Resources Code, GSD has not received requests for consultation from any recognized or unrecognized Native Americans; therefore, no consultation has been conducted or is anticipated.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by the 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	☐ Geology and Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology and Water Quality
☐ Land Use and Planning	☐ Mineral Resources	☐ Noise
☐ Population and Housing	☐ Public Services	☐ Recreation
☐ Transportation and Traffic	☐ Tribal Cultural Resources	☐ Utilities and Service Systems
☐ Mandatory Findings of Significance		

There are no environmental factors that would be potentially affected by the Project.

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this 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. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and 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 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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature Date

EVALUATION OF ENVIRONMENTAL IMPACTS

4.1 Aesthetics

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
AESTHETICS – Would the project**:**				
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) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

a) Would the project have a substantial adverse effect on a scenic vista?

No Impact. The Project site is an existing and developed WWTP. The Project would be located on an existing asphalt surface between existing buildings at the WWTP (see Figure 3). It would not be different in form from other structures on site and would blend in with the existing facility; thus, it would not significantly change the visual environment. Therefore, the Project would not have a substantial adverse effect on a scenic vista, and there would be no impact.

b) Would the project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. There are no state scenic highways near or with a view of the Project site; therefore, there would be no impact.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

No Impact. The Project would be located in the central portion of the existing WWTP site on an existing asphalt surface (see Figure 3). The Project would be consistent with the existing visual character and quality of the site. There would be no impact.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. No added lighting is proposed as part of the Project; therefore, there would be no impact.

4.2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
AGRICULTURE AND FORESTRY RESOURCES – In determining whether 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 agriculture and 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, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
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?	☐	☐	☐	☒
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 or conversion of forest land to non-forest use?	☐	☐	☐	☒

a) Would the project 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?

No Impact. The Project would be located at the WWTP, which is zoned as a Public Utility (PU) and has a land use designation of Public Utility (UT). The Project would be located on an existing asphalt surface between existing buildings.

The California Department of Conservation produces maps and statistical data used to analyze impacts on California's agricultural resources through its Farmland Mapping and Monitoring Program. Agricultural land is rated according to soil quality and irrigation status; the best-quality land is called Prime Farmland. The maps are updated every 2 years using a computer mapping system, aerial imagery, public review, and field reconnaissance. According to the Farmland Mapping and Monitoring Program, the Project site is designated as Urban and Built-Up Land, and the surrounding area does not include Farmland (CDC 2018). Therefore, there would be no potential for conversion of Farmland, and there would be no impact.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project site is not zoned for agriculture, and there are no agricultural properties adjacent to the site or in the vicinity (see Figure 4). There are no Williamson Act properties in the vicinity. Therefore, there would be no impact for this issue area.

c) Would the project 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))?

No Impact. The Project site is zoned Public Utility (PU) and would use an existing concrete slab. Therefore, there would be no conflict with existing zoning for, or cause for rezoning of forest land, timberland, or timberland zoned Timberland Production. Therefore, there would be no impact to this issue area.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The Project site is located at the existing WWTP site on an existing asphalt surface between existing buildings. There is no forest land adjacent to or in the vicinity of the Project site. Therefore, the Project would not result in the loss of forest land or conversion of forest land to non-forest use, and there would be no impact.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The Project site is located at the existing WWTP site on an existing asphalt surface between existing buildings. There is no Farmland or forest land on the Project site, adjacent to the Project site, or in the vicinity of the Project site. Therefore, the Project would not involve changes in the existing environment that could result in conversion of Farmland to non-agricultural use or of forest land to non-forest use, and there would be no impact.

4.3 Air Quality

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) 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)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant. SBCAPCD and the Santa Barbara County Association of Governments (SBCAG) are responsible for developing and implementing the *Clean Air Plan* (SBCAPCD and SBCAG 2015) for attainment and maintenance of the ambient air quality standards in the basin. SBCAPCD further describes consistency with the *Clean Air Plan* for projects subject to these guidelines, which means that direct and indirect emissions associated with the Project are accounted for in the *Clean Air Plan*'s emissions growth assumptions, and the Project is consistent with policies adopted in the *Clean Air Plan*. The *2016 Ozone Plan* was adopted by the SBCAPCD Board on October 20, 2016, and is the most recent applicable air quality plan. The *2016 Ozone Plan* is the 3-year update required by the state to show how SBCAPCD plans to meet the state 8-hour ozone (O_3) standard (SBCAPCD 2016).

The *2016 Ozone Plan* relies primarily on the land use and population projections provided by SBCAG and the California Air Resources Board on-road emissions forecasts as a basis for vehicle emissions for County incorporated and unincorporated areas.

If a project proposes development that is greater than that anticipated in the local plan and SBCAG's growth projections, the project might be in conflict with the *2016 Ozone Plan* and may contribute to a potentially significant cumulative impact on air quality. The Project site is within the Public Utility (PU) zone of the County. The Public Utility (PU) zone is applied to areas that are appropriate for the siting of large-scale public works, utilities, and private service facilities. The intent is to provide adequate design requirements to ensure that these facilities are compatible with surrounding land uses. Because the Project is consistent with the zoning for the Project site, it would not conflict with the growth projections of the County.

Based on the nature of the Project, implementation of the project would not result in development in excess of that anticipated in local plans or increases in population/housing growth beyond those contemplated by SBCAG. As such, the Project would not conflict with or obstruct implementation of a local air quality plan; therefore, impacts associated with consistency with local plans would be less than significant, and no mitigation measures are required.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant. Neither the construction emissions nor the operational emissions would violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Construction Emissions

Construction of the Project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions. Therefore, such emission levels can only be estimated, with a corresponding uncertainty in precise ambient air quality impacts. Table 1 presents the estimated annual construction emissions generated during construction of the Project. Details of the emission calculations are provided in the Air Quality and Greenhouse Gas Emissions Assessment Memorandum (Appendix A).

Table 1
Estimated Annual Construction Criteria Air Pollutant Emissions

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons per Year					
2018	0.02	0.24	0.13	0.00	0.01	0.01
SBCAPCD threshold	*25*	*25*	*25*	*25*	*25*	*25*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix A.
Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SBCAPCD = Santa Barbara County Air Pollution Control District
The values shown are the combined maximum annual emissions results from the California Emissions Estimator Model.
See Appendix A for complete results.

As shown in Table 1, annual construction emissions would not exceed the SBCAPCD significance thresholds for volatile organic compound (VOC), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), coarse particulate matter (PM_{10}), or fine particulate matter ($PM_{2.5}$) emissions during construction. Therefore, construction of the Project would result in a less-than-significant impact.

Operational Emissions

The Project involves development of an organic materials conversion facility. Operation of the project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips from worker vehicles and haul trucks and stationary sources. Pollutant emissions associated with long-term operations were quantified using a spreadsheet model. Project-generated mobile source emissions were estimated based on Project-specific trip rates.

Table 2 presents the maximum daily emissions associated with operation (Year 2018) of the Project. Details of the emission calculations are provided in the Air Quality and Greenhouse Gas Emissions Assessment Memorandum (Appendix A). Table 2 presents the emissions from the scenario when the combined heat and power generator (CHP) is operating normally, and the flare is operating 1 hour per day.

Table 2
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions – CHP Operating with Flare Backup

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
CHP	0.34	0.36	1.07	0.01	0.31	0.31
Flare	0.01	0.00	0.01	0.01	0.00	0.00
Emergency generator	0.05	0.96	1.19	0.00	0.01	0.01
Boiler	0.08	0.53	4.36	0.25	0.11	0.11
Off-road equipment	0.06	0.76	0.87	0.00	0.04	0.03
Mobile	0.02	0.13	1.82	0.00	0.02	0.01
Total	**0.56**	**2.74**	**9.32**	**0.27**	**0.48**	**0.47**
Vehicle source emission threshold	*25*	*25*	—	—	—	—
Vehicle source emissions threshold exceeded?	**No**	**No**	—	—	—	—
Area + vehicle source emissions threshold	*55*	*55*	—	—	*80*	—
Area + vehicle source emissions threshold exceeded?	**No**	**No**	—	—	**No**	—

Source: Appendix A.
Notes: CHP = combined heat and power generator; VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter
See Appendix A for complete results.

As shown in Table 2, the combined daily emissions would not exceed the SBCAPCD operational thresholds for VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$. The emissions from the scenario where the CHP would not be operable and the flare would operate 24 hours per day are provided in Table 3.

Table 3
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions – Flare Operating (No CHP)

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
CHP	0.00	0.00	0.00	0.00	0.00	0.00
Flare	0.23	0.08	0.35	0.24	0.02	0.02
Emergency generator	0.05	0.96	1.19	0.00	0.01	0.01
Boiler	0.08	0.53	4.36	0.25	0.11	0.11
Off-road equipment	0.06	0.76	0.87	0.00	0.04	0.03
Mobile	0.02	0.13	1.82	0.00	0.02	0.01
Total	**0.43**	**2.45**	**8.58**	**0.50**	**0.20**	**0.18**
Vehicle source emission threshold	*25*	*25*	—	—	—	—
Vehicle source emissions threshold exceeded?	**No**	**No**	—	—	—	—
Area + vehicle source emissions threshold	*55*	*55*	—	—	*80*	—
Area + vehicle source emissions threshold exceeded?	**No**	**No**	—	—	**No**	—

Source: Appendix A.
Notes: CHP = combined heat and power generator; VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter
See Appendix A for complete results.

As shown in Table 3, the combined daily emissions would not exceed the SBCAPCD operational thresholds for VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$. The emissions from the flare operating 24 hours per day are less than the scenario in Table 2 for all pollutants except SO_x. Impacts associated with Project-generated operational criteria air pollutant emissions would be less than significant; therefore, no mitigation measures are required.

c) Would the project 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)?

Less Than Significant. Cumulative air quality impacts are the effect of long-term emissions of the Project plus any existing emissions at the same location, as well as the effect of long-term emissions of reasonably foreseeable similar projects, on the projected regional air quality or localized air pollution in the County. As discussed in SBCAPCD's *Scope and Content of Air Quality Sections in Environmental Documents* (SBCAPCD 2017), the cumulative contribution of Project emissions to regional levels should be compared with existing programs and plans, including the most recent *Clean Air Plan*.

Due to the County's nonattainment status for the 8-hour O_3 standard and its regional nature, if a project's emissions from traffic sources of either of the O_3 precursors VOC or NO_x exceed the long-term emission thresholds, then the project's cumulative impacts would be considered significant. For projects that do not have significant O_3 precursor emissions or localized pollutant impacts, if emissions have been taken into account in the most recent *Clean Air Plan* growth projections, regional cumulative impacts may be considered less than significant. When a project's emissions exceed the thresholds and are clearly not accounted for in the most recent *Clean Air Plan* growth projections, then the project is considered to have significant cumulative impacts that must be mitigated to a less-than-significant level.

In analyzing cumulative impacts from the Project, the assessment must specifically evaluate the project's contribution to the cumulative increase in pollutants for which the County is designated as nonattainment for the National Ambient Air Quality Standards or California Ambient Air Quality Standards. The County is currently in attainment for the National Ambient Air Quality Standards and is in attainment for the California Ambient Air Quality Standards, with the exception of the state 8-hour O_3 standard and the state PM_{10} standards. Construction and operation of the Project would generate emissions of VOCs and NO_x (O_3 precursors) and PM_{10}; however, the Project would not exceed SBCAPCD guidance for annual construction emissions or SBCAPCD thresholds for daily operational emissions. Because implementation of the Project would result in less-than-significant impacts associated with operation of the Project, the Project's contribution to the County's nonattainment status for the state 8-hour O_3 and PM_{10} standards would be less than cumulatively considerable. Because the Project would not result in significant O_3 precursor emissions or PM_{10} emissions, and Project-generated emissions were taken into account in SBCAPCD's *2016 Ozone Plan* growth projections, cumulative impacts would be less than significant; therefore, no mitigation measures are required.

d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of toxic air contaminants (TACs) resulting from a project over a 9-, 30-, and 70-year exposure period would contract cancer based on the use of standard U.S. Environmental Protection Agency's Office of Environmental Health Hazard Assessment risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. TACs that would potentially be emitted during construction activities would be diesel particulate matter, which is emitted by heavy-duty construction equipment and heavy-duty trucks. Heavy-duty construction equipment and diesel trucks are subject to the California Air Resources Board's Airborne Toxic Control Measures to reduce diesel particulate matter emissions. According to the U.S. Environmental Protection Agency's Office of Environmental Health Hazard Assessment, health risk assessments (HRAs), which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with a project (OEHHA 2015). Thus, the duration of the Project (2 years) would only constitute a small percentage of the total long-term exposure period and would not result in exposure of proximate sensitive receptors to substantial TACs.

In an abundance of caution based on the long-term operation of the Project, a voluntary HRA was performed in accordance with the U.S. Environmental Protection Agency's Office of Environmental Health Hazard Assessment and SBCAPCD guidance. The HRA methodology is described in detail in Appendix B, Operational Health Risk Assessment. The results of the HRA for Project operational activity are summarized in Table 4.

Table 4
Operational Activity Health Risk Assessment Results

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
PMI – cancer risk	Per million	0.2	10.0	Less than significant
PMI – HIC	N/A	0.001	1.0	Less than significant
MEIR – cancer risk	Per million	0.002	10.0	Less than significant
MEIR – HIC	N/A	0.000001	1.0	Less than significant
MEIW – cancer risk	Per million	0.0002	10.0	Less than significant
MEIW – HIC	N/A	0.00005	1.0	Less than significant

Source: Appendix B.
Notes: CEQA = California Environmental Quality Act; PMI = point of maximum impact; HIC = chronic hazard index; N/A = not applicable; MEIR = maximally exposed individual receptor; MEIW = maximally exposed individual worker

The results of the operational HRA demonstrate that the emergency generator, flare, CHP, and mobile-source TAC exposure would result in cancer risk at the maximally exposed individual receptor (MEIR) below the 10 in 1 million threshold, as well as a chronic hazard index of less than 1. Therefore, TAC emissions from operation of the Project would not expose sensitive receptors to substantial pollutant concentrations, and impacts to sensitive receptors would be less than significant. Therefore, no mitigation measures are required.

e) Would the project create objectionable odors affecting a substantial number of people?

Less Than Significant. Although SBCAPCD has not adopted quantitative thresholds of significance for odor impacts, SBCAPCD recommends the development of an odor abatement plan for projects that may generate nuisance odors that may affect a substantial number of people.

Construction Odor Impacts

Potential sources that may emit odors during construction activities include diesel equipment and gasoline fumes. Odors from these sources would be localized and generally confined to the Project site. The closest sensitive receptor to the Project site is a single-family residence located approximately 2,170 feet to the northeast of the Project site. The release of odor-causing compounds would tend to be during the workday, when many residents would not be at home. Such odors are temporary and generally occur at magnitudes that would not affect a substantial number of people. Also, the construction of the Project is only expected to last up to 2 weeks. Therefore, construction of the Project would not cause an odor nuisance, and impacts associated with odors during construction would be considered less than significant.

Operational Odor Impacts

Certain projects have the potential to cause significant odor impacts because of the nature of their operation and their location. Examples include fast-food restaurants, bakeries, and coffee-roasting facilities (SBCAPCD 2017). Other projects may be developments (e.g., residential areas or sensitive receptors) that are located downwind of existing sources of odor. Although food waste may generate odors if left exposed to the elements for an extended period of time, the Project would begin processing the food waste as soon as it is received. Any odors generated by the Project would be brief and infrequent because the amount of material being processed would be minimal. Also, the Project would be co-located on the existing WWTP site. Any odors generated by the Project

would be minimal compared to those associated with the existing WWTP. Therefore, the Project would result in a less-than-significant odor impact, and no mitigation measures are required.

4.4 Biological Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
BIOLOGICAL RESOURCES – Would the project:				
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 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, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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 Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a) Would the project 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 U.S. Fish and Wildlife Service?

No Impact. The Project site is located in the Goleta Slough in the unincorporated area of the County adjacent to the City of Santa Barbra Municipal Airport and the City of Goleta city limits. A search was performed of the California Natural Diversity Database for the Goleta U.S. Geological Survey 7.5-minute quadrangle to identify potential species of concern for the Project area (CDFW 2018). Table 5 contains the results of the California Natural Diversity Database search. The Project would not involve ground disturbance or a change in land use or the physical environment of the Project site, with the exception of repaving a previously excavated and disturbed biosolids pad. The Project would take place within the footprint of the existing WWTP between existing buildings on an existing asphalt surface where there are no extant biological resources. The Project site contains no suitable habitat for sensitive species; therefore, no adverse direct or indirect impacts would occur.

Table 5
California Natural Diversity Database Species List

Common Name	Scientific Name	Federal Status	State Status	Other Status
Tricolored blackbird	*Agelaius tricolor*	None	Candidate Endangered	BLM: Sensitive CDFW: Species of Special Concern IUCN: Endangered NABCI: Red Watch List USFWS: Bird of Conservation Concern
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	None	None	CDFW: Watch List
Grasshopper sparrow	*Ammodramus savannarum*	None	None	CDFW: Species of Special Concern IUCN: Least Concern
Northern California legless lizard	*Anniella pulchra*	None	None	CDFW: Species of Special Concern USFS: Sensitive
Pallid bat	*Antrozous pallidus*	None	None	BLM: Sensitive CDFW: Species of Special Concern IUCN: Least Concern USFS: Sensitive WBWG: High Priority
Refugio manzanita	*Arctostaphylos refugioensis*	None	None	USFS: Sensitive
Great blue heron	*Ardea herodias*	None	None	CDFW: Sensitive IUCN: Least Concern

Table 5
California Natural Diversity Database Species List

Common Name	Scientific Name	Federal Status	State Status	Other Status
Bell's sage sparrow	*Artemisiospiza belli*	None	None	CDFW: Watch List USFWS: Bird of Conservation Concern
Coulter's saltbush	*Atriplex coulteri*	None	None	SB: Rancho Santa Ana Botanic Garden
Davidson's saltscale	*Atriplex serenana* var. *davidsonii*	None	None	—
Crotch bumble bee	*Bombus crotchii*	None	None	—
Late-flowered mariposa-lily	*Calochortus fimbriatus*	None	None	BLM: Sensitive USFS: Sensitive
Southern tarplant	*Centromadia parryi* ssp. *australis*	None	None	SB: Rancho Santa Ana Botanic Garden
Western snowy plover	*Charadrius alexandrinus nivosus*	Threatened	None	CDFW: Species of Special Concern NABCI: Red Watch List USFWS: Bird of Conservation Concern
Sandy beach tiger beetle	*Cicindela hirticollis gravida*	None	None	—
Globose dune beetle	*Coelus globosus*	None	None	IUCN: Vulnerable
Townsend's big-eared bat	*Corynorhinus townsendii*	None	None	BLM: Sensitive CDFW: Species of Special Concern IUCN: Least Concern USFS: Sensitive WBWG: High Priority
Monarch – California overwintering population	*Danaus plexippus* pop. 1	None	None	USFS: Sensitive
White-tailed kite	*Elanus leucurus*	None	None	BLM: Sensitive CDFW: Fully Protected IUCN: Least Concern
Western pond turtle	*Emys marmorata*	None	None	BLM: Sensitive CDFW: Species of Special Concern IUCN: Vulnerable USFS: Sensitive
Tidewater goby	*Eucyclogobius newberryi*	Endangered	None	AFS: Endangered CDFW: Species of Special Concern IUCN: Vulnerable
Ojai fritillary	*Fritillaria ojaiensis*	None	None	BLM: Sensitive USFS: Sensitive
Mesa horkelia	*Horkelia cuneata* var. *puberula*	None	None	USFS: Sensitive
Santa Lucia dwarf rush	*Juncus luciensis*	None	None	USFS: Sensitive
Western red bat	*Lasiurus blossevillii*	None	None	CDFW: Species of Special Concern IUCN: Least Concern WBWG: High Priority

Table 5
California Natural Diversity Database Species List

Common Name	Scientific Name	Federal Status	State Status	Other Status
Contra Costa goldfields	*Lasthenia conjugens*	Endangered	None	SB: UC Berkeley Botanical Garden
Coulter's goldfields	*Lasthenia glabrata* ssp. *coulteri*	None	None	BLM: Sensitive SB: Rancho Santa Ana Botanic Garden
Pale-yellow layia	*Layia heterotricha*	None	None	BLM: Sensitive SB: Santa Barbara Botanic Garden USFS: Sensitive
Santa Barbara honeysuckle	*Lonicera subspicata* var. *subspicata*	None	None	USFS: Sensitive
San Diego desert woodrat	*Neotoma lepida intermedia*	None	None	CDFW: Species of Special Concern
Belding's savannah sparrow	*Passerculus sandwichensis beldingi*	None	Endangered	—
Coast horned lizard	*Phrynosoma blainvillii*	None	None	BLM: Sensitive CDFW: Species of Special Concern IUCN: Least Concern
Light-footed Ridgway's rail	*Rallus obsoletus levipes*	Endangered	Endangered	CDFW: Fully Protected NABCI: Red Watch List
California red-legged frog	*Rana draytonii*	Threatened	None	CDFW: Species of Special Concern IUCN: Vulnerable
Bank swallow	*Riparia*	None	Threatened	BLM: Sensitive IUCN: Least Concern
Coast patch-nosed snake	*Salvadora hexalepis virgultea*	None	None	CDFW: Species of Special Concern
Black-flowered figwort	*Scrophularia atrata*	None	None	SB: Rancho Santa Ana Botanic Garden
Southern coastal salt marsh	—	None	None	—
California least tern	*Sternula antillarum browni*	Endangered	Endangered	CDFW: Fully Protected NABCI: Red Watch List
Estuary seablite	*Suaeda esteroa*	None	None	—
Coast Range newt	*Taricha torosa*	None	None	CDFW: Species of Special Concern
Sonoran maiden fern	*Thelypteris puberula* var. *sonorensis*	None	None	USFS: Sensitive
Mimic tryonia (=California brackishwater snail)	*Tryonia imitator*	None	None	IUCN: Data Deficient

Notes: AFS = American Fisheries Society; BLM = Bureau of Land Management; CDFW = California Department of Fish and Wildlife; IUCN = International Union for Conservation of Nature and Natural Resources; NABCI = North American Bird Conservation Initiative; County of SB = Santa Barbara; USFS = U.S. Forest Service; USFWS = U.S. Fish and Wildlife Service; WBWG = Western Bat Working Group

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No Impact. The *Eastern Goleta Valley Community Plan* area includes the Project site, and the plan identifies environmentally sensitive habitats and riparian corridors (County of Santa Barbara 2015a). The *Eastern Goleta Valley Community Plan* identifies environmentally sensitive habitat adjacent to the GSD WWTP site to the north and east, as well as along the southern section of the WWTP, including the Project site (see Figure 5, Biological Resources). The *Eastern Goleta Valley Community Plan* also identifies the Eastern Goleta Valley Atascadero Creek Greenway and Wildlife Corridor, which runs from Goleta Slough to the San Marcos Foothills along the southern border of the GSD WWTP site. No riparian habitats are identified in the vicinity of the Project site. The Project site is located between existing buildings on an existing asphalt surface. No natural habitats occur on the Project site. In addition, the Project would not involve any change in land use or physical change to the environment. Based on the above, there would be no impact on riparian habitat or other sensitive natural communities.

c) Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. San Pedro Creek runs adjacent to the GSD WWTP site to the east; however, stormwater runoff from the WWTP, including the Project site, is routed to existing solids stabilization basins and does not reach the creek. Wetlands exist northwest of the WWTP site, and Section 404 of the Clean Water Act protects this area. The Project would not involve the direct removal, filling, or hydrological interruption of this wetland or any other area. The Project would occur on an existing asphalt surface between existing buildings at the southern end of the existing WWTP site. Stormwater originating at the Project site would be routed to solids stabilization basins and would not affect the wetland. Therefore, there would be no impact.

d) Would the project 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?

No Impact. The Project site is located in the Goleta Slough within unincorporated Santa Barbara County and is identified in the *Goleta Slough Area Sea Level Rise and*

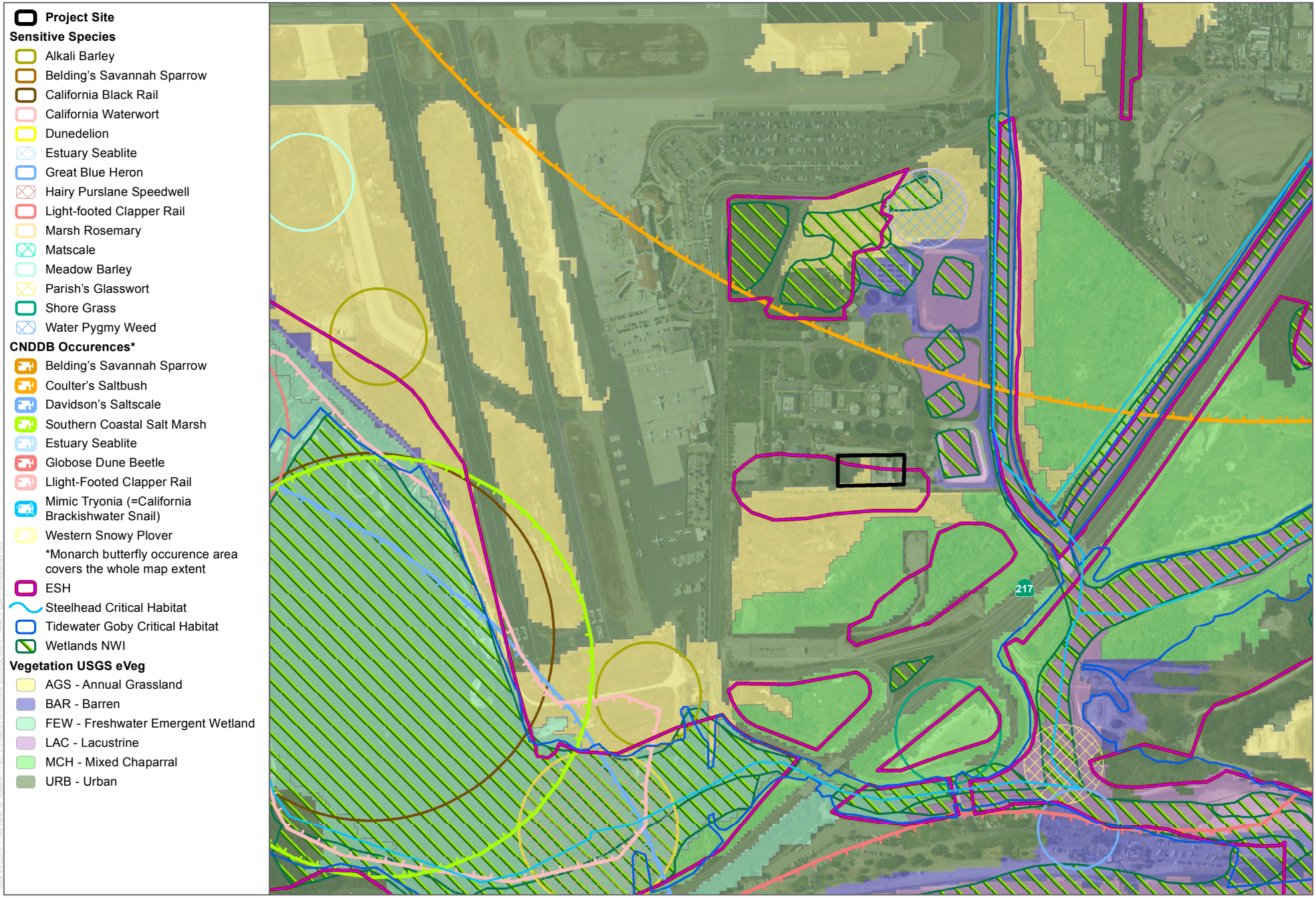
Management Plan (GSMC 2015). The Eastern Goleta Valley Atascadero Creek Greenway and Wildlife Corridor identified in the *Eastern Goleta Valley Community Plan* (County of Santa Barbara 2015a) runs along the southern edge of the GSD WWTP property adjacent to the Project site. The Project would not interfere with this wildlife corridor. The Project site is located between existing buildings on an existing asphalt surface. There is no natural area, suitable habitat, nursery site, or wildlife corridor on the Project site; therefore, no impact would occur.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The Project would occur on an existing asphalt surface between existing buildings at the existing WWTP site. There are no biological resources, including trees, on the Project site. Therefore, no impact would occur.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The Project site is located in the Goleta Slough within unincorporated Santa Barbara County, and is identified in the *Goleta Slough Area Sea Level Rise and Management Plan* (GSMC 2015). The plan identifies the Project site as a utility, and the Project is consistent with that designation. The Project would not conflict with the provisions of the *Goleta Slough Area Sea Level Rise and Management Plan*, and no impact would occur.



SOURCE: NAIP 2016, County of Santa Barbara, City of Goleta, CDFWS, USFWS, USGS

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0 305 610 Feet

FIGURE 5

Biological Resources

Organic Materials to Energy Demonstration Project

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4.5 Cultural Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☒

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No Impact. The WWTP facility is in an area that has been identified as having significant historical resources. Archaeological investigations were conducted for previous projects at the WWTP site (GSD 2009) and identified the need to avoid ground disturbances. The Project would be located on an existing asphalt surface, and there would be no ground disturbance other than repaving of a previously constructed and disturbed drying bed. No excavation is proposed. Therefore, the Project would not cause a substantial adverse change in the significance of a historical resource as defined in the California Code of Regulations, Title 14, Chapter 3, Section 15064.5. No impact would occur.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

No Impact. The WWTP facility is in an area that has been identified as having significant archaeological resources. Archaeological investigations have been conducted for previous projects at the WWTP site (GSD 2009) and identified the need to avoid ground disturbances. The Project would be located on an existing asphalt surface, and there would be no ground disturbance other than repaving of a previously constructed and disturbed drying bed. No excavation is proposed. Therefore, the Project would not cause a substantial adverse change in the significance of an archaeological resource as defined in the California Code of Regulations, Title 14, Chapter 3, Section 15064.5. No impact would occur.

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. Previous investigations have found a low paleontological sensitivity for the Project site (GSD 2009). The Project would be located on an existing asphalt surface, and the only ground disturbance would be repaving a previously constructed and disturbed drying bed. Therefore, the Project would not directly or indirectly destroy a unique paleontological resource or site or unique geological feature, and no impact would occur.

d) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

No Impact. The WWTP facility exists in an area that has been identified as having significant archaeological resources. Archaeological investigations have been conducted for previous projects at the WWTP site (GSD 2009) and identified the need to avoid ground disturbances. The Project would be located on an existing asphalt surface, and there would be no ground disturbance other than repaving a previously constructed and disturbed drying bed that has been subject to previously conducted and approved environmental documents. No excavation is proposed. Therefore, the Project would not disturb any human remains, and no impact would occur.

4.6 Geology and Soils

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
GEOLOGY AND SOILS – Would the project:				
a) Expose people or structures to 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

a) Would the project expose people or structures to 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.

No Impact. The Project site is within the County. According to the County's Comprehensive Plan Seismic and Safety Element, nine faults within the County are considered active (County of Santa Barbara 2015b). Included in the list of active faults is the More Ranch Fault, which runs along the southern boundary of the Project site (see Figure 6, Fault Lines and Flood Zone). The More Ranch Fault is classified by the California Geological Survey as a potentially active fault rather than an active fault and is, therefore, not delineated in an Alquist-Priolo Earthquake Fault Zone map. Due to the resulting uncertainty as to whether the fault is active or potentially active, GSD hired a consultant to conduct a fault investigation in July 2009 in preparation for upgrades to the WWTP (GSD 2009). The fault investigation included two fault trenches, one of which passed through the current location of the Solids Handling Building, adjacent to the Project site. The investigation found "no evidence indicative of faulting, such as bedding, gouge zones or slickensided fractures" in the two trenches (GSD 2009). Since the current Project would only include placing modular units on existing concrete areas and would

have minimal repaving, there would be no potential for the Project to cause any rupture of a known earthquake fault, and no impact would occur.

ii) Strong seismic ground shaking?

No Impact. According to the County's Comprehensive Plan Seismic and Safety Element, the Project site has a problem rating of "high" for seismic ground shaking (County of Santa Barbara 2015b). However, the Project would not include any ground disturbance other than repaving of a previously constructed and disturbed drying bed. No excavation is proposed. Hence, there would be no potential for the Project to cause any strong seismic ground shaking. In addition, operating equipment is expected to be anchor-bolted to the existing paved surface, which would minimize the impact of any seismic shaking on the Project. Therefore, no impact would occur.

iii) Seismic-related ground failure, including liquefaction?

No Impact. According to the County's Comprehensive Plan Seismic and Safety Element, the WWTP location has a problem rating of "moderate" for liquefaction (County of Santa Barbara 2015b). In 2009, GSD hired a consultant to conduct borings to determine the liquefaction potential for four specific areas of the WWTP (GSD 2009). Three areas, including the Project site, were found not to have liquefaction potential due to the lack of groundwater and the presence of shallow siltstone. Therefore, no impact would occur.

iv) Landslides?

No Impact. The WWTP site is flat and paved and away from any significant slopes. In addition, the County's Comprehensive Plan Seismic and Safety Element indicates a "low" problem rating for landslides for the Project site (County of Santa Barbara 2015b). Therefore, no impact would occur.

b) Would the project result in substantial soil erosion or the loss of topsoil?

No Impact. The Project would occur in the previously developed and paved land of the existing WWTP site on flat ground and would not include ground disturbance or displacement, with the exception of limited ground disturbance related to the repaving of a biosolids pad, which was reviewed under the previously conducted and approved *Mitigated Negative Declaration for the Wastewater Treatment Plan Upgrade Project* (GSD 2009). The Project would not result in substantial soil erosion or the loss of topsoil, and no impact would occur.

c) Would the project 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?

No Impact. The Project would be located in the previously developed and paved areas of the existing WWTP site between existing buildings. The County's Comprehensive Plan Seismic and Safety Element indicates a "low" problem rating for landslides and expansive soil for the Project site (County of Santa Barbara 2015b), and previous studies have indicated a low liquefaction potential (GSD 2009). In addition to being located on an existing asphalt surface between existing buildings, the Project is relatively small compared to the existing infrastructure of the WWTP. The Project would not include any components of construction or operation that would result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Therefore, no impact would occur.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

No Impact. According to the County's Comprehensive Plan Seismic and Safety Element (County of Santa Barbara 2015b), the Project site has a problem rating of "low" for expansive soil. Therefore, no impact would occur.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The Project would be connected to GSD services and would not include the use of septic systems; therefore, there would be no impact associated with soils incapable of supporting septic systems.

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SOURCE: NAIP 2016, City of Goleta, FEMA 2017

DUDEK

0 305 610 Feet

FIGURE 6

Fault Lines and Flood Zone

Organic Materials to Energy Demonstration Project

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4.7 Greenhouse Gas Emissions

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
GREENHOUSE GAS EMISSIONS – Would the project:				
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?	☐	☐	☒	☐

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant. The analysis conducted for this section has demonstrated that impacts would be less than significant; therefore, no mitigation is required.

Construction Emissions

Construction of the Project would result in greenhouse gas (GHG) emissions that are primarily associated with use of off-road construction equipment, on-road vendor trucks, and worker vehicles. The County's *Environmental Thresholds and Guidelines Manual* (County of Santa Barbara 2008) recommends the use of a 1,000 metric tons of carbon dioxide equivalent (MT CO_2e) bright-line threshold for both construction and operation of stationary-source projects.

The California Emissions Estimator Model was used to calculate the annual GHG emissions based on the construction scenario described in Appendix A. Construction of the Project is anticipated to commence in October 2018, lasting a total of approximately 2 weeks. On-site sources of GHG emissions include off-road equipment, and off-site sources include on-road vehicles (haul trucks, vendor trucks, and worker vehicles). Table 6 presents construction emissions for the Project from on-site and off-site emission sources.

Table 6
Estimated Annual Construction Greenhouse Gas Emissions

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
2018	38.15	0.01	0.00	38.29
			Significance threshold	*1,000*
			Exceeds significance threshold?	**No**

Source: Appendix A.
Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent
See Appendix A for complete results.

As shown in Table 6, the estimated total GHG emissions during construction would be approximately 38 MT CO_2e, which does not exceed the County's significance threshold. As with Project-generated construction air quality pollutant emissions, GHG emissions generated during construction of the Project would be short term in nature, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions. Therefore, the Project would have a less-than-significant impact during construction.

Operational Emissions

Operation of the Project would generate GHG emissions through motor vehicle trips to and from the Project site; energy use (natural gas and generation of electricity consumed by the Project); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. The spreadsheet model was used to calculate the annual GHG emissions based on the operational assumptions described in Section 2.2, Operation, in Appendix A. Similar to air quality, two operational scenarios were estimated for the GHG emissions analysis: one with the CHP operational, and the other with the CHP not operating and the flare operating 24 hours per day.

The estimated first full operational year (2019) Project-generated GHG emissions from area sources, energy use, motor vehicles, solid waste generation, and water use and wastewater generation from the scenario where the CHP is operating and the flare is used only for backup (operating 1 hour per day) are shown in Table 7.

Table 7
Estimated Annual Operational GHG Emissions –
CHP Operating with Flare Backup

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
CHP	17.94	0.01	0.00	17.99
Flare	0.75	0.00	0.00	0.75
Emergency generator	2.65	0.00	0.00	2.66
Boiler	166.22	0.01	0.00	166.89
Off-road equipment	9.16	0.00	0.00	9.61
Mobile	22.93	0.01	0.00	24.31
Energy	189.12	0.01	0.00	189.80
Solid waste	4.36	0.22	0.00	9.77
Biogas venting	0.00	0.00	0.00	0.06
			Total	**421.82**
			Significance threshold	*1,000*
			Exceeds significance threshold?	**No**

Source: Appendix A.
Notes: CHP = combined heat and power generator; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent
See Appendix A for complete results.

As shown in Table 7, estimated annual Project-generated GHG emissions would be approximately 422 MT CO_2e per year as a result of Project operation. As shown, the total annual emissions would not exceed the GHG significance threshold of 1,000 MT CO_2e per year. Table 8 provides the annual GHG emissions from the Project under the scenario where the CHP would be inoperable and the flare would operate 24 hours per day.

Table 8
Estimated Annual Operational Greenhouse Gas Emissions –
Flare Operating, No CHP

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
CHP	0.00	0.00	0.00	0.00
Flare	17.94	0.00	0.00	17.99
Emergency generator	2.65	0.00	0.00	2.66
Boiler	166.22	0.01	0.00	166.89
Off-road equipment	9.16	0.00	0.00	9.61
Mobile	22.93	0.01	0.00	24.31
Energy	189.12	0.01	0.00	189.80
Solid waste	4.36	0.22	0.00	9.77

Table 8
Estimated Annual Operational Greenhouse Gas Emissions –
Flare Operating, No CHP

Emission Source	CO_2	CH_4	N_2O	CO_2e
Biogas venting	0.00	0.00	0.00	0.06
			Total	**421.07**
			Significance threshold	*1,000*
			Exceeds significance threshold?	**No**

Source: Appendix A.
Notes: CHP = combined heat and power generator; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent
See Appendix A for complete results.

As shown in Table 8, estimated annual Project-generated GHG emissions would be approximately 421 MT CO_2e per year as a result of Project operation and would not exceed the GHG significance threshold of 1,000 MT CO_2e per year. Because the Project's GHG emissions would not result in a cumulatively considerable contribution under either operational scenario, the Project would result in a cumulative impact in terms of climate change that is less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant. The analysis conducted for this section has demonstrated that impacts would be less than significant; therefore, no mitigation is required.

Consistency with the Energy and Climate Action Plan

The Energy and Climate Action Plan (ECAP) Environmental Impact Report contains a programmatic analysis of GHG emissions for unincorporated Santa Barbara County, and a project may tier from the ECAP's certified Environmental Impact Report for its impact analysis of GHG emissions if the project's emissions were considered in the ECAP, and the project does not exceed the growth projections assumed in the ECAP. The Project does not require a General Plan Amendment, change in land use designation, or zoning change. However, as discussed in Section 4.1.2, Local Guidance, in Appendix A, the Project was not included in the ECAP Environmental Impact Report emission inventory forecast because it would be considered a stationary source.

The ECAP contains 53 County and community-wide programmatic emission reduction measures intended to achieve the 15% GHG emissions reduction target by 2020. The County created the Energy and Sustainability Initiatives Division and is taking other steps

to implement and monitor the effectiveness of these measures throughout the unincorporated County. For example, the EmPower Program helps homeowners Countywide overcome obstacles to making energy-saving improvements to their homes. The Project directly supports several GHG reducing measures in the ECAP, including renewable energy and waste reduction. The Renewable Energy (RE) measure RE 1 of the ECAP states, "Increase the use of alternative energy technology as appropriate in new and existing development" (County of Santa Barbara 2015c). Because the Project would produce electricity from renewable biogas generated from organic waste, it is consistent with this ECAP strategy. The Waste Reduction (WR) measure WR 1 of the ECAP states, "Continue to support the programs associated with efficient waste collection and recycling, public school education, and composting" (County of Santa Barbara 2015c). The Project would reduce the amount of waste sent to the landfill by processing it into a usable product using the Lystek system. This supports the WR strategies of the ECAP. As such, the Project would not conflict with or obstruct implementation of the ECAP; therefore, impacts associated with consistency with the ECAP would be less than significant.

Consistency with *Fast Forward 2040* – SBCAG's Regional Transportation Plan/Sustainable Communities Strategy

With regard to consistency with SBCAG's Regional Plan, the Project would include site design elements developed to support the policy objectives of the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and Senate Bill 375 where applicable. Table 9 shows the Project's consistency with applicable goals and policy objectives (SBCAG 2017).

Table 9
2010–2040 RTP/SCS Consistency Analysis

Policy Objective or Strategy	Consistency Analysis
1.1, Land Use	*Not applicable*. The Project would not inhibit SBCAG from implementing land use policies within region.
1.2, Air Quality	*Consistent*. The Project would help reduce GHG emissions consistent with Senate Bill 375. The Project would also conform to the *Clean Air Plan*.
1.3, Alternative Fuels and Energy	*Consistent*. The Project would produce renewable energy from biogas generated from organic waste.
1.4, Aesthetics and Community Character	*Consistent*. The Project would be consistent with the aesthetics at the GSD.
1.5, Regional Greenprint	*Not applicable*. The Project would not inhibit SBCAG from pursuing development to mitigate impacts from transportation projects on sensitive biological areas.

Table 9
2010–2040 RTP/SCS Consistency Analysis

Policy Objective or Strategy	Consistency Analysis
2.1, Access, Circulation and Congestion	*Not applicable*. The Project would not inhibit SBCAG from planning, constructing, and operating transportation facilities.
2.2, System Maintenance, Expansion and Efficiency	*Not applicable*. The Project would not inhibit SBCAG from maintaining or expanding transportation facilities.
2.3, Alternative Transportation Modes	*Not applicable*. The Project would not inhibit SBCAG from encouraging alternative transportation modes throughout the County.
2.4, Freight and Goods Movement	*Not applicable*. The Project would not inhibit SBCAG from facilitating secure and efficient movement of goods and freight.
2.5, Transportation System Management Technologies	*Not applicable*. The Project would not inhibit SBCAG from implementing transportation system management technologies.
2.6, Consistency with Other Plans	*Not applicable*. The Project would not inhibit SBCAG from ensuring that transportation facilities are consistent with relevant plans.
3.1, Access	*Not applicable*. The Project would not inhibit SBCAG from ensuring that transportation systems are accessible for all transportation users.
3.2, Affordable Housing	*Not applicable*. The Project would not inhibit SBCAG from encouraging local agencies to plan and provide affordable housing in the community.
3.3, Environmental Justice	*Not applicable*. The Project would not inhibit SBCAG from improving the public health and safety of the regional transportation system.
4.1, Safe Roads and Highways	*Not applicable*. The Project would not inhibit SBCAG from planning, constructing, and operating safe roads and highways.
4.2, Public Health	*Not applicable*. The Project would not inhibit SBCAG from promoting active transportation and complete streets.
5.1, Commuter Savings	*Not applicable*. The Project would not inhibit SBCAG from reducing average commute time and cost.
5.2, Support Business and Local Investment	*Consistent*. The Project would provide an investment in the local community and create jobs.
5.3, Public-Private Partnerships	*Consistent.* The Project would create a public-private partnership between GSD and Lystek.
5.4, Transportation Funding	*Not applicable*. The Project would not inhibit SBCAG from seeking funding opportunities to implement the RTP/SCS.

Notes: RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SBCAG = Santa Barbara County Association of Governments; GHG = greenhouse gas; SBCAPCD = Santa Barbara County Air Pollution Control District; GSD = Goleta Sanitary District; Lystek = Lystek International Limited

As shown in Table 9, the Project would be consistent with applicable policy measures in *Fast Forward 2040*, SBCAG's RTP/SCS; therefore, impacts associated with the consistency with the RTP/SCS would be less than significant.

Consistency with the California Air Resources Board's Scoping Plan

The Scoping Plan, approved by the California Air Resources Board on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires the California Air Resources Board and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. In the Final Statement of Reasons for the amendments to the CEQA Guidelines, the California Natural Resources Agency observed that "the [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. The California Air Resources Board and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area-source emissions (e.g., energy usage, high-global-warming-potential GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., Low Carbon Fuel Standard), among others. The Project would comply with applicable regulations adopted in furtherance of the Scoping Plan to the extent required by law.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of Assembly Bill 32 and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. Table 10 highlights measures that have been developed under the Scoping Plan and demonstrates the Project's consistency with Scoping Plan measures. Table 10 also includes measures in the 2017 Scoping Plan Update. To the extent that these regulations are applicable to the Project, its inhabitants, or its uses, the Project would comply with applicable regulations adopted in furtherance of the Scoping Plan.

Table 10
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Transportation Sector		
Advanced Clean Cars	T-1	This measure does not apply to the Project.
1.5 Million Zero-Emission and Plug-In Hybrid Light-Duty Electric Vehicles by 2025 (4.2 million zero-emission vehicles by 2030)	N/A	This measure does not apply to the Project.

Table 10
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Low Carbon Fuel Standard	T-2	Motor vehicles driven by the Project's employees would use compliant fuels.
Low Carbon Fuel Standard (18% reduction in carbon intensity by 2030)	N/A	Motor vehicles driven by the Project's employees would use compliant fuels.
Regional Transportation-Related GHG Targets	T-3	This measure does not apply to the Project.
Advanced Clean Transit	N/A	This measure does not apply to the Project.
Last Mile Delivery	N/A	This measure does not apply to the Project.
Reduction in Vehicle Miles Traveled	N/A	The Project would reduce the distance refuse trucks would haul food waste from UCSB to the landfill.
Vehicle Efficiency Measures 1. Tire Pressure 2. Fuel Efficiency Tire Program 3. Low-Friction Oil 4. Solar-Reflective Automotive Paint and Window Glazing	T-4	This measure does not apply to the Project.
Ship Electrification at Ports (Shore Power)	T-5	This measure does not apply to the Project.
Goods Movement Efficiency Measures 1. Port Drayage Trucks 2. Transport Refrigeration Units Cold Storage Prohibition 3. Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification 4. Goods Movement Systemwide Efficiency Improvements 5. Commercial Harbor Craft Maintenance and Design Efficiency 6. Clean Ships 7. Vessel Speed Reduction	T-6	This measure does not apply to the Project.
California Sustainable Freight Action Plan	N/A	This measure does not apply to the Project.
Heavy-Duty Vehicle GHG Emission Reduction 1. Tractor-Trailer GHG Regulation 2. Heavy-Duty Greenhouse Gas Standards for New Vehicle and Engines (Phase I)	T-7	This measure does not apply to the Project.
Medium- and Heavy-Duty Vehicle Hybridization Voucher Incentive Project	T-8	This measure does not apply to the Project.
Medium- and Heavy-Duty GHG Phase 2	N/A	This measure does not apply to the Project.
High-Speed Rail	T-9	This measure does not apply to the Project.
Electricity and Natural Gas Sector		
Energy Efficiency Measures (Electricity)	E-1	The Project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.

Table 10
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Energy Efficiency (Natural Gas)	CR-1	The Project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.
Solar Water Heating (California Solar Initiative Thermal Program)	CR-2	This measure does not apply to the Project.
Combined Heat and Power	E-2	This measure does not apply to the Project.
Renewable Portfolios Standard (33% by 2020)	E-3	The Project would generate renewable energy from food waste.
Renewable Portfolios Standard (50% by 2050)	N/A	The Project would generate renewable energy from food waste.
Senate Bill 1 Million Solar Roofs (California Solar Initiative, New Solar Home Partnership, Public Utility Programs) and Earlier Solar Programs	E-4	This measure does not apply to the Project.
Water Sector		
Water Use Efficiency	W-1	The Project is going to use non-potable water for any water needs on site.
Water Recycling	W-2	The Project would use recycled non-potable water from the GSD for any water needs on site.
Water System Energy Efficiency	W-3	This is applicable for the transmission and treatment of water, but it is not applicable for the Project.
Reuse Urban Runoff	W-4	This measure does not apply to the Project.
Renewable Energy Production	W-5	This is applicable for wastewater treatment systems. It is not applicable for the Project.
Green Buildings		
1. State Green Building Initiative: Leading the Way with State Buildings (Greening New and Existing State Buildings)	GB-1	The Project would be required to be constructed in compliance with state or local green building standards in effect at the time of building construction.
2. Green Building Standards Code (Greening New Public Schools, Residential and Commercial Buildings)	GB-1	The Project's buildings would meet green building standards that are in effect at the time of design and construction.
3. Beyond Code: Voluntary Programs at the Local Level (Greening New Public Schools, Residential and Commercial Buildings)	GB-1	The Project would be required to be constructed in compliance with local green building standards in effect at the time of building construction.
4. Greening Existing Buildings (Greening Existing Homes and Commercial Buildings)	GB-1	This is applicable for existing buildings only and is not applicable to the Project.
Industry Sector		
Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	I-1	This is not applicable to the Project.
Oil and Gas Extraction GHG Emission Reduction	I-2	This is not applicable to the Project.

Table 10
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Reduce GHG Emissions by 20% in Oil Refinery Sector	N/A	This is not applicable to the Project.
GHG Emissions Reduction from Natural Gas Transmission and Distribution	I-3	This is not applicable to the Project.
Refinery Flare Recovery Process Improvements	I-4	This is not applicable to the Project.
Work with the Local Air Districts to Evaluate Amendments to Their Existing Leak Detection and Repair Rules for Industrial Facilities to Include Methane Leaks	I-5	This is not applicable to the Project.
Recycling and Waste Management Sector		
Landfill Methane Control Measure	RW-1	This is not applicable to the Project.
Increasing the Efficiency of Landfill Methane Capture	RW-2	This is not applicable to the Project.
Mandatory Commercial Recycling	RW-3	This measure does not apply to the Project.
Increase Production and Markets for Compost and Other Organics	RW-3	This Project would produce a product that can be composted or land-applied similar to compost.
Anaerobic/Aerobic Digestion	RW-3	The Project would use anaerobic digestion to generate biogas from food waste.
Extended Producer Responsibility	RW-3	This is not applicable to the Project.
Environmentally Preferable Purchasing	RW-3	This is not applicable to the Project.
Forests Sector		
Sustainable Forest Target	F-1	This is not applicable to the Project.
High GWP Gases Sector		
Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	H-1	This is not applicable to the Project.
SF_6 Limits in Non-Utility and Non-Semiconductor Applications	H-2	This is not applicable to the Project.
Reduction of Perfluorocarbons in Semiconductor Manufacturing	H-3	This is not applicable to the Project.
Limit High GWP Use in Consumer Products	H-4	This measure does not apply to the Project.
Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	H-5	This measure does not apply to the Project.
Stationary Equipment Refrigerant Management Program – Refrigerant Tracking/Reporting/Repair Program	H-6	This is not applicable to the Project.
Stationary Equipment Refrigerant Management Program – Specifications for Commercial and Industrial Refrigeration	H-6	This is not applicable to the Project.
SF_6 Leak Reduction Gas Insulated Switchgear	H-6	This is not applicable to the Project.

Table 10
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
40% Reduction in Methane and Hydrofluorocarbon (HFC) Emissions	N/A	This is not applicable to the Project.
50% Reduction in Black Carbon Emissions	N/A	This is not applicable to the Project.
Agriculture Sector		
Methane Capture at Large Dairies	A-1	This is not applicable to the Project.

Source: CARB 2008, 2017.
Notes: GHG = greenhouse gas; N/A = not applicable; GWP = global warming potential; UCSD = University of California, Santa Barbara; GSD = Goleta Sanitary District; SF_6 = sulfur hexafluoride

Based on the analysis in Table 10, the Project would be consistent with the applicable strategies and measures in the California Air Resources Board's Scoping Plan.

4.8 Hazards and Hazardous Materials

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
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 that 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 a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant. The Project would involve reconstruction of an existing concrete biosolids pad and delivery and operation of prefabricated demonstration units. Construction and delivery activities would be one time and short-term and involve the limited transport and use of fuel, a hazardous material. Fuel handling and use would be controlled by GSD's *Hazardous Materials Business Plan and Emergency Response Plan and Training Program* (GSD 2008). During operation, the Project would not accept any hazardous materials.

The Project would comply with workplace safety, protection, and ergonomics policies as required. Regular inspections at the workplace would be carried out by the facility manager to ensure consistent compliance among employees. Additionally, the effectiveness and efficiency of the facility's policies on safety, health, and the environment would be reviewed periodically and revised as necessary.

An employee training program would be provided for employees who are actively involved with day-to-day facility operations. A detailed health, safety, and emergency response plan would be developed for the Project and would form part of the detailed operations plan.

Preventive maintenance is a critical aspect for the effective and efficient operation of the Project's equipment. A detailed maintenance and preventive maintenance program would be developed and implemented, and the document would be on site and available for inspection at any time. Site supervisory duties would include ensuring that maintenance schedules and procedures are observed. Based on the above, the impact would be less than significant.

b) Would the project 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?

Less Than Significant. The Project would involve reconstruction of an existing concrete biosolids pad and delivery and operation of prefabricated demonstration units. Construction and delivery activities would occur at once and be short-term and involve the limited transport and use of fuel, a hazardous material. Fuel handling and use would be controlled by GSD's Hazardous Materials Business Plan (GSD 2008), which would minimize the risk of upset or accidents that would involve the release of hazardous materials to the environment.

During operation, the Project would not accept any hazardous materials. Where there is a potential for a spillage situation, either inside or outside of the processing area, adequate containment facilities would be constructed. Incoming loads of overly wet material could be a source of non-hazardous liquids, but the receiving bunker would be a contained area that would prevent the leaking of liquids from the area. In addition, a spill control curb would be provided for incoming deliveries so that any incidental spills from a truck are collected.

The main process digesters and reactors would be single-walled vessels housed within the skid/trailer unit. Any spills occurring in this area would be directed through catch basins to sumps, which would then be directed to the on-site sewer system. It is not possible for excess loading of the tanks because they operate in batch mode. This material would not be hazardous, and the piping would be within the limits of the Project area. Conveyance piping would be sealed and similar to WWTP grade; therefore, it would be unlikely to result in rupture. No pumping of material through the lines would be undertaken during un-staffed hours of operation. If a conveyance pipe ruptures, there would be pressure loss in the line that would be identified through a system of pressure transmitters, and notification would be sent through the Project's supervisory control and data acquisition system. If this occurs, the flow would be terminated immediately, and processing operations would be stopped until the damaged line is repaired.

The Project has been designed to ensure that redundancy is available in critical applications. In the event of a power failure, the electrical infrastructure has been developed to allow for plug in of a portable generator, if required. In the event that critical equipment malfunctions, incoming waste feedstocks would be scaled back or terminated until the equipment is repaired or replaced. In the event of risk to the environment or public health, appropriate action plans would be available in a

contingency and emergency response plan, which would be updated following commissioning of the Project. This plan would include the following:

- List of persons responsible for the site, including contact information
- List of emergency phone numbers for applicable emergency entities
- Description of fire protection, control systems, and emergency procedures
- Description of safety devices and maintenance procedures
- Plan for training site personnel
- Site plan, including locations of emergency equipment

The contingency and emergency response plan would be kept in a central location during the Project term. Training would be provided for personnel in contingency and emergency response plan procedures. Based on the above, the impact would be less than significant.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. The Project would not emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school. Therefore, no impact would occur.

d) Would the project be located on a site that 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?

No Impact. The Project would not be located on a site included on a list of hazardous materials sites compiled pursuant to California Government Code, Section 65962.5. Therefore, no impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Less Than Significant. The Project site is adjacent to the City of Santa Barbara Municipal Airport and within the Traffic Pattern Safety Zone per the draft *Santa Barbara County Airport Land Use Compatibility Plan* (County of Santa Barbara 2012). The Project site is not located beneath the approach, departure, or sideline zones of the

airport, which are the areas of greatest hazard to people on the ground. In addition, the Project would be located at the existing WWTP site and would not require additional personnel. Therefore, the safety hazard for people working on the Project site resulting from the Project would be less than significant.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The Project is not within the vicinity of a private airstrip. Therefore, there would be no impact.

g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The Project would not impair implementation of or physically interfere with GSD's Hazardous Materials Business Plan or the Project contingency and emergency response plan. Hazardous materials management and emergency response procedures, including evacuation plans, would remain the same as is currently followed and enforced. Therefore, there would be no impact.

h) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The Project site is located at the existing WWTP site in a developed portion of the Goleta Valley. The WWTP site is surrounded on three sides by open space lands that do not contain dense areas of flammable brush, grass, or trees. The Project site is within the existing WWTP site on existing paving. In addition, the Project would comply with local fire code requirements. Therefore, the Project would not cause exposure of people or structures to significant risk of loss, injury, or death involving wildland fires, and there would be no impact.

4.9 Hydrology and Water Quality

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

a) Would the project violate any water quality standards or waste discharge requirements?

No Impact. The Project would be located on an existing asphalt surface at the WWTP site and would use the existing surface water management system. Stormwater from the WWTP site is directed off site and regulated under the Statewide Industrial Storm Water Permit (National Pollutant Discharge Elimination System [NPDES] General Permit No. CAS000001). Liquid waste from the Project would be treated by the WWTP. The WWTP discharges treated effluent to the Pacific Ocean. This discharge is subject to Waste Discharge Requirement Order No. R3-2017-0021 and NPDES Permit No. CA0048160. Activities related to the Project would comply with these permit requirements. No violations of water quality standards or waste discharge requirements would occur, and there would be no impact.

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

No Impact. The Project would be located on an existing asphalt surface and would not, therefore, increase the impervious surface area or otherwise interfere substantially with groundwater recharge. If water is required for Project operation, it would use recycled water produced by GSD and would not use groundwater supplies; therefore, the Project would not substantially deplete groundwater supplies, and there would be no impact.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

No Impact. The Project would be located on an existing asphalt surface and would not substantially alter the existing drainage pattern of the site or area. Therefore, there would be no impact.

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

No Impact. The Project would be located on an existing asphalt surface and would not substantially alter the existing drainage pattern of the site or area. Therefore, there would be no impact.

e) Would the project 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?

No Impact. The Project would be located on an existing asphalt surface and would not create or contribute any additional runoff water. All Project materials would be held in covered containers, and the Project would not provide substantial additional sources of pollution. Therefore, there would be no impact.

f) Would the project otherwise substantially degrade water quality?

No Impact. Water quality at and from the Project site is regulated by NPDES General Permit No. CAS000001 and NPDES Permit No. CA0048160. Project activities would not entail any water discharge and would not otherwise substantially degrade water quality. Therefore, there would be no impact.

g) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The Project would not include housing. Therefore, there would be no impact.

h) Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No Impact. The Project would not place structures within a 100-year flood hazard area. The Project site is close to, but outside of, the 100-year flood zone (FEMA 2012) (see Figure 6). Therefore, there would be no impact.

i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

No Impact. There are no levees or dams that protect the Project area from flooding. Flood risk at the Project site is minimized by the elevated location of the WWTP with regard to the surrounding land area. Therefore, there would be no impact.

j) Inundation by seiche, tsunami, or mudflow?

No Impact. Installation, construction, and operation of the Project would not increase the risk of inundation by seiche, tsunami, or mudflow. Therefore, there would be no impact.

4.10 Land Use and Planning

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a) Would the project physically divide an established community?

No Impact. The Project would take place entirely within the existing WWTP site and would not physically divide an established community. Therefore, there would be no impact.

b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The Project would not conflict with any applicable 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. The Project is consistent with the Public

Utility (UT) land use and Public Utility (PU) zoning designation of the property. Therefore, there would be no impact.

c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. The Project would not conflict with any applicable habitat conservation plan or community conservation plan. The GSD WWTP is a highly developed area, and no natural habitats occur on the site. Therefore, there would be no impact.

4.11 Mineral Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
MINERAL RESOURCES – Would the 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?	☐	☐	☐	☒

a) Would the project 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?

No Impact. The Project would be located on an existing asphalt surface at the existing WWTP site and would not result in the loss of availability of a known mineral resource. Therefore, there would be no impact.

b) Would the project 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?

No Impact. The Project would be located on an existing asphalt surface at the existing WWTP site and would not result in the loss of availability of a locally important mineral resource recovery site. Therefore, there would be no impact.

4.12 Noise and Vibration

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
NOISE – Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a 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?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a) Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant. Reconstruction of the biosolids pad would cause short-term generation of noise. This noise generation would conform to the County's Noise Element (County of Santa Barbara 2009); the County's *Environmental Thresholds and Guidelines Manual* (County of Santa Barbara 2008); and the standards and requirements contained in the Santa Barbara County Code, Article II, Coastal Zoning Ordinance, which is the governing zoning ordinance for the Project (County of Santa Barbara 2018). The Project would also be in compliance with *Eastern Goleta Valley Community Plan* Objective N-EGV-1, which is as follows: "Reduce and prevent noise impacts during planning, construction, and operation phases of development. Especially to sensitive receptor

populations" (County of Santa Barbara 2015a). According to the *Eastern Goleta Valley Community Plan*, the Project site is within a 60- to 64-decibel noise level area (County of Santa Barbara 2015a).

Noise-sensitive land uses, per the County's Comprehensive Plan Noise Element consist of residential, including single- and multi-family dwellings, mobile home parks, dormitories, and similar uses; transient lodging, including hotels, motels, and similar uses; hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care; and public or private educational facilities, libraries, churches, and places of public assembly (County of Santa Barbara 2009).

The closest noise-sensitive land use to the GSD site is a small number of residences in the industrial-zoned area located 500 feet east of the GSD site. In addition, the Rancho Goleta Mobile Home Park is located on the eastern side of State Route 217, with the closest residential mobile homes located approximately 1,530 feet from the eastern boundary of the GSD site.

Per the *Eastern Goleta Valley Community Plan*, "construction activities within 1,600 feet of sensitive receptors for any project that requires a Land Use Permit, Coastal Development Permit or Zoning Clearance shall be limited to the hours between 8:00 a.m. and 5:00 p.m., Monday through Friday" (County of Santa Barbara 2015a). Although the Project does not require a Land Use Permit, Coastal Development Permit, or Zoning Clearance, construction activities would follow best management practices and be limited to between 8:00 a.m. and 5:00 p.m., Monday through Friday. Project operation would generate very little noise. The primary sources of noise would be from inbound and outbound vehicle traffic, the depackaging equipment when in operation, and other processing equipment. Given the relatively small number of trucks that would be accessing the Project (four trucks per week), noise from traffic is expected to be fairly minor, especially compared to existing GSD plant operations. Noise associated with the Project would remain within levels of normal operation for the WWTP. Therefore, impacts would be less than significant.

b) Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

No Impact. The Project would not result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Repaving of the drying bed for use as a biosolids pad would require demolition and installation. Demolition of the existing drying bed would include sawcutting existing concrete and stockpiling the

material on site, removing existing safety bollards, removing existing vertical concrete walls to 1 foot below finished grade, breaking up existing pavement on the bottom of the basin, cutting and capping existing drain lines, and moving the sawcut and stockpiled concrete into the basin for use as fill. The installation phase of the new biosolids pad would include pouring concrete in place for new footings/vertical wall; importing and placing approximately 1,500 cubic yards of fill to the existing basins to subgrade; compacting the subgrade with a roller compactor; importing, placing, and compacting approximately 500 cubic yards of base; pouring in place of approximately 500 cubic yards of concrete; and installing safety bollards and a bucking wall.

These short-term activities would not result in generation of excessive groundborne vibration or noise. Therefore, there would be no impact.

c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

No Impact. Project operation, over the temporary 24-month Project operation period, is anticipated to generate very little noise. Noise levels are anticipated to remain within levels of normal operation for the WWTP. Some additional truck traffic (up to four truck trips per week) would be generated to deliver organic materials and remove waste products. However, this traffic would remain within the normal noise levels of WWTP operation. Therefore, there would be no impact.

d) Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant. Repaving of the biosolids pad would cause short-term generation of noise. Although temporary construction noise would exceed normal ambient noise at the WWTP site, the noise generation would conform to the County's Code of Ordinances and policies related to noise (County of Santa Barbara 2018). The Project is in accordance with the *Eastern Goleta Valley Community Plan* Objective N-EGV-1, quoted in Section 4.12(a). According to the *Eastern Goleta Valley Community Plan*, the Project site is within a 60- to 64-decibel noise level area (County of Santa Barbara 2015a).

Noise-sensitive land uses, according to the County's Comprehensive Plan Noise Element (County of Santa Barbara 2009), are listed in Section 4.12(a). The closest noise-sensitive land use to the GSD site is a small number of residences in the industrial-zoned area located 500 feet east of the GSD site. In addition, the Rancho Goleta Mobile Home Park is

located on the eastern side of State Route 217, with the closest residential mobile homes located approximately 1,530 feet from the eastern boundary of the GSD site.

The *Eastern Goleta Valley Community Plan* (County of Santa Barbara 2015a) noise guidance is provided in Section 4.12(a). Although the Project would not require a Land Use Permit, Coastal Development Permit, or Zoning Clearance, construction activities would follow best management practices and be limited to the hours between 8:00 a.m. and 5:00 p.m., Monday through Friday.

Project operation is anticipated to generate very little noise. Noise levels are anticipated to remain within levels of normal operation for the WWTP. Some additional truck traffic would be generated to deliver organic materials and to remove waste products. However, this traffic would not significantly increase noise levels. Therefore, impacts would be less than significant.

e) Would the project be located within an airport land use plan or, where such a 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?

No Impact. The Project site is included in the draft *Santa Barbara County Airport Land Use Compatibility Plan* within the Traffic Pattern Safety Zone (County of Santa Barbara 2012). The Project would not increase the permanent number of people working on the Project site, and there is no residential component of the Project. Therefore, the Project would not result in exposure of people residing or working in the Project area to excessive noise levels, and there would be no impact.

f) Would the project be within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The Project would not be within the vicinity of a private airstrip. Therefore, there would be no impact.

4.13 Population and Housing

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
POPULATION AND HOUSING – Would the project:				
a) Induce substantial 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 housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Would the project induce substantial 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)?

No Impact. The Project would neither change the operational capacity of the WWTP nor have any other impact that could directly or indirectly induce substantial population growth in an area. Therefore, there would be no impact.

b) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Project would be located and operated within the existing WWTP site boundaries; therefore, the Project would not displace existing housing, and there would be no impact.

c) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The Project would be located and operated within the existing WWTP site boundaries; therefore, the Project would not displace people, and there would be no impact.

4.14 Public Services

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
PUBLIC SERVICES				
a) Would the project 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 the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

a) Would the project 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 the public services.

Fire protection?

No Impact. The Project would not add, physically alter, or require additional or physically altered government facilities for fire protection. The equipment and infrastructure used would be resistant to fire. Electrical components would be installed with fire protection. In addition, the incoming materials to be processed are very high in moisture content and do not pose a fire risk. Therefore, there would be no impact.

Police protection?

No Impact. The Project would not add or physically alter or require additional or physically altered government facilities for police protection. Trained personnel would supervise activities occurring during the hours of operation of the Project demonstration period. Processing, loading, unloading, and transferring of feedstocks and final product would be supervised by trained personnel. The Project would be secured by a fence and lockable gates at the entrance to allow only authorized personnel onto the Project site.

Signage would be posted at the entrance to the Project site identifying the following:

- Facility name
- Name of the owner
- Normal hours of operation
- Project personnel telephone number where complaints may be directed
- Emergency number for contacting GSD personnel
- A warning against unauthorized access
- A warning against dumping at the Project/GSD site

Therefore, there would be no impact.

Schools?

No Impact. The Project would not add or physically alter or require additional or physically altered government facilities for schools. Therefore, there would be no impact.

Parks?

No Impact. The Project would not add or physically alter or require additional or physically altered government facilities for parks. Therefore, there would be no impact.

Other public facilities?

No Impact. The Project would not add or physically alter or require additional or physically altered government facilities for other public facilities. Therefore, there would be no impact.

4.15 Recreation

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
RECREATION				
a) Would the project 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a) Would the project 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?

No Impact. The Project would not increase the use of existing neighborhood or regional parks or other recreational facilities. Therefore, there would be no impact.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

No Impact. The Project would not include recreational facilities or require the construction or expansion of recreational facilities. Therefore, there would be no impact.

4.16 Transportation and Traffic

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
TRANSPORTATION/TRAFFIC – Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

a) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

No Impact. The Project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. Implementation of the Project would not generate significant additional traffic volumes or affect the capacity of the street system.

The primary streams of truck traffic for the Project would be for incoming organic material and outgoing loads containing final fertilizer product and waste. At design capacity, the number of total trucks transporting organic materials to and from the Project site is expected to be a maximum of approximately four trucks per week. Organic waste would be brought to the site in approximately two truck trips per week. On average, one truck leaving the Project site per week would carry final end products, and one truck per week would remove the final fertilizer product. Truck traffic entering the site would be distributed evenly over a 9-hour work day for the 5-day work week. Outgoing trucks would primarily be scheduled during the same period.

Standard garbage trucks (typically 10-wheel) that carry a roll-off waste container with covering material would be used for incoming materials with up to 10 tons per load. Other types of vehicles used by the solid waste industry could also be used.

Delivery and installation of the Project components (including the skids/trailers mounted with digester, reactor, and electrical conversion units; the skid/trailer-mounted Smicon depackaging unit; and various storage containers for residuals and un-finished and finished material) would result in approximately 10 truck trips spread over a 2-week period. Reconstruction of the biosolids pad would result in a short-term (4-week) increase in truck traffic to the Project site. Vehicles would use Moffett Place and enter the southern entrance along the western side of the GSD plant. Trucks carrying feedstock or product would pass over paved areas once they are on site. They would then proceed to the unloading areas, deposit material, and circulate back prior to exiting the GSD plant through Moffett Place. There is adequate room to queue a significant number of vehicles, and the turning radius for the largest vehicles was used to confirm accessibility to and within the Project site.

UCSB would have control over the trucking contracts that would be used for hauling incoming materials to the Project site. The trucks that would be used to haul incoming materials would be standard vehicles and enclosed waste containers or with sealed tarp systems designed to minimize odor and prevent loss/leakage of material during transportation of feedstock to the Project site.

Outgoing final fertilizer product vehicles would be sealed tankers of approximately 25 tons each. Based on the above, no impact would occur relating to conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system.

b) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

No Impact. The Project would not conflict with an applicable congestion management program. Implementation of the Project would not generate significant additional traffic volumes or affect the capacity of the street system. At design capacity, the number of total trucks transporting organic materials to and from the Project site is expected to be a maximum of approximately two trucks per day for 2 days per week during construction. Therefore, there would be no impact.

c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The Project would not result in a change in air traffic patterns. Therefore, there would be no impact.

d) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The Project would involve upgrading an existing biosolids bed and the temporary location of biosolids treatment units, and would not include dangerous features. The Project would be located within the existing WWTP site and consistent with the existing use. Therefore, there would be no impact.

e) Would the project result in inadequate emergency access?

No Impact. The Project would not result in the need for additional or altered emergency access; existing emergency access would remain adequate. Therefore, there would be no impact.

f) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. The Project would not conflict with adopted policies, plans, or programs regarding public transit or bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Therefore, there would be no impact.

4.17 Tribal Cultural Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
TRIBAL CULTURAL RESOURCES				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, 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	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☐	☐	☒

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, 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:

i) 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)?

No Impact. The WWTP facility exists on an area that has been identified as having significant archaeological resources, including those with cultural significance for Chumash Native American descendants. Archaeological investigations have been conducted for previous projects at the WWTP site (GSD 2009) and have identified the need to avoid ground disturbance. There would be very limited ground disturbance associated with the repaving of a previously constructed and disturbed drying bed. This work was conducted and approved under a previous environmental document (GSD 2009), and no excavation is proposed. Therefore, the Project would not cause any change in the significance of a tribal resource, and there would be no impact.

ii) ***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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?***

No Impact. The WWTP facility exists in an area that has been identified as having significant archaeological resources, including those with cultural significance for Chumash Native American descendants. Archaeological investigations have been conducted for previous projects at the WWTP site (GSD 2009) and have identified the need to avoid ground disturbances. The Project would be located on an existing asphalt surface. There would be very limited ground disturbance associated with repaving a previously disturbed and constructed biosolids pad, the construction of which was reviewed and approved under a previous CEQA document (GSD 2009). The Project would not cause any change in the significance of a tribal resource, and there would be no impact.

4.18 Utilities and Service Systems

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. Effluent from the anaerobic digester would be dewatered before entering the Lystek system for finishing. The liquid effluent of the dewatering process, approximately 500 gallons per week, would be treated by the GSD WWTP. The WWTP operates under NPDES Permit No. CA0048160. Treatment of the liquid effluent would not cause the WWTP to exceed wastewater treatment requirements in the NPDES permit. Therefore, there would be no impact.

b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The Project would use the existing GSD on-site sanitary system. No additional sanitary services would be required as a result of the Project. Effluent from the anaerobic digester would be dewatered before entering the Lystek system for finishing. The liquid effluent of the dewatering process (centrate) would be treated by the GSD WWTP. Any water required as part of the Project would be supplied by the GSD recycled water system or potentially from the centrate. Both the WWTP and the recycled water system have sufficient capacity to provide for the Project. Neither the treatment of liquid waste from the Project nor the use of recycled water by the Project would require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities. It is expected that one full-time and one part-time staff would be required to service the Project. This is well within the operating capacity of the existing facility. During the Project period, some additional personnel would visit the site for testing and monitoring. These personnel are expected to be on the Project site for a short duration. Therefore, there would be no impact.

c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The Project would be located on an existing asphalt surface and would use the existing stormwater drainage facility. The Project would not require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities. Therefore, there would be no impact.

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

No Impact. The Project would have access to potable water service, provided by GSD. It is expected that the majority of processing water requirements for the Project would be satisfied by the incoming feedstocks and WWTP recycled water. If the processed organic material feedstock to the anaerobic digesters would become too thick for normal operations, liquid dilution would be achieved through the use of recycled water from GSD or potentially from centrate from the dewatering process. GSD produces sufficient recycled water supplies to serve the Project from existing resources, and no new or expanded entitlements would be required. Therefore, there would be no impact.

e) Would the project 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?

No Impact. Effluent from the anaerobic digester would be dewatered before entering the Lystek system for finishing. The centrate from the dewatering process, approximately 500 gallons per week, would be treated by the GSD WWTP. The WWTP has adequate capacity to serve the Project's projected demand, in addition to the provider's existing commitments. Therefore, there would be no impact.

f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

No Impact. The Project would be served by the Tajiguas Landfill for waste materials and by-products. The Project would accept food waste as an input and would generate electricity and a high-quality compost material suitable for land application as an output. Waste from the Project would be equal to approximately 50% of the incoming volume of food waste. Of that, approximately 75% would be landfilled. The waste from the Project, including packaging material and contaminated organic material, would be significantly less than the volume that

would be diverted by the Project. Therefore, the Project would result in a net reduction in the volume of waste that is landfilled, and there would be no impact.

g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. During construction and operation of the Project, GSD must comply with city, county, and state solid waste diversion, reduction, and recycling mandates, including compliance with the County's Integrated Waste Management Plan. Therefore, there would be no impact.

4.19 Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to 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, 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 cumulatively considerable? ("Cumulatively 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?	☐	☐	☐	☒

a) Does the project have the potential to 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, 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?

No Impact. The Project would be located at the existing WWTP site between existing buildings and on an existing asphalt surface. The Project site does not contain any natural habitat or other biological resources. In addition, the Project would not cause ground disturbance or significant changes to the physical environment. The Project does not have the potential to 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, 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. Therefore, there would be no impact.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively 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)?

No Impact. The Project would not have impacts that would be cumulatively considerable when viewed in connection with past projects, other current projects, or probable future projects. Therefore, there would be no impact.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

No Impact. The Project would be located at the existing WWTP site between existing buildings and on an existing asphalt surface. The Project site does not contain any natural habitat or other biological resources. In addition, the Project would not cause ground disturbance or significant changes to the physical environment. Therefore, there would be no impact.

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5.2 List of Preparers

Jane Gray, Dudek
Lila Spring, Dudek
Adam Poll, Dudek

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APPENDIX A

Air Quality and Greenhouse Gas Emissions Assessment Memorandum

DUDEK

621 CHAPALA STREET
SANTA BARBARA, CALIFORNIA 93101
T 805.963.0651 F 805.963.2074

MEMORANDUM

To:	Steve Wagner, Goleta Sanitary District
From:	Adam Poll, Dudek
Subject:	Organic Materials to Energy Demonstration Project Air Quality and Greenhouse Gas Emissions Assessment
Date:	April 4, 2018
cc:	Jim Dunbar, Lystek
	Jane Gray, Dudek
Attachment A:	Emission Calculations
Attachment B:	Operational Health Risk Assessment

Dudek is pleased to submit this air quality and greenhouse gas (GHG) emissions assessment to assist Goleta Sanitary District (District) with environmental planning requirements for the proposed Organic Materials to Energy Demonstration Project (proposed project) located in Santa Barbara County (County), California.

This memorandum estimates criteria air pollutant and GHG emissions from construction and operation of the proposed project and evaluates potential air quality and GHG emissions impacts resulting from project implementation.

The contents and organization of this memorandum are as follows: project description, general analysis and methodology, thresholds of significance and impact analyses for the air quality and GHG emissions assessment, conclusions, and references cited.

1 PROJECT DESCRIPTION

The District's proposed project would be located in the City of Goleta, Santa Barbara County. The proposed project would be designed, constructed, and operated by Lystek International Limited (Lystek) using proprietary organics processing technology (including depackaging, digestion, dewatering, hydrolysis, and energy conversion). The proposed project would process a variety of organic waste materials (i.e., source-separated organics/food waste; pre-consumer organic/food waste; dewatered biosolids, liquid organic materials, and other similar organic materials from the agricultural, waste and food processing sectors. The end product of the

process will include a pathogen-free, nutrient-rich fertilizer product that is appropriate for land application or enhanced anaerobic digester efficiency. The Lystek process has been developed to produce various end-use products (biofertilizer for land application; anaerobic digestion enhancement; biological nutrient removal improvement; energy generation increase).

The proposed project is intended to receive and process materials, manage the resulting end-product(s), and generate electricity on a small scale. The proposed project will involve the District as the host project location, Lystek as the equipment supplier and operator, and the University of California–Santa Barbara as the initial/primary source of organics. Project details are provided in Attachments A and B.

2 GENERAL ANALYSIS AND METHODOLOGY

The proposed project location is in the South Central Coast Air Basin and is within the jurisdictional boundaries of the Santa Barbara County Air Pollution Control District (SBCAPCD). Emission calculations for construction were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 (CAPCOA 2017). A spreadsheet-based model and emissions factors from the California Air Resources Board (CARB) mobile-source emissions inventory model, EMFAC2017 (CARB 2018); the CARB off-road emissions inventory model, OFFROAD2007 (CARB 2011); and the U.S. Environmental Protection Agency (EPA) method of compilation of air emissions factors, AP-42 (EPA 2018) were used for operational emissions.

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Criteria air pollutants that are evaluated include volatile organic compounds (VOCs; also referred to as reactive organic gases (ROGs)), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$). VOCs and NO_x are important because they are precursors to ozone (O_3). Criteria air pollutant emissions associated with construction of the proposed project were estimated for the following emission sources: operation of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. Project operational emission sources evaluated include mobile (vehicle) sources, stationary sources (emergency generator, biogas combustion, boiler use), and energy use.

GHGs are gases that absorb infrared radiation in the atmosphere. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature. Global climate change concerns are

focused on whether human activities are leading to an enhancement of the greenhouse effect. Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and water vapor. If the atmospheric concentrations of GHGs rise, the average temperature of the lower atmosphere will gradually increase. Globally, climate change has the potential to impact numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. Climate change is already affecting California: average temperatures have increased, leading to more extreme hot days and fewer cold nights; shifts in the water cycle have been observed, with less winter precipitation falling as snow, and both snowmelt and rainwater running off earlier in the year; sea levels have risen; and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010).

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP), which varies among GHGs. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of CO_2 equivalent (CO_2e).[1]

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs (CAT 2010). This approach is consistent with the Final Statement of Reasons for Regulatory Action for amendments to the California Environmental Quality Act (CEQA) Guidelines, which confirms that an environmental impact report (EIR) or other environmental document must analyze the incremental contribution of a project to GHG levels and determine whether those emissions are cumulatively considerable (CNRA 2009).

GHG emissions associated with construction of the proposed project were estimated for the following emission sources: operation of off-road construction equipment, on-road hauling and vendor trucks, and worker vehicles. GHG emission sources associated with operation of the proposed project were evaluated for energy use (generation of electricity consumed by the project), water supply, stationary sources (emergency generator, biogas combustion, boiler use), and project-generated vehicular traffic. The detailed project construction and operational assumptions are included in Attachment A.

[1] The CO_2e for a gas is derived by multiplying the mass of the gas by the associated GWP, such that metric tons (MT) of CO_2e = (metric tons of a GHG) × (GWP of the GHG). CalEEMod assumes that the GWP for CH_4 is 25, which means that emissions of 1 MT CH_4 are equivalent to emissions of 25 MT CO_2, and the GWP for N_2O is 298, based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007).

2.1 Construction

This section presents a summary of the calculation methodology for the proposed project. Detailed emissions calculations are provided in Attachment A.

Construction of the proposed project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Emissions from the construction phase of the project were estimated using CalEEMod Version 2016.3.2.

Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided by the project applicant (the District). For purposes of estimating project emissions, and based on information provided by the project applicant, it is assumed that construction of the proposed project would commence in August 2018 and would last 2 weeks. Construction of the project would consist of up to four heavy-duty tractor-trailer trucks delivering four roll-off containers that contain the various pieces of equipment. A crane would be used on site during the day of delivery to remove the containers from the trucks and place them on site, which is anticipated to take 1 day. It is estimated that up to two workers would be on site during equipment placement in addition to the four heavy-duty trucks.

The project would also include construction of a concrete pad for the equipment to be placed on. Demolition of existing concrete and vertical walls would take place first, followed by installation of the new pad. Demolition is expected to include a backhoe, front-end loader, and jackhammer. The construction of the pad would require a backhoe, front-end loader, rolling and pneumatic compactor, concrete delivery trucks, and concrete trailer pump. This phase would take up to 1 week. It is estimated that eight workers would be on site during construction of the pad.

2.2 Operation

Emissions from the operational phase of the proposed project were estimated using a spreadsheet-based model and emissions factors from EMFAC2017, OFFROAD2007, and EPA AP-42. Emission calculations were based on assumptions derived from CalEEMod. Operational emissions include stationary and mobile source emissions. Detailed emission calculations are provided in Attachment A. Two emission scenarios were evaluated: one scenario where the combined heat and power generator (CHP) would operate normally 24 hours per day and the flare would operate for 1 hour per day and another scenario where the CHP would not be operating and the flare would operate 24 hours per day.

2.2.1 Stationary Sources

The proposed project includes several stationary sources located on site that would emit criteria air pollutants during operation. As part of the food waste conversion process biogas would be generated, which would be approximately 60% methane. The biogas would be combusted using a small-capacity electrical conversion unit (either a fuel-cell, micro-turbine, or similar type equipment) to generate electricity on site. As a worst-case scenario, a CHP unit was assumed. The electricity generated would be stored in batteries and then used to charge electric golf carts used at the District. The CHP is rated at 49 horsepower and emissions were calculated based on assumptions derived within the Tajiguas Landfill Resource Recovery Project EIR (AECOM 2014). It was assumed that the unit would combust up to 80.29 cubic feet per hour of biogas (Design 2 Operate 2017).

There are three scenarios in which the CHP would not be used to combust the biogas: when the biogas flow rate is insufficient for the CHP, when the biogas flowrate exceeds the needs of the CHP, and when the CHP is inoperable. In any of these cases the biogas will be sent to a portable flare, Solar Spark Passive Vent Flare Model CF-5. As discussed above, two scenarios were modeled to show the worst-case daily emissions.

Once the food waste has been processed via anaerobic digestion, any solids are processed using the Lystek technology. Part of the Lystek process requires heating of the material. A 0.612-million-British-thermal-unit-per-hour (MMBtu/hr) boiler would be used to provide steam to heat the material during the Lystek process. The boiler would operate on commercial-grade propane. The Cleaver-Brooks Model CFH-700-15-15ST boiler is a South Coast Air Quality Management District Rule 1146.2 certified boiler. The boiler was assumed to operate 24 hours per day and 180 days per year.

The proposed project would also include an emergency generator in case power is not available from the grid. It was assumed that the generator would power just one component at a time, not the entire project. The generator would be a Tier 4 Final diesel engine (Caterpillar XQ35) rated at 49 horsepower.

2.2.2 Mobile Sources

Mobile sources for the proposed project would primarily be motor vehicles (automobiles, light-duty trucks, and refuse trucks) traveling to and from the project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Based on conservative estimates for vehicular movement, the proposed project is anticipated to have up to 8 one-way trips per day from heavy-

duty trucks and up to 10 one-way trips per day from worker vehicles. Emission factors representing the vehicle mix and emissions for Year 2018 from CARB's EMFAC2017 model were used to estimate emissions associated with full buildout of the proposed project. It was assumed that the heavy-duty refuse trucks would be powered by natural gas, which is consistent with what MarBorg (the County's solid waste contractor) uses (MarBorg 2018).

2.2.3 Off-Road Equipment

The proposed project would involve the use of a skidsteer loader as part of the operation for loading food waste into the components. The size of the loader was based on the weighted average horsepower (by equipment population) and load factors for the mode of engine groupings in CARB's OFFROAD2007 model (CARB 2011). It was assumed that the loader would operate up to 5 hours per day and 3 days per week.

2.2.4 Health Risk Assessment

In an abundance of caution, this assessment includes a health risk assessment (HRA) associated with operational emissions and followed the methodologies prescribed in the Office of Environmental Health Hazard Assessment (OEHHA) Guidance Manual for Preparation of Health Risk Assessments (OEHHA Guidelines; OEHHA 2015). To implement the OEHHA Guidelines based on information for the proposed project, SBCAPCD has developed a three-tiered approach where each successive tier is progressively more refined, with fewer conservative assumptions. The SBCAPCD Modeling Guidelines for Health Risk Assessment, Form 15i, provides guidance with which to perform HRAs within the County (SBCAPCD 2017a).

Health effects from carcinogenic (cancer-causing) air toxics are usually described in terms of cancer risk. The SBCAPCD recommends a carcinogenic risk threshold of 10 in one million. Additionally, some toxic air contaminants (TACs) increase non-cancer health risk due to long-term (chronic) exposures. The chronic hazard index is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. The SBCAPCD recommends a chronic hazard index significance threshold of 1.0 (project increment). The exhaust from diesel engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. Diesel particulate matter (DPM) has established cancer risk factors and relative exposure values for chronic health hazard impacts. No short-term (acute) relative exposure level has been established for DPM; therefore, acute impacts of DPM are not addressed in this assessment. Additional TAC emissions from the combustion of biogas were modeled in the HRA. SBCAPCD recommends evaluating the impact to sensitive receptors within 2 kilometers of the proposed project site.

The dispersion modeling of TAC emissions was performed using the American Meteorological Society/EPA Regulatory Model (AERMOD), which is the model SBCAPCD requires for atmospheric dispersion of emissions. AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of surface and elevated sources, building downwash, and simple and complex terrain (EPA 2015). For the proposed project, AERMOD was run with all sources emitting unit emissions (1 gram per second) to obtain the X/Q values. "X/Q" is a dispersion factor that is the average effluent concentration normalized by source strength, and is used as a way to simplify the representation of emissions from many sources. The X/Q values of ground-level concentrations were determined for construction emissions using AERMOD and the maximum concentrations determined for the 1-hour and Period averaging periods. The principal parameters of this modeling are presented in Table 1.

Table 1
AERMOD Principal Parameters

Parameter	Details
Meteorological data	The latest 5-year meteorological data (2012–2016) for the Santa Barbara Airport station (Station ID 23190) from SBCAPCD were downloaded and then input into AERMOD. For cancer or chronic non-cancer risk assessments, the average cancer risk of all years modeled was used.
Urban versus rural option	Urban areas typically have more surface roughness as well as structures and low-albedo surfaces that absorb more sunlight – and thus more heat – relative to rural areas. Based on the SBCAPCD guidelines, the rural dispersion option was selected due to the vegetation coverage near the proposed project.
Terrain characteristics	The terrain in the vicinity of the modeled industrial site is generally flat. The elevation of the modeled site is about 13 feet above sea level. DEM files were imported into AERMOD so that complex terrain features were evaluated as appropriate.
Elevation data	Digital elevation data were imported into AERMOD and elevations were assigned to the emission sources and receptors. Digital elevation data were obtained through AERMOD View in the U.S. Geological Survey's DEM format with a 7.5-minute format.
Emission sources and release parameters	Air dispersion modeling of operational activities was conducted using emissions generated using a spreadsheet-based model, conservatively assuming work days of 24 hours and 180 days per year. The project included four point sources (CHP, flare, emergency generator, and boiler) and two raised area sources (skidsteer loader and heavy-duty trucks).
Source release characterizations	For modeling operational emissions dispersion using AERMOD, it was assumed that the total site area would operate over a 2-year period.
Modeling grid	A Cartesian grid at a 2-kilometer (1.2-mile) distance from the facility with 20-meter (66-foot) resolution was evaluated to capture maximum TAC impacts.
Discrete receptors	Discrete receptors were placed at residences to the east of the site, at UCSB, and workers located at Santa Barbara Airport and Goleta Beach.

Source: Attachment B.
Notes: SBCAPCD = Santa Barbara County Air Pollution Control District; DEM = digital elevation model; CHP = combined heat and power generator; TAC = toxic air contaminant; UCSB = University of California–Santa Barbara.

Dispersion model plotfiles from AERMOD were then imported into CARB's Hotspots Analysis and Reporting Program Version 2 (HARP 2) to determine health risk, which requires peak 1-hour emission rates and annual-averaged emission rates for all pollutants for each modeling source. For the residential health risk, the HRA assumes that exposure would start in the third trimester of pregnancy. The results of the HRA are provided in Section 3.3.4 and detailed results are provided in Attachment B.

2.2.5 GHG-Only Sources

Energy Sources

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage (non-hearth). Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for GHGs in CalEEMod, because criteria pollutant emissions occur at the site of the power plant, which is typically off site.

The estimation of operational energy emissions was based on data provided by the applicant. The project was estimated to use up to 593,568 kilowatt-hours per year based on applicant-provided data. The proposed project's boiler would use propane, as discussed previously.

Solid Waste

The project would generate solid waste, therefore resulting in GHG emissions associated with landfill off-gassing. Solid waste generation was estimated based on applicant-provided data. Emission estimates associated with solid waste were estimated using CalEEMod.

Biogas Venting

The two digesters are equipped with pressure release valves that are meant to release pressure from the vessels if it reaches a set pressure point. These valves are intended to avoid an overpressure situation that may cause damage to the digesters. When the system is up and running normally the pressure release valves are not used. For the purposes of modeling a worst-case scenario, it was assumed that once a week, a pressure event would occur that would evacuate one-third of the volume of the digesters, which represents the headspace. As previously mentioned, the biogas is estimated to contain up to 60% methane.

3 AIR QUALITY ASSESSMENT

3.1 Ambient Air Quality

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the National Ambient Air Quality Standards (NAAQS) to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 2.

Table 2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as primary standard[f]
	8 hours	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)[f]	
NO_2[g]	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as primary standard
	Annual arithmetic mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[h]	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 μg/m³	150 μg/m³	Same as primary standard
	Annual arithmetic mean	20 μg/m³	—	

Table 2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary[c,d]*	*Secondary[c,e]*
$PM_{2.5}$[j]	24 hours	—	35 μg/m³	Same as primary standard
	Annual arithmetic mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[j,k]	30-day average	1.5 μg/m³	—	—
	Calendar quarter	—	1.5 μg/m³ (for certain areas)[k]	Same as primary standard
	Rolling 3-month average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 μg/m³)	—	—
Sulfates	24- hours	25 μg/m³	—	—
Visibility-reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016a.

Notes: O_3 = ozone; ppm = parts per million by volume; μg/m³ = micrograms per cubic meter; NO_2 = nitrogen dioxide; CO = carbon monoxide; mg/m³= milligrams per cubic meter; SO_2 = sulfur dioxide; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns.

a California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

d National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

f On October 1, 2015, the EPA Administrator signed the notice for the final rule to revise the primary and secondary NAAQS for O_3. The EPA is revising the levels of both standards from 0.075 ppm to 0.070 ppm and retaining their indicators (O_3), forms (fourth-highest daily maximum, averaged across 3 consecutive years) and averaging times (8 hours). The EPA is in the process of submitting the rule for publication in the Federal Register. The final rule will be effective 60 days after the date of publication in the Federal Register. The lowered national 8-hour standards are reflected in the table.

g To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of

ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

h On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

i On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

j CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

k The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Under authority and oversight from the EPA pursuant to Title 40 of the Code of Federal Regulations, Part 58, SBCAPCD and CARB maintain ambient air quality monitoring stations throughout the South Central Coast Air Basin, and SBCAPCD currently operates 13 monitoring sites.[2] In addition, SBCAPCD gathers air quality data from a variety of monitoring sites from other contracted agencies (e.g., the U.S. Marine Corps). Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Not all air pollutants are monitored at each station; thus, data from the closest representative station that monitors a specific pollutant are summarized.

The closest ambient air quality monitoring station to the project site that monitors O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ is the Goleta monitoring station, located at 380 North Fairview Avenue, Goleta, California 93117, approximately 1.6 miles to the north of the proposed project site. The data collected at this station are considered representative of the air quality experienced in the project vicinity. The most recent background ambient air quality data from 2014 to 2016 and the number of days exceeding the ambient air quality standards are presented in Table 3. The Isla Vista station, located at University of California–Santa Barbara West Campus, Isla Vista, California 93117, located approximately 2.9 miles to the west of the project site, is the nearest air quality monitoring station that monitors SO_2.

2 Santa Maria, Lompoc HSandP, Lompoc S H St, Vandenberg AFB, Gaviota, Santa Ynez Airport, Las Flores Canyon No. 1, El Capitan Beach, Paradise Road, Isla Vista, Goleta, Santa Barbara, and Carpinteria.

Table 3
Local Ambient Air Quality Data

Concentration or Exceedances	Ambient Air Quality Standard	2014	2015	2016
Ozone (O_3) – Goleta Monitoring Station				
Maximum 1-hour concentration (ppm)	0.09 (state)	0.096	0.075	0.079
Number of days exceeding state standard (days)		1	0	0
Maximum 8-hour concentration (ppm)	0.070 (state)	0.081	0.063	0.072
	0.070 (federal)	0.080	0.062	0.071
Number of days exceeding state standard (days)		*3*	*0*	*1*
Number of days exceeding federal standard (days)		*2*	*0*	*1*
Nitrogen Dioxide (NO_2) – Goleta Monitoring Station				
Maximum 1-hour concentration (ppm)	0.18 (state)	0.038	0.034	0.030
	0.100 (federal)	0.038	0.034	0.030
Number of days exceeding state standard (days)		*0*	*0*	*0*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Annual concentration (ppm)	0.030 (state)	0.005	0.004	0.002
	0.053 (federal)	0.005	0.004	0.002
Carbon Monoxide (CO) – Goleta Monitoring Station				
Maximum 1-hour concentration (ppm)	20 (state)	0.9	0.9	1.7
	35 (federal)	0.9	0.9	1.7
Number of days exceeding state standard (days)		*0*	*0*	*0*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Maximum 8-hour concentration (ppm)	9.0 (state)	0.5	0.5	0.8
	9 (federal)	0.5	0.5	0.8
Number of days exceeding state standard (days)		*0*	*0*	*0*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Sulfur Dioxide (SO_2) – Isla Vista Monitoring Station				
Maximum 1-hour concentration (ppm)	0.075 (federal)	0.004	0.002	0.002
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Maximum 24-hour concentration (ppm)	0.14 (federal)	0.03	0.01	0.01
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Annual concentration (ppm)	0.030 (federal)	0.000	0.006	0.006
Coarse Particulate Matter (PM_{10}) – Goleta Monitoring Station				
Maximum 24-hour concentration ($\mu g/m^3$)	50 (state)	45.3	41.2	68.8
	150 (federal)	44.7	40.0	67.9
Number of days exceeding state standard (days)[b]		*0*	*0*	*3*
Number of days exceeding federal standard (days)[b]		*0*	*0*	*0*

Table 3
Local Ambient Air Quality Data

Concentration or Exceedances	Ambient Air Quality Standard	2014	2015	2016
Annual concentration (state method) ($\mu g/m^3$)	20 (state)	17.8	16.9	16.2
Fine Particulate Matter ($PM_{2.5}$) – Goleta Monitoring Station				
Maximum 24-hour concentration ($\mu g/m^3$)	35 (federal)	24.3	23.2	26.0
Number of days exceeding federal standard (days)[b]		*0*	*0*	*0*
Annual concentration ($\mu g/m^3$)	12 (state)	7.8	8.2	—
	12.0 (federal)	7.8	8.2	—

Sources: CARB 2016b; EPA 2016.
Notes: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; — = not available.
Data taken from CARB iADAM (2016b) and EPA AirData (2016) represent the highest concentrations experienced over a given year.
Exceedances of federal and state standards are only shown for O_3, particulate matter, and CO. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour O_3, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
[a] Mean does not satisfy minimum data completeness criteria.
[b] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

3.2 Thresholds of Significance

The State of California has developed guidelines to address the significance of air quality impacts based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), which provides guidance that a project would have a significant environmental impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- 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).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

The County's Environmental Thresholds and Guidelines Manual (County of Santa Barbara 2008, p. 18) states that a significant adverse air quality impact may occur when a project, individually or cumulatively, triggers one of the following:

- Interferes with progress toward the attainment of the ozone standard by releasing emissions which equal or exceed the established long-term quantitative thresholds for NO_x and ROC [reactive organic compound];
- Equals or exceeds the state or federal ambient air quality standards for any criteria pollutant (as determined by modeling).

The County's guidance also indicates that cumulative air quality impacts and consistency with the policies and measures in the Air Quality Supplement of the Comprehensive Plan, other general plans, and the Air Quality Attainment Plan should be determined for all projects (i.e., whether the project exceeds the Air Quality Attainment Plan emission projections or growth assumptions). Pursuant to the County's Environmental Thresholds and Guidelines Manual (County of Santa Barbara 2008, p. 19), the following issues should also be discussed, but only if they are applicable to the project:

- Emissions which may affect sensitive receptors (e.g., children, elderly, or acutely ill);
- Toxic or hazardous air pollutants in amounts which may increase cancer risk for the affected population; or
- Odor or another air quality nuisance problem impacting a considerable number of people.

Chapter 5 of the County Environmental Thresholds and Guidelines Manual addresses the subject of air quality. The Long-Term/Operational Emission Thresholds (County of Santa Barbara 2008, p. 20) provide that a proposed project will not have a significant impact on air quality if operation of the project will:

- Emit (from all project sources, mobile and stationary), less than the daily trigger for offsets set in the [SB]APCD New Source Review Rule, for any pollutant [currently 55 pounds per day for NO_x and ROC, and 80 pounds for PM_{10}]; and
- Emit less than 25 pounds per day of oxides of nitrogen (NO_x) or reactive organic compounds (ROC) from motor vehicle trips only; and
- Not cause or contribute to a violation of California or National Ambient Air Quality Standard (except ozone); and

- Not exceed the APCD health risk public notification thresholds adopted by the APCD Board; and
- Be consistent with the adopted federal and state Air Quality Plans.

As stated in SBCAPCD's Scope and Content of Air Quality Sections in Environmental Documents (SBCAPCD 2017b), no quantitative thresholds have been established for short-term impacts associated with construction activities. However, SBCAPCD uses 25 tons per year for ROCs (referred to in this report as VOCs) or NO_x as a guideline for determining the significance of construction impacts. Additionally, the County's grading ordinance requires standard dust control conditions for all projects involving grading activities. The long-term/operational emission thresholds listed above have been established to address mobile emissions (i.e., motor vehicle emissions) and stationary-source emissions (i.e., station boilers, engines, paints, solvents, and chemical or industrial processing operations that release pollutants) (SBCAPCD 2017b).

The County's Environmental Thresholds and Guidelines Manual states that a project will have a significant air quality impact if it causes, by adding to the existing background CO levels, a CO "hot spot" where the California 1-hour standard of 20 parts per million CO is exceeded, which typically occurs at severely congested intersections. The County's project screening thresholds for CO impacts (County of Santa Barbara 2008, p. 21) are as follows:

1. If a project contributes less than 800 peak hour trips, then CO modeling is **not required**.
2. Projects contributing more than 800 peak hour trips to an existing congested intersection at level of service (LOS) D or below, or will cause an intersection to reach LOS D or below, may be required to model for CO impacts. However, projects that will incorporate intersection modifications to ease traffic congestion, are not required to perform modeling to determine potential CO impacts.

3.3 Air Quality Impact Analysis

3.3.1 Would the Project Conflict With or Obstruct Implementation of the Applicable Air Quality Plan?

SBCAPCD and the Santa Barbara County Association of Governments (SBCAG) are responsible for developing and implementing the Clean Air Plan (SBCAPCD and SBCAG 2015) for attainment and maintenance of the ambient air quality standards in the basin. SBCAPCD further describes consistency with the Clean Air Plan for projects subject to these guidelines, which means that direct and indirect emissions associated with the project are accounted for

in the Clean Air Plan's emissions growth assumptions, and the project is consistent with policies adopted in the Clean Air Plan. The 2016 Ozone Plan was adopted by the District Board on October 20, 2016, and is the most recent applicable air quality plan. The 2016 Ozone Plan is the 3-year update required by the state to show how SBCAPCD plans to meet the state 8-hour O_3 standard (SBCAPCD 2016).

The 2016 Ozone Plan relies primarily on the land use and population projections provided by SBCAG and CARB on-road emissions forecasts as a basis for vehicle emissions for all County incorporated and unincorporated areas.

If a project proposes development that is greater than that anticipated in the local plan and SBCAG's growth projections, the project might be in conflict with the 2016 Ozone Plan and may contribute to a potentially significant cumulative impact on air quality. The project site is within the Public Utility (PU) zone of the County. The PU zone is applied to areas that are appropriate for the siting of large-scale public works, utilities, and private service facilities. The intent is to provide adequate design requirements to ensure that these facilities are compatible with surrounding land uses. Because the proposed project is consistent with the zoning for the project site, it would not conflict with the growth projections of the County.

Based on the nature of the proposed project, implementation of the project would not result in development in excess of that anticipated in local plans or increases in population/housing growth beyond those contemplated by SBCAG. As such, the proposed project would not conflict with or obstruct implementation of a local air quality plan; therefore, impacts associated with consistency with local plans would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant; therefore, no mitigation is required.

3.3.2 Would the Project Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation?

Construction Emissions

Construction of the proposed project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Construction

emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions. Therefore, such emission levels can only be estimated, with a corresponding uncertainty in precise ambient air quality impacts. Table 4 presents the estimated annual construction emissions generated during construction of the project. Details of the emission calculations are provided in Attachment A.

Table 4
Estimated Annual Construction Criteria Air Pollutant Emissions

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons per Year					
2018	0.02	0.24	0.13	0.00	0.01	0.01
SBCAPCD threshold	*25*	*25*	*25*	*25*	*25*	*25*
Threshold exceeded?	No	No	No	No	No	No

Source: Attachment A.
Notes: VOC = volatile organic compound; CO = carbon monoxide; NO_x = oxides of nitrogen; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
The values shown are the combined maximum annual emissions results from CalEEMod.
See Attachment A for complete results.

As shown in Table 4, annual construction emissions would not exceed the SBCAPCD significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ emissions during construction. Therefore, construction of the proposed project would result in a less than significant impact.

Operational Emissions

The proposed project involves development of an organic materials conversion facility. Operation of the project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips from worker vehicles and haul trucks and stationary sources. As discussed in Section 2, General Analysis and Methodology, pollutant emissions associated with long-term operations were quantified using a spreadsheet model. Project-generated mobile source emissions were estimated based on project-specific trip rates.

Table 5 presents the maximum daily emissions associated with operation (Year 2018) of the proposed project. Details of the emission calculations are provided in Attachment A. Table 5 presents the emissions from the scenario when the CHP is operating normally and the flare is operating 1 hour per day.

Table 5
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions – CHP Operating with Flare Backup

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
CHP	0.34	0.36	1.07	0.01	0.31	0.31
Flare	0.01	0.00	0.01	0.01	0.00	0.00
Emergency generator	0.05	0.96	1.19	0.00	0.01	0.01
Boiler	0.08	0.53	4.36	0.25	0.11	0.11
Off-road equipment	0.06	0.76	0.87	0.00	0.04	0.03
Mobile	0.02	0.13	1.82	0.00	0.02	0.01
Total	0.56	2.74	9.32	0.27	0.48	0.47
Vehicle source emission threshold	*25*	*25*	—	—	—	—
Vehicle source emissions threshold exceeded?	No	No	—	—	—	—
Area + vehicle source emissions threshold	*55*	*55*	—	—	*80*	—
Area + vehicle source emissions threshold exceeded?	No	No	—	—	No	—

Source: Attachment A.
Notes: CHP = combined heat and power generator; VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
See Attachment A for complete results.

As shown in Table 5, the combined daily emissions would not exceed the SBCAPCD operational thresholds for VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$. The emissions from the scenario where the CHP would not be operable and the flare would operate 24 hours per day are provided in Table 6.

Table 6
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions – Flare Operating, No CHP

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
CHP	0.00	0.00	0.00	0.00	0.00	0.00
Flare	0.23	0.08	0.35	0.24	0.02	0.02
Emergency generator	0.05	0.96	1.19	0.00	0.01	0.01
Boiler	0.08	0.53	4.36	0.25	0.11	0.11
Off-road equipment	0.06	0.76	0.87	0.00	0.04	0.03

Table 6
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions – Flare Operating, No CHP

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile	0.02	0.13	1.82	0.00	0.02	0.01
Total	0.43	2.45	8.58	0.50	0.20	0.18
Vehicle source emission threshold	*25*	*25*	—	—	—	—
Vehicle source emissions threshold exceeded?	No	No	—	—	—	—
Area + vehicle source emissions threshold	*55*	*55*	—	—	*80*	—
Area + vehicle source emissions threshold exceeded?	No	No	—	—	No	—

Source: Attachment A.
Notes: CHP = combined heat and power generator; VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
See Attachment A for complete results.

As shown in Table 6, the combined daily emissions would not exceed the SBCAPCD operational thresholds for VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$. The emissions from the flare operating 24 hours per day are less than the scenario in Table 5 for all pollutants except SO_x. Impacts associated with project-generated operational criteria air pollutant emissions would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant; therefore, no mitigation is required.

3.3.3 Would the Project 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)?

Cumulative air quality impacts are the effect of long-term emissions of the proposed project plus any existing emissions at the same location, as well as the effect of long-term emissions of reasonably foreseeable similar projects, on the projected regional air quality or localized air

pollution in the County. As discussed in SBCAPCD's Scope and Content of Air Quality Sections in Environmental Documents (SBCAPCD 2017b), the cumulative contribution of project emissions to regional levels should be compared with existing programs and plans, including the most recent Clean Air Plan.

Due to the County's nonattainment status for the 8-hour O_3 standard and its regional nature, if a project's emissions from traffic sources of either of the O_3 precursors VOC or NO_x exceed the long-term emission thresholds, then the project's cumulative impacts will be considered significant. For projects that do not have significant O_3 precursor emissions or localized pollutant impacts, if emissions have been taken into account in the most recent Clean Air Plan growth projections, regional cumulative impacts may be considered less than significant. When a project's emissions exceed the thresholds and are clearly not accounted for in the most recent Clean Air Plan growth projections, then the project is considered to have significant cumulative impacts that must be mitigated to a less than significant level.

In analyzing cumulative impacts from the proposed project, the assessment must specifically evaluate the project's contribution to the cumulative increase in pollutants for which the County is designated as nonattainment for the NAAQS or CAAQS. The County is currently in attainment of NAAQS and is in attainment for all CAAQS with the exception of the state 8-hour O_3 standard and the state standards for PM_{10}. Construction and operation of the proposed project would generate emissions of VOCs and NO_x (O_3 precursors) and PM_{10}; however, the proposed project would not exceed SBCAPCD guidance for annual construction emissions or SBCAPCD thresholds for daily operational emissions. Because implementation of the proposed project would result in less than significant impacts associated with operation of the project, the project's contribution to the County's nonattainment status for the state 8-hour O_3 and PM_{10} standards would be less than cumulatively considerable. Because the proposed project would not result in significant O_3 precursor emissions or PM_{10} emissions, and project-generated emissions have been taken into account in SBCAPCD's 2016 Ozone Plan growth projections, cumulative impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant; therefore, no mitigation is required.

3.3.4 Would the Project Expose Sensitive Receptors to Substantial Pollutant Concentrations?

"Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period would contract cancer based on the use of standard OEHHA risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. TACs that would potentially be emitted during construction activities would be DPM, which is emitted by heavy-duty construction equipment and heavy-duty trucks. Heavy-duty construction equipment and diesel trucks are subject to CARB Airborne Toxic Control Measures to reduce DPM emissions. According to the OEHHA, HRAs, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2015). Thus, the duration of the proposed project (2 years) would only constitute a small percentage of the total long-term exposure period and would not result in exposure of proximate sensitive receptors to substantial TACs.

In an abundance of caution based on the long-term operation of the project, a voluntary HRA was performed in accordance with OEHHA and SBCAPCD guidance. The HRA methodology is described in detail in Attachment B. The results of the HRA for proposed project operations are summarized in Table 7.

Table 7
Operational Activity Health Risk Assessment Results

Impact Parameter	Units	Proposed Project Impact	CEQA Threshold	Level of Significance
PMI – Cancer Risk	Per million	0.2	10.0	Less than significant
PMI – HIC	N/A	0.001	1.0	Less than significant
MEIR – Cancer Risk	Per million	0.002	10.0	Less than significant
MEIR – HIC	N/A	0.000001	1.0	Less than significant
MEIW – Cancer Risk	Per million	0.0002	10.0	Less than significant
MEIW – HIC	N/A	0.00005	1.0	Less than significant

Source: Attachment B.
Notes: CEQA = California Environmental Quality Act; PMI = point of maximum impact; HIC = chronic hazard index; N/A = not applicable; MEIR = maximally exposed individual receptor; MEIW = maximally exposed individual worker.

The results of the operational HRA demonstrate that the emergency generator, flare, CHP, and mobile source TAC exposure would result in cancer risk at the MEIR below the 10 in one million threshold, as well as a chronic hazard index of less than 1. Therefore, TAC emissions

from operation of the proposed project would not expose sensitive receptors to substantial pollutant concentrations and impacts to sensitive receptors would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant; therefore, no mitigation is required.

3.3.5 Would the Project Create Objectionable Odors Affecting a Substantial Number of People?

Although SBCACPD has not adopted quantitative thresholds of significance for odor impacts, SBCAPCD recommends the development of an odor abatement plan for projects that may generate nuisance odors that may affect a substantial number of people.

Construction Odor Impacts

Potential sources that may emit odors during construction activities include diesel equipment and gasoline fumes. Odors from these sources would be localized and generally confined to the project site. The closest sensitive receptor to the proposed project site is a single-family residence located approximately 2,170 feet to the northeast of the project site. The release of odor-causing compounds would tend to be during the workday, when many residents would not be at home. Such odors are temporary and generally occur at magnitudes that would not affect a substantial number of people. Also, the construction of the project is only expected to last up to 2 weeks. Therefore, construction of the proposed project would not cause an odor nuisance, and impacts associated with odors during construction would be considered less than significant.

Operational Odor Impacts

Certain projects have the potential to cause significant odor impacts because of the nature of their operation and their location. Examples include fast-food restaurants, bakeries, and coffee roasting facilities (SBCAPCD 2017b). Other projects may be developments (e.g., residential areas or sensitive receptors) that are located downwind of existing sources of odor. Although food waste may generate odors if left exposed to the elements for an extended period of time, the proposed project would begin processing the food waste it as soon as it is received. Any odors generated by the project would be brief and infrequent because the amount of material being

processed would be minimal. Also, the proposed project would be co-located on the existing District wastewater treatment plant site. Any odors generated by the project would be minimal compared to those associated with the existing wastewater treatment plant. Therefore, the proposed project would result in a less than significant odor impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant; therefore, no mitigation is required.

4 GHG EMISSIONS ASSESSMENT

4.1 Thresholds of Significance

4.1.1 CEQA Guidelines

The California Natural Resources Agency adopted amendments to the CEQA Guidelines on December 30, 2009, which became effective on March 18, 2010. With respect to GHG emissions, the amended CEQA Guidelines state in Section 15064.4(a) that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15064.4(a)). Section 15064.4(b) of the CEQA Guidelines states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously

adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." Similarly, the revisions to Appendix G, Environmental Checklist Form, which is often used as a basis for lead agencies' selection of significance thresholds, do not prescribe specific thresholds.

Rather, the CEQA Guidelines establish two new CEQA thresholds related to GHGs, which will be used in this memorandum to discuss the significance of project impacts (14 CCR 15000 et seq., Appendix G):

1. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
2. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Accordingly, the CEQA Guidelines do not prescribe specific methodologies for performing an assessment, establish specific thresholds of significance, or mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance that are consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009).

4.1.2 Local Guidance

County Environmental Thresholds

The County's Environmental Thresholds and Guidelines Manual (revised July 2015) provides direction on assessing GHG impacts from projects within the County (County of Santa Barbara 2008). Although the guidelines were designed for projects that require discretionary approval by the County, because the project lies within unincorporated Santa Barbara County these thresholds still apply. The thresholds indicate that all industrial stationary-source projects shall be subject to a numeric bright-line threshold of 1,000 metric tons (MT) CO_2e per year to determine whether a project would have a significant impact. Also, the guidelines state that for industrial stationary-source projects, construction-related emissions are to be accounted for in the year that they occur and shall not be amortized and added to the operational emissions. This threshold will be used to assess GHG Significance Criterion 1 from Appendix G.

The County Board of Supervisors adopted the Energy and Climate Action Plan (ECAP) in May 2015 and certified the accompanying EIR (County of Santa Barbara 2015). The ECAP meets the criteria in CEQA Guidelines Section 15183.5(b) for a "plan to reduce GHG emissions."

The ECAP commits the County to reduce community-wide GHG emissions by 15% below 2007 levels by 2020, consistent with the California Global Warming Solutions Act of 2006 (Assembly Bill 32) and the related Climate Change Scoping Plan (Scoping Plan; CARB 2017). However, the ECAP is not certified beyond 2020.

The ECAP included a GHG emissions forecast for unincorporated Santa Barbara County through 2020. The growth estimates used in the emissions forecast came from the County Regional Growth Forecast 2005–2040 prepared by SBCAG and incorporated 2010 U.S. Census data where available. The estimates were based on factors such as population projections, vehicle trends, and planned land uses. The sources of GHG emissions included various sectors, such as transportation, residential energy, commercial energy, off-road, solid waste, agriculture, water and wastewater, industrial energy, and aircraft. As a result, most residential and commercial projects that are consistent with the County's zoning (in 2007) were included in the forecast and would therefore be considered consistent with the ECAP. However, certain projects were not included in the emissions forecast, such as stationary-source projects (e.g., large boilers, gas stations, auto body shops, dry cleaners, and water treatment facilities), comprehensive plan amendments, and community plans that exceed the County's projected population and job growth, due to uncertainty in forecasting their GHG emissions. Projects not included in the forecast must be evaluated on a case-by-case basis.

The ECAP EIR contains a programmatic analysis of GHG emissions for unincorporated Santa Barbara County. A project that was included in the ECAP's emissions forecast may tier from the ECAP's certified EIR for its impact analysis of GHG emissions. A project that tiers from the ECAP's EIR is considered in compliance with the requirements in the ECAP and would be considered less than significant.

Because the proposed project would be considered a stationary-source project and was therefore not included in the ECAP EIR, its significance will be evaluated as follows: for purposes of GHG Significance Criterion 2 from Appendix G, the proposed project will be assessed based on its potential to conflict with the County's ECAP, SBCAG's Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS), and CARB's Scoping Plan. The Scoping Plan goals and measures are analyzed against the project as part of the consistency analysis. The potential for the proposed project to conflict with these plans is addressed in detail in Section 4.2.

4.2 GHG Emissions Impact Analysis

4.2.1 Would the Project Generate Greenhouse Gas Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment?

Construction Emissions

Construction of the project would result in GHG emissions that are primarily associated with use of off-road construction equipment, on-road vendor trucks, and worker vehicles. The County's Environmental Thresholds and Guidelines Manual (County of Santa Barbara 2008) recommends the use of a 1,000 MT CO_2e bright-line threshold for both construction and operation of stationary-source projects.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Attachment A. Construction of the proposed project is anticipated to commence in October 2018, lasting a total of approximately 2 weeks. On-site sources of GHG emissions include off-road equipment and off-site sources include on-road vehicles (haul trucks, vendor trucks, and worker vehicles). Table 8 presents construction emissions for the project from on-site and off-site emission sources.

Table 8
Estimated Annual Construction GHG Emissions

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
2018	38.15	0.01	0.00	38.29
			Significance threshold	*1,000*
			Exceeds significance threshold?	No

Source: Attachment A.
Notes: GHG = greenhouse gas; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent.
See Attachment A for complete results.

As shown in Table 8, the estimated total GHG emissions during construction would be approximately 38 MT CO_2e, which does not exceed the County's significance threshold. As with project-generated construction air quality pollutant emissions, GHG emissions generated during construction of the project would be short term in nature, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions. Therefore, the project would have a less than significant impact during construction.

Operational Emissions

Operation of the project would generate GHG emissions through motor vehicle trips to and from the project site; energy use (natural gas and generation of electricity consumed by the project); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. The spreadsheet model was used to calculate the annual GHG emissions based on the operational assumptions described in Section 2.2, Operation. Similar to air quality, two operational scenarios were estimated for the GHG emissions analysis: one with the CHP operational and the other with the CHP not operating and the flare operating 24 hours per day.

The estimated first full operational year (2019) project-generated GHG emissions from area sources, energy usage, motor vehicles, solid waste generation, and water usage and wastewater generation from the scenario where the CHP is operating and the flare is used only for backup (operating 1 hour per day) are shown in Table 9.

Table 9
Estimated Annual Operational GHG Emissions –
CHP Operating with Flare Backup

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
CHP	17.94	0.01	0.00	17.99
Flare	0.75	0.00	0.00	0.75
Emergency generator	2.65	0.00	0.00	2.66
Boiler	166.22	0.01	0.00	166.89
Off-road equipment	9.16	0.00	0.00	9.61
Mobile	22.93	0.01	0.00	24.31
Energy	189.12	0.01	0.00	189.80
Solid waste	4.36	0.22	0.00	9.77
Biogas venting	0.00	0.00	0.00	0.06
			Total	421.82
			Significance threshold	*1,000*
			Exceeds significance threshold?	No

Source: Attachment A.
Notes: CHP = combined heat and power generator; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent. See Attachment A for complete results.

As shown in Table 9, estimated annual project-generated GHG emissions would be approximately 422 MT CO_2e per year as a result of project operation. As shown, the total annual emissions would not exceed the GHG significance threshold of 1,000 MT CO_2e per year. Table

10 provides the annual GHG emissions from the project under the scenario where the CHP would be inoperable and the flare would operate 24 hours per day.

Table 10
Estimated Annual Operational GHG Emissions –
Flare Operating, No CHP

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
CHP	0.00	0.00	0.00	0.00
Flare	17.94	0.00	0.00	17.99
Emergency generator	2.65	0.00	0.00	2.66
Boiler	166.22	0.01	0.00	166.89
Off-road equipment	9.16	0.00	0.00	9.61
Mobile	22.93	0.01	0.00	24.31
Energy	189.12	0.01	0.00	189.80
Solid waste	4.36	0.22	0.00	9.77
Biogas venting	0.00	0.00	0.00	0.06
			Total	421.07
			Significance threshold	*1,000*
			Exceeds significance threshold?	No

Source: Attachment A.
Notes: GHG = greenhouse gas; CHP = combined heat and power generator; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent.
See Attachment A for complete results.

As shown in Table 10, estimated annual project-generated GHG emissions would be approximately 421 MT CO_2e per year as a result of project operation and would not exceed the GHG significance threshold of 1,000 MT CO_2e per year. Because the project's GHG emissions would not result in a cumulatively considerable contribution under either operational scenario, the project would result in a cumulative impact in terms of climate change that is less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant; therefore, no mitigation is required.

4.2.2 Would the Project Conflict With an Applicable Plan, Policy or Regulation Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases?

This section discusses the project's compliance the County's ECAP, SBCAG's RTP/SCS, and CARB's Scoping Plan.

Consistency with the ECAP

The ECAP EIR contains a programmatic analysis of GHG emissions for unincorporated Santa Barbara County, and a project may tier from the ECAP's certified EIR for its impact analysis of GHG emissions if the project's emissions were considered in the ECAP and the project does not exceed the growth projections assumed in the ECAP. The proposed project does not require a general plan amendment, change in land use designation, or zoning change. However, as discussed in Section 4.1.2, Local Guidance, the proposed project was not included in the ECAP EIR emission inventory forecast because it would be considered a stationary source.

The ECAP contains 53 County- and community-wide programmatic emission reduction measures intended to achieve the 15% GHG emissions reduction target by 2020. The County created the Energy and Sustainability Initiatives Division and is taking other steps to implement and monitor the effectiveness of these measures throughout the unincorporated County. For example, the EmPower Program helps homeowners County-wide overcome obstacles to making energy-saving improvements to their homes. The proposed project directly supports several GHG reducing measures in the ECAP, including Renewable Energy and Waste Reduction. The Renewable Energy (RE) measure RE 1 of the ECAP states: "Increase the use of alternative energy technology as appropriate in new and existing development" (County of Santa Barbara 2015). Because the proposed project would produce electricity from renewable biogas generated from organic waste, it is consistent with this ECAP strategy. The Waste Reduction (WR) measure WR 1 of the ECAP states: "Continue to support the programs associated with efficient waste collection and recycling, public school education, and composting" (County of Santa Barbara 2015). The proposed project would reduce the amount of waste sent to the landfill by processing it into a usable product using the Lystek system. This supports the Waste Reduction strategies of the ECAP. As such, the proposed project would not conflict with or obstruct implementation of the ECAP; therefore, impacts associated with consistency with the ECAP would be less than significant.

Consistency with Fast Forward 2040 – SBCAG's RTP/SCS

With regard to consistency with SBCAG's Regional Plan, the proposed project would include site design elements developed to support the policy objectives of the RTP/SCS and Senate Bill 375 where applicable. Table 11 shows the proposed project's consistency with all applicable goals and policy objectives (SBCAG 2017).

Table 11
2010–2040 RTP/SCS Consistency Analysis

Policy Objective or Strategy	Consistency Analysis
1.1, Land Use	*Not applicable*. The project would not inhibit SBCAG from implementing land use policies within region.
1.2, Air Quality	*Consistent*. The project would help reduce GHG emissions consistent with Senate Bill 375. The project would also conform with the SBCAPCD Clean Air Plan.
1.3, Alternative Fuels and Energy	*Consistent*. The project would produce renewable energy from biogas generated from organic waste.
1.4, Aesthetics and Community Character	*Consistent*. The project would be consistent with the aesthetics at the Goleta Sanitary District.
1.5, Regional Greenprint	*Not applicable*. The project would not inhibit SBCAG from pursuing development to mitigate impacts from transportation projects on sensitive biological areas.
2.1, Access, Circulation and Congestion	*Not applicable*. The project would not inhibit SBCAG from planning, constructing, and operating transportation facilities.
2.2, System Maintenance, Expansion and Efficiency	*Not applicable*. The project would not inhibit SBCAG from maintaining or expanding transportation facilities.
2.3, Alternative Transportation Modes	*Not applicable*. The project would not inhibit SBCAG from encouraging alternative transportation modes throughout the County.
2.4, Freight and Goods Movement	*Not applicable*. The project would not inhibit SBCAG from facilitating secure and efficient movement of goods and freight.
2.5, Transportation System Management Technologies	*Not applicable*. The project would not inhibit SBCAG from implementing transportation system management technologies.
2.6, Consistency with Other Plans	*Not applicable*. The project would not inhibit SBCAG from ensuring that transportation facilities are consistent with relevant plans.
3.1, Access	*Not applicable*. The project would not inhibit SBCAG from ensuring that transportation systems are accessible for all transportation users.
3.2, Affordable Housing	*Not applicable*. The project would not inhibit SBCAG from encouraging local agencies to plan and provide affordable housing in the community.

Table 11
2010–2040 RTP/SCS Consistency Analysis

Policy Objective or Strategy	Consistency Analysis
3.3, Environmental Justice	*Not applicable*. The project would not inhibit SBCAG from improving the public health and safety of the regional transportation system.
4.1, Safe Roads and Highways	*Not applicable*. The project would not inhibit SBCAG from planning, constructing, and operating safe roads and highways.
4.2, Public Health	*Not applicable*. The project would not inhibit SBCAG from promoting active transportation and complete streets.
5.1, Commuter Savings	*Not applicable*. The project would not inhibit SBCAG from reducing average commute time and cost.
5.2, Support Business and Local Investment	*Consistent*. The project would provide an investment in the local community and create jobs.
5.3, Public-Private Partnerships	*Consistent.* The project would create a public-private partnership between the Goleta Sanitary District and Lystek.
5.4, Transportation Funding	*Not applicable*. The project would not inhibit SBCAG from seeking funding opportunities to implement the RTP/SCS.

RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SBCAG = Santa Barbara County Association of Governments; GHG = greenhouse gas; SBCAPCD = Santa Barbara County Air Pollution Control District.

As shown in Table 11, the project would be consistent with all applicable policy measures within Fast Forward 2040, SBCAG's RTP/SCS; therefore, impacts associated with the consistency with the RTP/SCS would be less than significant.

Consistency with CARB's Scoping Plan

The Scoping Plan, approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. In the Final Statement of Reasons for the amendments to the CEQA Guidelines, the California Natural Resources Agency observed that "[t]he [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area-source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels

(e.g., Low Carbon Fuel Standard), among others. The proposed project would comply with all applicable regulations adopted in furtherance of the Scoping Plan to the extent required by law.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of Assembly Bill 32 and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. Table 12 highlights measures that have been developed under the Scoping Plan and demonstrates the proposed project's consistency with Scoping Plan measures. The table also includes measures in the 2017 Scoping Plan Update. To the extent that these regulations are applicable to the proposed project, its inhabitants, or its uses, the proposed project would comply with all applicable regulations adopted in furtherance of the Scoping Plan.

Table 12
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Transportation Sector		
Advanced Clean Cars	T-1	This measure does not apply to the project.
1.5 Million Zero-Emission and Plug-In Hybrid Light-Duty Electric Vehicles by 2025 (4.2 million zero-emission vehicles by 2030)	N/A	This measure does not apply to the project.
Low Carbon Fuel Standard	T-2	Motor vehicles driven by the project's employees would use compliant fuels.
Low Carbon Fuel Standard (18% Reduction in Carbon Intensity by 2030)	N/A	Motor vehicles driven by the project's employees would use compliant fuels.
Regional Transportation-Related GHG Targets	T-3	This measure does not apply to the project.
Advanced Clean Transit	N/A	This measure does not apply to the project.
Last Mile Delivery	N/A	This measure does not apply to the project.
Reduction in Vehicle Miles Traveled	N/A	The project would reduce the distance refuse trucks would haul food waste from University of California–Santa Barbara to the landfill.
Vehicle Efficiency Measures 1. Tire Pressure 2. Fuel Efficiency Tire Program 3. Low-Friction Oil 4. Solar-Reflective Automotive Paint and Window Glazing	T-4	This measure does not apply to the project.
Ship Electrification at Ports (Shore Power)	T-5	This measure does not apply to the project.

Table 12
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Goods Movement Efficiency Measures 1. Port Drayage Trucks 2. Transport Refrigeration Units Cold Storage Prohibition 3. Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification 4. Goods Movement Systemwide Efficiency Improvements 5. Commercial Harbor Craft Maintenance and Design Efficiency 6. Clean Ships 7. Vessel Speed Reduction	T-6	This measure does not apply to the project.
California Sustainable Freight Action Plan	N/A	This measure does not apply to the project.
Heavy-Duty Vehicle GHG Emission Reduction 1. Tractor-Trailer GHG Regulation 2. Heavy-Duty Greenhouse Gas Standards for New Vehicle and Engines (Phase I)	T-7	This measure does not apply to the project.
Medium- and Heavy-Duty Vehicle Hybridization Voucher Incentive Project	T-8	This measure does not apply to the project.
Medium- and Heavy-Duty GHG Phase 2	N/A	This measure does not apply to the project.
High-Speed Rail	T-9	This measure does not apply to the project.
Electricity and Natural Gas Sector		
Energy Efficiency Measures (Electricity)	E-1	The project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.
Energy Efficiency (Natural Gas)	CR-1	The project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.
Solar Water Heating (California Solar Initiative Thermal Program)	CR-2	This measure does not apply to the project.
Combined Heat and Power	E-2	This measure does not apply to the project.
Renewable Portfolios Standard (33% by 2020)	E-3	The project would generate renewable energy from food waste.
Renewable Portfolios Standard (50% by 2050)	N/A	The project would generate renewable energy from food waste.
Senate Bill 1 Million Solar Roofs (California Solar Initiative, New Solar Home Partnership, Public Utility Programs) and Earlier Solar Programs	E-4	This measure does not apply to the project.

Table 12
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Water Sector		
Water Use Efficiency	W-1	The project is going to use non-potable water for any water needs on site.
Water Recycling	W-2	The project would use recycled non-potable water from the Goleta Sanitary District for any water needs on site.
Water System Energy Efficiency	W-3	This is applicable for the transmission and treatment of water, but it is not applicable for the project.
Reuse Urban Runoff	W-4	This measure does not apply to the project.
Renewable Energy Production	W-5	Applicable for wastewater treatment systems. Not applicable for the project.
Green Buildings		
1. State Green Building Initiative: Leading the Way with State Buildings (Greening New and Existing State Buildings)	GB-1	The project would be required to be constructed in compliance with state or local green building standards in effect at the time of building construction.
2. Green Building Standards Code (Greening New Public Schools, Residential and Commercial Buildings)	GB-1	The project's buildings would meet green building standards that are in effect at the time of design and construction.
3. Beyond Code: Voluntary Programs at the Local Level (Greening New Public Schools, Residential and Commercial Buildings)	GB-1	The project would be required to be constructed in compliance with local green building standards in effect at the time of building construction.
4. Greening Existing Buildings (Greening Existing Homes and Commercial Buildings)	GB-1	This is applicable for existing buildings only and is not applicable.
Industry Sector		
Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	I-1	This is not applicable to the project.
Oil and Gas Extraction GHG Emission Reduction	I-2	This is not applicable to the project.
Reduce GHG Emissions by 20% in Oil Refinery Sector	N/A	This is not applicable to the project.
GHG Emissions Reduction from Natural Gas Transmission and Distribution	I-3	This is not applicable to the project.
Refinery Flare Recovery Process Improvements	I-4	This is not applicable to the project.
Work with the Local Air Districts to Evaluate Amendments to Their Existing Leak Detection and Repair Rules for Industrial Facilities to Include Methane Leaks	I-5	This is not applicable to the project.
Recycling and Waste Management Sector		
Landfill Methane Control Measure	RW-1	This is not applicable to the project.

Table 12
Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Increasing the Efficiency of Landfill Methane Capture	RW-2	This is not applicable to the project.
Mandatory Commercial Recycling	RW-3	This measure does not apply to the project.
Increase Production and Markets for Compost and Other Organics	RW-3	This project would produce a product that can be composted or land-applied similar to compost.
Anaerobic/Aerobic Digestion	RW-3	The project would use anaerobic digestion to generate biogas from food waste.
Extended Producer Responsibility	RW-3	This is not applicable to the project.
Environmentally Preferable Purchasing	RW-3	This is not applicable to the project.
Forests Sector		
Sustainable Forest Target	F-1	This is not applicable to the project.
High GWP Gases Sector		
Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	H-1	This is not applicable to the project.
SF_6 Limits in Non-Utility and Non-Semiconductor Applications	H-2	This is not applicable to the project.
Reduction of Perfluorocarbons in Semiconductor Manufacturing	H-3	This is not applicable to the project.
Limit High GWP Use in Consumer Products	H-4	This measure does not apply to the project.
Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	H-5	This measure does not apply to the project.
Stationary Equipment Refrigerant Management Program – Refrigerant Tracking/Reporting/Repair Program	H-6	This is not applicable to the project.
Stationary Equipment Refrigerant Management Program – Specifications for Commercial and Industrial Refrigeration	H-6	This is not applicable to the project.
SF_6 Leak Reduction Gas Insulated Switchgear	H-6	This is not applicable to the project.
40% reduction in methane and hydrofluorocarbon (HFC) emissions	N/A	This is not applicable to the project.
50% reduction in black carbon emissions	N/A	This is not applicable to the project.
Agriculture Sector		
Methane Capture at Large Dairies	A-1	This is not applicable to the project.

Source: CARB 2008, 2017.
Notes: GHG = greenhouse gas; N/A = not applicable; GWP = global warming potential; SF_6 = sulfur hexafluoride.

Based on the analysis in Table 12, the proposed project would be consistent with the applicable strategies and measures in CARB's Scoping Plan.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant; therefore, no mitigation is required.

5 CONCLUSIONS

Emissions generated during construction of the proposed project would not exceed SBCAPCD's significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions. Operation of the proposed project would also not result in criteria air pollutant emissions that would exceed the SBCAPCD thresholds. Potential impacts related to TACs, siting health risk, odors, and consistency with the Clean Air Plan would be less than significant.

Estimated total GHG emissions generated during construction would be 38 MT CO_2e, which does not exceed the County's bright-line significance threshold of 1,000 MT CO_2e per year. Estimated project-generated operational GHG emissions from stationary sources, energy usage, motor vehicles, and solid waste would be approximately 422 MT CO_2e per year under the worst-case scenario, which is below the County's threshold of 1,000 MT CO_2e per year. The proposed project would not conflict with County's ECAP, SBCAG's RTP/SCS, or CARB's Scoping Plan. Accordingly, potential cumulative GHG impacts would be less than significant.

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ATTACHMENT A

Emission Calculations

GSD Foodwaste to Energy Project

Santa Barbara County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.00	2,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on applicant provided data.

Construction Phase - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Trips and VMT - Based on applicant provided data.

On-road Fugitive Dust - CalEEMod defaults.

Demolition - All demo will keep material onsite for reuse later.

Architectural Coating - No architectural coatings.

Vehicle Trips - Calculated outside of CalEEMod.

Woodstoves - Not applicable.

Consumer Products - Not applicable.

Area Coating - Not applicable.

Landscape Equipment - Not applicable.

Energy Use - Based on applicant provided data.

Water And Wastewater - Not applicable.

Solid Waste - Based on applicant provided data and 800 pounds per week.

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	200.00	1.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	10.00	15.00
tblEnergyUse	T24E	0.00	296.78
tblLandUse	LandUseSquareFeet	0.00	2,000.00
tblLandUse	LotAcreage	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblSolidWaste	SolidWasteGenerationRate	0.00	21.00
tblTripsAndVMT	HaulingTripNumber	0.00	500.00
tblTripsAndVMT	WorkerTripNumber	10.00	14.00
tblTripsAndVMT	WorkerTripNumber	13.00	16.00
tblTripsAndVMT	WorkerTripNumber	1.00	14.00

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					
2018	0.0192	0.2411	0.1328	4.0000e-004	5.2600e-003	9.0200e-003	0.0143	1.4300e-003	8.5800e-003	0.0100	0.0000	38.1457	38.1457	5.5500e-003	0.0000	38.2846
Maximum	**0.0192**	**0.2411**	**0.1328**	**4.0000e-004**	**5.2600e-003**	**9.0200e-003**	**0.0143**	**1.4300e-003**	**8.5800e-003**	**0.0100**	**0.0000**	**38.1457**	**38.1457**	**5.5500e-003**	**0.0000**	**38.2846**

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					
2018	0.0192	0.2411	0.1328	4.0000e-004	5.2600e-003	9.0200e-003	0.0143	1.4300e-003	8.5800e-003	0.0100	0.0000	38.1457	38.1457	5.5500e-003	0.0000	38.2846
Maximum	**0.0192**	**0.2411**	**0.1328**	**4.0000e-004**	**5.2600e-003**	**9.0200e-003**	**0.0143**	**1.4300e-003**	**8.5800e-003**	**0.0100**	**0.0000**	**38.1457**	**38.1457**	**5.5500e-003**	**0.0000**	**38.2846**

	ROG	NOx	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)
		Highest		

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	7.8100e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	189.1235	189.1235	7.8100e-003	1.6200e-003	189.8001
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	4.3609	0.0000	4.3609	0.2162	0.0000	9.7670
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.8100e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.3609**	**189.1235**	**193.4844**	**0.2241**	**1.6200e-003**	**199.5671**

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	7.8100e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	189.1235	189.1235	7.8100e-003	1.6200e-003	189.8001
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	4.3609	0.0000	4.3609	0.2162	0.0000	9.7670
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.8100e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.3609**	**189.1235**	**193.4844**	**0.2241**	**1.6200e-003**	**199.5671**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2018	9/7/2018	5	5	
2	Paving	Paving	9/8/2018	9/28/2018	5	15	
3	Building Construction	Building Construction	10/1/2018	10/1/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Air Compressors	1	8.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Rubber Tired Loaders	1	8.00	203	0.36
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Plate Compactors	1	8.00	8	0.43
Paving	Pumps	1	8.00	84	0.74
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Loaders	1	8.00	203	0.36
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	0	7.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	14.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	16.00	0.00	500.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	1	14.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0300e-003	0.0364	0.0257	5.0000e-005		2.0900e-003	2.0900e-003		2.0100e-003	2.0100e-003	0.0000	4.3308	4.3308	8.5000e-004	0.0000	4.3521
Total	**4.0300e-003**	**0.0364**	**0.0257**	**5.0000e-005**	**0.0000**	**2.0900e-003**	**2.0900e-003**	**0.0000**	**2.0100e-003**	**2.0100e-003**	**0.0000**	**4.3308**	**4.3308**	**8.5000e-004**	**0.0000**	**4.3521**

3.2 Demolition - 2018

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	1.4000e-004	1.2000e-004	1.0700e-003	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1877	0.1877	1.0000e-005	0.0000	0.1879
Total	**1.4000e-004**	**1.2000e-004**	**1.0700e-003**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1877**	**0.1877**	**1.0000e-005**	**0.0000**	**0.1879**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0300e-003	0.0364	0.0257	5.0000e-005		2.0900e-003	2.0900e-003		2.0100e-003	2.0100e-003	0.0000	4.3308	4.3308	8.5000e-004	0.0000	4.3521
Total	**4.0300e-003**	**0.0364**	**0.0257**	**5.0000e-005**	**0.0000**	**2.0900e-003**	**2.0900e-003**	**0.0000**	**2.0100e-003**	**2.0100e-003**	**0.0000**	**4.3308**	**4.3308**	**8.5000e-004**	**0.0000**	**4.3521**

3.2 Demolition - 2018

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	1.4000e-004	1.2000e-004	1.0700e-003	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1877	0.1877	1.0000e-005	0.0000	0.1879
Total	**1.4000e-004**	**1.2000e-004**	**1.0700e-003**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1877**	**0.1877**	**1.0000e-005**	**0.0000**	**0.1879**

3.3 Paving - 2018

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	0.0114	0.1116	0.0752	1.4000e-004		6.1800e-003	6.1800e-003		5.8600e-003	5.8600e-003	0.0000	12.6760	12.6760	2.9000e-003	0.0000	12.7485
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.1116**	**0.0752**	**1.4000e-004**		**6.1800e-003**	**6.1800e-003**		**5.8600e-003**	**5.8600e-003**	**0.0000**	**12.6760**	**12.6760**	**2.9000e-003**	**0.0000**	**12.7485**

3.3 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7500e-003	0.0892	0.0257	2.0000e-004	4.2600e-003	5.9000e-004	4.8500e-003	1.1700e-003	5.7000e-004	1.7300e-003	0.0000	20.0070	20.0070	1.6900e-003	0.0000	20.0491
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	4.2000e-004	3.6600e-003	1.0000e-005	7.4000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6434	0.6434	3.0000e-005	0.0000	0.6441
Total	**3.2200e-003**	**0.0897**	**0.0294**	**2.1000e-004**	**5.0000e-003**	**6.0000e-004**	**5.6000e-003**	**1.3700e-003**	**5.7000e-004**	**1.9300e-003**	**0.0000**	**20.6503**	**20.6503**	**1.7200e-003**	**0.0000**	**20.6932**

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	0.0114	0.1116	0.0752	1.4000e-004		6.1800e-003	6.1800e-003		5.8600e-003	5.8600e-003	0.0000	12.6760	12.6760	2.9000e-003	0.0000	12.7485
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.1116**	**0.0752**	**1.4000e-004**		**6.1800e-003**	**6.1800e-003**		**5.8600e-003**	**5.8600e-003**	**0.0000**	**12.6760**	**12.6760**	**2.9000e-003**	**0.0000**	**12.7485**

3.3 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7500e-003	0.0892	0.0257	2.0000e-004	4.2600e-003	5.9000e-004	4.8500e-003	1.1700e-003	5.7000e-004	1.7300e-003	0.0000	20.0070	20.0070	1.6900e-003	0.0000	20.0491
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	4.2000e-004	3.6600e-003	1.0000e-005	7.4000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6434	0.6434	3.0000e-005	0.0000	0.6441
Total	**3.2200e-003**	**0.0897**	**0.0294**	**2.1000e-004**	**5.0000e-003**	**6.0000e-004**	**5.6000e-003**	**1.3700e-003**	**5.7000e-004**	**1.9300e-003**	**0.0000**	**20.6503**	**20.6503**	**1.7200e-003**	**0.0000**	**20.6932**

3.4 Building Construction - 2018

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	2.9000e-004	3.4100e-003	1.2600e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.2634	0.2634	8.0000e-005	0.0000	0.2654
Total	**2.9000e-004**	**3.4100e-003**	**1.2600e-003**	**0.0000**		**1.5000e-004**	**1.5000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.2634**	**0.2634**	**8.0000e-005**	**0.0000**	**0.2654**

3.4 Building Construction - 2018

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	3.0000e-005	2.0000e-005	2.1000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0375	0.0375	0.0000	0.0000	0.0376
Total	**3.0000e-005**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0375**	**0.0375**	**0.0000**	**0.0000**	**0.0376**

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	2.9000e-004	3.4100e-003	1.2600e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.2634	0.2634	8.0000e-005	0.0000	0.2654
Total	**2.9000e-004**	**3.4100e-003**	**1.2600e-003**	**0.0000**		**1.5000e-004**	**1.5000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.2634**	**0.2634**	**8.0000e-005**	**0.0000**	**0.2654**

3.4 Building Construction - 2018

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	3.0000e-005	2.0000e-005	2.1000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0375	0.0375	0.0000	0.0000	0.0376
Total	**3.0000e-005**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0375**	**0.0375**	**0.0000**	**0.0000**	**0.0376**

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.60	5.50	6.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.546962	0.032250	0.203301	0.133652	0.025574	0.006384	0.017070	0.018005	0.002749	0.002622	0.007451	0.002735	0.001244

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	189.1235	189.1235	7.8100e-003	1.6200e-003	189.8001
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	189.1235	189.1235	7.8100e-003	1.6200e-003	189.8001
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	593568	189.1235	7.8100e-003	1.6200e-003	189.8001
Total		**189.1235**	**7.8100e-003**	**1.6200e-003**	**189.8001**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	593568	189.1235	7.8100e-003	1.6200e-003	189.8001
Total		**189.1235**	**7.8100e-003**	**1.6200e-003**	**189.8001**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive 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	7.8100e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	7.8100e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	7.8100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**7.8100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	7.8100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**7.8100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.3609	0.2162	0.0000	9.7670
Unmitigated	4.3609	0.2162	0.0000	9.7670

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	21	4.3609	0.2162	0.0000	9.7670
Total		**4.3609**	**0.2162**	**0.0000**	**9.7670**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	21	4.3609	0.2162	0.0000	9.7670
Total		**4.3609**	**0.2162**	**0.0000**	**9.7670**

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

GSD Foodwaste to Energy Project

Santa Barbara County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.00	2,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on applicant provided data.

Construction Phase - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Trips and VMT - Based on applicant provided data.

On-road Fugitive Dust - CalEEMod defaults.

Demolition - All demo will keep material onsite for reuse later.

Architectural Coating - No architectural coatings.

Vehicle Trips - Calculated outside of CalEEMod.

Woodstoves - Not applicable.

Consumer Products - Not applicable.

Area Coating - Not applicable.

Landscape Equipment - Not applicable.

Energy Use - Based on applicant provided data.

Water And Wastewater - Not applicable.

Solid Waste - Based on applicant provided data and 800 pounds per week.

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	200.00	1.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	10.00	15.00
tblEnergyUse	T24E	0.00	296.78
tblLandUse	LandUseSquareFeet	0.00	2,000.00
tblLandUse	LotAcreage	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblSolidWaste	SolidWasteGenerationRate	0.00	21.00
tblTripsAndVMT	HaulingTripNumber	0.00	500.00
tblTripsAndVMT	WorkerTripNumber	10.00	14.00
tblTripsAndVMT	WorkerTripNumber	13.00	16.00
tblTripsAndVMT	WorkerTripNumber	1.00	14.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	1.9494	26.5453	13.8543	0.0468	0.6803	0.9033	1.5836	0.1853	0.8568	1.0421	0.0000	4,915.9314	4,915.9314	0.6754	0.0000	4,932.8158
Maximum	**1.9494**	**26.5453**	**13.8543**	**0.0468**	**0.6803**	**0.9033**	**1.5836**	**0.1853**	**0.8568**	**1.0421**	**0.0000**	**4,915.9314**	**4,915.9314**	**0.6754**	**0.0000**	**4,932.8158**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	1.9494	26.5453	13.8543	0.0468	0.6803	0.9033	1.5836	0.1853	0.8568	1.0421	0.0000	4,915.9314	4,915.9314	0.6754	0.0000	4,932.8158
Maximum	**1.9494**	**26.5453**	**13.8543**	**0.0468**	**0.6803**	**0.9033**	**1.5836**	**0.1853**	**0.8568**	**1.0421**	**0.0000**	**4,915.9314**	**4,915.9314**	**0.6754**	**0.0000**	**4,932.8158**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2018	9/7/2018	5	5	
2	Paving	Paving	9/8/2018	9/28/2018	5	15	
3	Building Construction	Building Construction	10/1/2018	10/1/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

GSD Foodwaste to Energy Project - Santa Barbara County APCD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Air Compressors	1	8.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Rubber Tired Loaders	1	8.00	203	0.36
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Plate Compactors	1	8.00	8	0.43
Paving	Pumps	1	8.00	84	0.74
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Loaders	1	8.00	203	0.36
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	0	7.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	14.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	16.00	0.00	500.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	1	14.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6135	14.5439	10.2685	0.0196		0.8346	0.8346		0.8053	0.8053		1,909.5678	1,909.5678	0.3747		1,918.9350
Total	**1.6135**	**14.5439**	**10.2685**	**0.0196**	**0.0000**	**0.8346**	**0.8346**	**0.0000**	**0.8053**	**0.8053**		**1,909.5678**	**1,909.5678**	**0.3747**		**1,918.9350**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0534	0.0441	0.4195	8.5000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		84.5761	84.5761	3.5200e-003		84.6642
Total	**0.0534**	**0.0441**	**0.4195**	**8.5000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**84.5761**	**84.5761**	**3.5200e-003**		**84.6642**

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6135	14.5439	10.2685	0.0196		0.8346	0.8346		0.8053	0.8053	0.0000	1,909.5678	1,909.5678	0.3747		1,918.9350
Total	**1.6135**	**14.5439**	**10.2685**	**0.0196**	**0.0000**	**0.8346**	**0.8346**	**0.0000**	**0.8053**	**0.8053**	**0.0000**	**1,909.5678**	**1,909.5678**	**0.3747**		**1,918.9350**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0534	0.0441	0.4195	8.5000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		84.5761	84.5761	3.5200e-003		84.6642
Total	**0.0534**	**0.0441**	**0.4195**	**8.5000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**84.5761**	**84.5761**	**3.5200e-003**		**84.6642**

3.3 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5257	14.8741	10.0235	0.0190		0.8245	0.8245		0.7815	0.7815		1,863.0588	1,863.0588	0.4260		1,873.7094
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5257**	**14.8741**	**10.0235**	**0.0190**		**0.8245**	**0.8245**		**0.7815**	**0.7815**		**1,863.0588**	**1,863.0588**	**0.4260**		**1,873.7094**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3628	11.6208	3.3515	0.0268	0.5792	0.0781	0.6573	0.1585	0.0747	0.2332		2,956.2142	2,956.2142	0.2453		2,962.3474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0610	0.0504	0.4794	9.7000e-004	0.1011	6.9000e-004	0.1017	0.0268	6.4000e-004	0.0274		96.6584	96.6584	4.0300e-003		96.7590
Total	**0.4238**	**11.6712**	**3.8309**	**0.0277**	**0.6803**	**0.0788**	**0.7591**	**0.1853**	**0.0754**	**0.2606**		**3,052.8726**	**3,052.8726**	**0.2494**		**3,059.1064**

3.3 Paving - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5257	14.8741	10.0235	0.0190		0.8245	0.8245		0.7815	0.7815	0.0000	1,863.0588	1,863.0588	0.4260		1,873.7094
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5257**	**14.8741**	**10.0235**	**0.0190**		**0.8245**	**0.8245**		**0.7815**	**0.7815**	**0.0000**	**1,863.0588**	**1,863.0588**	**0.4260**		**1,873.7094**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3628	11.6208	3.3515	0.0268	0.5792	0.0781	0.6573	0.1585	0.0747	0.2332		2,956.2142	2,956.2142	0.2453		2,962.3474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0610	0.0504	0.4794	9.7000e-004	0.1011	6.9000e-004	0.1017	0.0268	6.4000e-004	0.0274		96.6584	96.6584	4.0300e-003		96.7590
Total	**0.4238**	**11.6712**	**3.8309**	**0.0277**	**0.6803**	**0.0788**	**0.7591**	**0.1853**	**0.0754**	**0.2606**		**3,052.8726**	**3,052.8726**	**0.2494**		**3,059.1064**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5707	6.8208	2.5219	5.7700e-003		0.2952	0.2952		0.2716	0.2716		580.5979	580.5979	0.1808		585.1166
Total	**0.5707**	**6.8208**	**2.5219**	**5.7700e-003**		**0.2952**	**0.2952**		**0.2716**	**0.2716**		**580.5979**	**580.5979**	**0.1808**		**585.1166**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0534	0.0441	0.4195	8.5000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		84.5761	84.5761	3.5200e-003		84.6642
Total	**0.0534**	**0.0441**	**0.4195**	**8.5000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**84.5761**	**84.5761**	**3.5200e-003**		**84.6642**

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5707	6.8208	2.5219	5.7700e-003		0.2952	0.2952		0.2716	0.2716	0.0000	580.5979	580.5979	0.1808		585.1166
Total	**0.5707**	**6.8208**	**2.5219**	**5.7700e-003**		**0.2952**	**0.2952**		**0.2716**	**0.2716**	**0.0000**	**580.5979**	**580.5979**	**0.1808**		**585.1166**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0534	0.0441	0.4195	8.5000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		84.5761	84.5761	3.5200e-003		84.6642
Total	**0.0534**	**0.0441**	**0.4195**	**8.5000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**84.5761**	**84.5761**	**3.5200e-003**		**84.6642**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.60	5.50	6.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.546962	0.032250	0.203301	0.133652	0.025574	0.006384	0.017070	0.018005	0.002749	0.002622	0.007451	0.002735	0.001244

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

GSD Foodwaste to Energy Project

Santa Barbara County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.00	2,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on applicant provided data.

Construction Phase - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Off-road Equipment - Based on applicant provided data.

Trips and VMT - Based on applicant provided data.

On-road Fugitive Dust - CalEEMod defaults.

Demolition - All demo will keep material onsite for reuse later.

Architectural Coating - No architectural coatings.

Vehicle Trips - Calculated outside of CalEEMod.

Woodstoves - Not applicable.

Consumer Products - Not applicable.

Area Coating - Not applicable.

Landscape Equipment - Not applicable.

Energy Use - Based on applicant provided data.

Water And Wastewater - Not applicable.

Solid Waste - Based on applicant provided data and 800 pounds per week.

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	200.00	1.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	10.00	15.00
tblEnergyUse	T24E	0.00	296.78
tblLandUse	LandUseSquareFeet	0.00	2,000.00
tblLandUse	LotAcreage	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblSolidWaste	SolidWasteGenerationRate	0.00	21.00
tblTripsAndVMT	HaulingTripNumber	0.00	500.00
tblTripsAndVMT	WorkerTripNumber	10.00	14.00
tblTripsAndVMT	WorkerTripNumber	13.00	16.00
tblTripsAndVMT	WorkerTripNumber	1.00	14.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	1.9670	26.6424	14.0479	0.0464	0.6803	0.9049	1.5851	0.1853	0.8583	1.0436	0.0000	4,876.3368	4,876.3368	0.6810	0.0000	4,893.3630
Maximum	**1.9670**	**26.6424**	**14.0479**	**0.0464**	**0.6803**	**0.9049**	**1.5851**	**0.1853**	**0.8583**	**1.0436**	**0.0000**	**4,876.3368**	**4,876.3368**	**0.6810**	**0.0000**	**4,893.3630**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	1.9670	26.6424	14.0479	0.0464	0.6803	0.9049	1.5851	0.1853	0.8583	1.0436	0.0000	4,876.3368	4,876.3368	0.6810	0.0000	4,893.3630
Maximum	**1.9670**	**26.6424**	**14.0479**	**0.0464**	**0.6803**	**0.9049**	**1.5851**	**0.1853**	**0.8583**	**1.0436**	**0.0000**	**4,876.3368**	**4,876.3368**	**0.6810**	**0.0000**	**4,893.3630**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2018	9/7/2018	5	5	
2	Paving	Paving	9/8/2018	9/28/2018	5	15	
3	Building Construction	Building Construction	10/1/2018	10/1/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

GSD Foodwaste to Energy Project - Santa Barbara County APCD Air District, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Air Compressors	1	8.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Rubber Tired Loaders	1	8.00	203	0.36
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Plate Compactors	1	8.00	8	0.43
Paving	Pumps	1	8.00	84	0.74
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Loaders	1	8.00	203	0.36
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	0	7.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	14.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	16.00	0.00	500.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	1	14.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6135	14.5439	10.2685	0.0196		0.8346	0.8346		0.8053	0.8053		1,909.5678	1,909.5678	0.3747		1,918.9350
Total	**1.6135**	**14.5439**	**10.2685**	**0.0196**	**0.0000**	**0.8346**	**0.8346**	**0.0000**	**0.8053**	**0.8053**		**1,909.5678**	**1,909.5678**	**0.3747**		**1,918.9350**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0602	0.0504	0.4393	8.3000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		82.6248	82.6248	3.5700e-003		82.7140
Total	**0.0602**	**0.0504**	**0.4393**	**8.3000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**82.6248**	**82.6248**	**3.5700e-003**		**82.7140**

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6135	14.5439	10.2685	0.0196		0.8346	0.8346		0.8053	0.8053	0.0000	1,909.5678	1,909.5678	0.3747		1,918.9350
Total	**1.6135**	**14.5439**	**10.2685**	**0.0196**	**0.0000**	**0.8346**	**0.8346**	**0.0000**	**0.8053**	**0.8053**	**0.0000**	**1,909.5678**	**1,909.5678**	**0.3747**		**1,918.9350**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0602	0.0504	0.4393	8.3000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		82.6248	82.6248	3.5700e-003		82.7140
Total	**0.0602**	**0.0504**	**0.4393**	**8.3000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**82.6248**	**82.6248**	**3.5700e-003**		**82.7140**

3.3 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5257	14.8741	10.0235	0.0190		0.8245	0.8245		0.7815	0.7815		1,863.0588	1,863.0588	0.4260		1,873.7094
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5257**	**14.8741**	**10.0235**	**0.0190**		**0.8245**	**0.8245**		**0.7815**	**0.7815**		**1,863.0588**	**1,863.0588**	**0.4260**		**1,873.7094**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3725	11.7107	3.5224	0.0264	0.5792	0.0796	0.6589	0.1585	0.0762	0.2347		2,918.8496	2,918.8496	0.2509		2,925.1232
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0688	0.0576	0.5020	9.5000e-004	0.1011	6.9000e-004	0.1017	0.0268	6.4000e-004	0.0274		94.4284	94.4284	4.0800e-003		94.5303
Total	**0.4414**	**11.7683**	**4.0245**	**0.0274**	**0.6803**	**0.0803**	**0.7606**	**0.1853**	**0.0768**	**0.2621**		**3,013.2780**	**3,013.2780**	**0.2550**		**3,019.6536**

3.3 Paving - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5257	14.8741	10.0235	0.0190		0.8245	0.8245		0.7815	0.7815	0.0000	1,863.0588	1,863.0588	0.4260		1,873.7094
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5257**	**14.8741**	**10.0235**	**0.0190**		**0.8245**	**0.8245**		**0.7815**	**0.7815**	**0.0000**	**1,863.0588**	**1,863.0588**	**0.4260**		**1,873.7094**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3725	11.7107	3.5224	0.0264	0.5792	0.0796	0.6589	0.1585	0.0762	0.2347		2,918.8496	2,918.8496	0.2509		2,925.1232
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0688	0.0576	0.5020	9.5000e-004	0.1011	6.9000e-004	0.1017	0.0268	6.4000e-004	0.0274		94.4284	94.4284	4.0800e-003		94.5303
Total	**0.4414**	**11.7683**	**4.0245**	**0.0274**	**0.6803**	**0.0803**	**0.7606**	**0.1853**	**0.0768**	**0.2621**		**3,013.2780**	**3,013.2780**	**0.2550**		**3,019.6536**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5707	6.8208	2.5219	5.7700e-003		0.2952	0.2952		0.2716	0.2716		580.5979	580.5979	0.1808		585.1166
Total	**0.5707**	**6.8208**	**2.5219**	**5.7700e-003**		**0.2952**	**0.2952**		**0.2716**	**0.2716**		**580.5979**	**580.5979**	**0.1808**		**585.1166**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0602	0.0504	0.4393	8.3000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		82.6248	82.6248	3.5700e-003		82.7140
Total	**0.0602**	**0.0504**	**0.4393**	**8.3000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**82.6248**	**82.6248**	**3.5700e-003**		**82.7140**

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5707	6.8208	2.5219	5.7700e-003		0.2952	0.2952		0.2716	0.2716	0.0000	580.5979	580.5979	0.1808		585.1166
Total	**0.5707**	**6.8208**	**2.5219**	**5.7700e-003**		**0.2952**	**0.2952**		**0.2716**	**0.2716**	**0.0000**	**580.5979**	**580.5979**	**0.1808**		**585.1166**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0602	0.0504	0.4393	8.3000e-004	0.0884	6.0000e-004	0.0890	0.0235	5.6000e-004	0.0240		82.6248	82.6248	3.5700e-003		82.7140
Total	**0.0602**	**0.0504**	**0.4393**	**8.3000e-004**	**0.0884**	**6.0000e-004**	**0.0890**	**0.0235**	**5.6000e-004**	**0.0240**		**82.6248**	**82.6248**	**3.5700e-003**		**82.7140**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.60	5.50	6.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.546962	0.032250	0.203301	0.133652	0.025574	0.006384	0.017070	0.018005	0.002749	0.002622	0.007451	0.002735	0.001244

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0428	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0428**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Emissions Summary - CHP Operating with Flare Backup

Emission Source	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2e
	Pounds per Day						*MT/year*
CHP	0.34	0.36	1.07	0.01	0.31	0.31	17.99
Flare	0.01	0.00	0.01	0.01	0.00	0.00	0.75
Emergency Generator	0.05	0.96	1.19	0.00	0.01	0.01	2.66
Boiler	0.08	0.53	4.36	0.25	0.11	0.11	166.89
Offroad Equipment	0.06	0.76	0.87	0.00	0.04	0.03	9.61
Mobile	0.02	0.13	1.82	0.00	0.02	0.01	24.31
Digester Venting	-	-	-	-	-	-	0.06
Energy[1]	-	-	-	-	-	-	189.80
Solid Waste[1]	-	-	-	-	-	-	9.77
Total	**0.56**	**2.74**	**9.32**	**0.27**	**0.48**	**0.47**	**421.82**
Vehicle Source Emission Threshold	***25***	***25***	–	–	–	–	–
Vehicle Source Emissions Threshold Exceeded?	**No**	**No**	–	–	–	–	–
Area + Vehicle Source Emissions Threshold	***55***	***55***	–	–	***80***	–	**1,000**
Area + Vehicle Source Emissions Threshold?	**No**	**No**	–	–	**No**	–	**No**

Note:

[1] Calculated using CalEEMod.

Emissions Summary - Flare Operating, No CHP

Emission Source	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2e
	Pounds per Day						*MT/year*
CHP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flare	0.23	0.08	0.35	0.24	0.02	0.02	17.99
Emergency Generator	0.05	0.96	1.19	0.00	0.01	0.01	2.66
Boiler	0.08	0.53	4.36	0.25	0.11	0.11	166.89
Offroad Equipment	0.06	0.76	0.87	0.00	0.04	0.03	9.61
Mobile	0.02	0.13	1.82	0.00	0.02	0.01	24.31
Digester Venting	-	-	-	-	-	-	0.06
Energy[1]	-	-	-	-	-	-	189.80
Solid Waste[1]	-	-	-	-	-	-	9.77
Total	**0.43**	**2.45**	**8.58**	**0.50**	**0.20**	**0.18**	**421.07**
Vehicle Source Emission Threshold	***25***	***25***	–	–	–	–	–
Vehicle Source Emissions Threshold Exceeded?	**No**	**No**	–	–	–	–	–
Area + Vehicle Source Emissions Threshold	***55***	***55***	–	–	***80***	–	**1,000**
Area + Vehicle Source Emissions Threshold?	**No**	**No**	–	–	**No**	–	**No**

Note:

[1] Calculated using CalEEMod.

Biogas CHP Emissions

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Combustion CO_2	CH_4	N_2O	Pass-through CO_2	CO_2e
lb/day[a]										
0.34	0.36	1.07	0.01	0.31	0.31	129.49	0.01	0.00	90.19	220.34
ton/year[b]						MT/year[b]				
0.03	0.03	0.10	0.00	0.03	0.03	10.57	0.00	0.00	7.36	17.99

Notes:

a Assumes normal operation of 23 hours per day plus one hour for start-up and shutdown.

b Assumes 180 days of operation per year.

CHP Emission Factors Normal Operation

Type	Engine Rating (hp)	Biogas Input @ Full Load (scfh)[a]	@ Full Load (MMBtu/hr)	Daily Operation (hr/day)	ROC (g/bhp-hr)[b]	NO_x (g/bhp-hr)[b]	CO (g/bhp-hr)[b]	SO_x (g/scf)[c]	PM_{10} (g/bhp-hr)[d]	$PM_{2.5}$ (g/bhp-hr)[d]	Combustion CO_2 (g/MMBtu)[e]	CH_4 (g/MMBtu)[f]	N_2O (g/MMBtu)[f]	Pass-through CO_2 (g/scf)[g]
CHP	49	80.29	0.05	23	0.12	0.12	0.3	0.00151	0.118	0.118	52070	3.2	0.63	21.23

Notes:

Biogas heating value = 587 Btu/scf — From Table 8 of Attachment C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

Biogas sulfur = 20 ppmv — From Table 8 of Attachment C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

Biogas CO_2 fraction = 0.4 — Appendix 2 of Basis of Design estimates biogas to be 60% methane.

a Biogas input at full load [scfh] = Heat input at full load [MMBtu/hr] x 106 [Btu/MMBtu] / Biogas heating value [Btu/scf]

b From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

c SOx emission factor [g/scf] = Biogas sulfur [ppmv] x 10-6 x 64 [lb/lb-mole SO] / 385.5 [scf/lb-mole] x 453.6 g/lb

d From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR. Filterable PM_{10} and $PM_{2.5}$ assumed equal to filterable PM

Condensable PM emission factor for 4-stroke lean-burn natural gas fired engibes from AP-42, Section 3.2 (Natural Gas-fired Reciprocating Internal Combustion Engines, 7/2000), Table 3.2-2 is 9.91 x 10-3 lb/MMBtu = 9.91 x 10-3 lb/MMBtu x 9.88 MMBtu/hr heat input / 1,573 hp engine rating x 453.6 g/lb = 0.0282 g/bhp-hr.

Total PM_{10} and $PM_{2.5}$ emission factor = 0.09 g/bhp-hr filterable + 0.0282 g/bhp-hr condensable = 0.0118 g/bhp-hr.

e From Table C-1 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

f From Table C-2 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

g "Pass-through" CO_2 emission factor [g/scf] = Biogas CO_2 volume fraction [unitless] x 44 [lb/lb-mole CO_2] / 385.5 [scf/lb-mole] x 453.6 g/lb

CHP Emission Factors (start-up)

ROC (g/bhp-hr)[a]	NO_x (g/bhp-hr)[a]	CO (g/bhp-hr)[a]	SO_x (g/scf)[b]	PM_{10} (g/bhp-hr)[b]	$PM_{2.5}$ (g/bhp-hr)[b]	Combustion CO_2 (g/MMBtu)[b]	CH_4 (g/MMBtu)[b]	N_2O (g/MMBtu)[b]	Pass-through CO_2 (g/scf)[b]
0.43	0.6	3	0.00151	0.118	0.118	52070	3.2	0.63	21.23

Notes:

a From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

b Same as during normal operation.

Biogas CHP Hourly Emission Factors (normal operation)[a]

ROC (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	SO_x (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	Combustion CO_2 (lb/hr)	CH_4 (lb/hr)	N_2O (lb/hr)	Pass-through CO_2 (lb/hr)
0.01	0.01	0.03	0.00	0.01	0.01	5.40	0.00	0.00	3.76

Notes:

a Except for SOx, CO_2, CH_4 and N_2O, Hourly emissions [lb/hr] = Engine rating [hp] x Emission factor [g/bhp-hr] / 453.6 [g/lb]

SOx and pass-though CO_2 hourly emissions [lb/hr] = Biogas input [scfh] x Emission factor [g/scf] / 453.6 [g/lb]

Combustion CO_2, CH_4 and N_2O hourly emisisons [lb/hr] = Heat input [MMBtu/hr] x Emission factor [g/MMBtu] / 453.6 [g/lb]

Biogas CHP Hourly Emission Factors (startup and shutdown)[a]

ROC (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	SO_x (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	Combustion CO_2 (lb/hr)	CH_4 (lb/hr)	N_2O (lb/hr)	Pass-through CO_2 (lb/hr)
0.05	0.06	0.32	0.00	0.01	0.01	5.40	0.00	0.00	3.76

Note:

a Start-up is 30 minutes with no CO, ROC, or NO_x control by SCR/catalyst system. Emissions are for one-hour period that includes 30 minute start-up.

Biogas CHP Emissions

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Combustion CO_2	CH_4	N_2O	Pass-through CO_2	CO_2e
lb/day[a]										
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ton/year[b]						MT/year[b]				
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes:

a Assumes engine is down for repair or maintenance and 100% of biogas is sent to the flare.

CHP Emission Factors Normal Operation

Type	Engine Rating (hp)	Biogas Input @ Full Load (scfh)[a]	@ Full Load (MMBtu/hr)	Daily Operation (hr/day)	ROC (g/bhp-hr)[b]	NO_x (g/bhp-hr)[b]	CO (g/bhp-hr)[b]	SO_x (g/scf)[c]	PM_{10} (g/bhp-hr)[d]	$PM_{2.5}$ (g/bhp-hr)[d]	Combustion CO_2 (g/MMBtu)[e]	CH_4 (g/MMBtu)[f]	N_2O (g/MMBtu)[f]	Pass-through CO_2 (g/scf)[g]
CHP	49	80.29	0.05	24	0.12	0.12	0.3	0.00151	0.118	0.118	52070	3.2	0.63	21.23

Notes:

Biogas heating value = 587 Btu/scf — From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

Biogas sulfur = 20 ppmv — From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

Biogas CO_2 fraction = 0.4 — Appendix 2 of Basis of Design estimates biogas to be 60% methane.

a Biogas input at full load [scfh] = Heat input at full load [MMBtu/hr] x 106 [Btu/MMBtu] / Biogas heating value [Btu/scf]

b From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

c SOx emission factor [g/scf] = Biogas sulfur [ppmv] x 10-6 x 64 [lb/lb-mole SO] / 385.5 [scf/lb-mole] x 453.6 g/lb

d From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR. Filterable PM_{10} and $PM_{2.5}$ assumed equal to filterable PM

Condensable PM emission factor for 4-stroke lean-burn natural gas fired engibes from AP-42, Section 3.2 (Natural Gas-fired Reciprocating Internal Combustion Engines, 7/2000), Table 3.2-2 is 9.91 x 10-3 lb/MMBtu = 9.91 x 10-3 lb/MMBtu x 9.88 MMBtu/hr heat input / 1,573 hp engine rating x 453.6 g/lb = 0.0282 g/bhp-hr.

Total PM_{10} and $PM_{2.5}$ emission factor = 0.09 g/bhp-hr filterable + 0.0282 g/bhp-hr condensable = 0.0118 g/bhp-hr.

e From Table C-1 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

f From Table C-2 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

g "Pass-through" CO_2 emission factor [g/scf] = Biogas CO_2 volume fraction [unitless] x 44 [lb/lb-mole CO_2] / 385.5 [scf/lb-mole] x 453.6 g/lb

CHP Emission Factors (start-up)

ROC (g/bhp-hr)[a]	NO_x (g/bhp-hr)[a]	CO (g/bhp-hr)[a]	SO_x (g/scf)[b]	PM_{10} (g/bhp-hr)[b]	$PM_{2.5}$ (g/bhp-hr)[b]	Combustion CO_2 (g/MMBtu)[b]	CH_4 (g/MMBtu)[b]	N_2O (g/MMBtu)[b]	Pass-through CO_2 (g/scf)[b]
0.43	0.6	3	0.00151	0.118	0.118	52070	3.2	0.63	21.23

Notes:

a From Table 8 of Appendix C.1 of the Tajiguas Resource Recovery Project Draft Subsequent EIR

b Same as during normal operation.

Biogas CHP Hourly Emission Factors (normal operation)[a]

ROC (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	SO_x (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	Combustion CO_2 (lb/hr)	CH_4 (lb/hr)	N_2O (lb/hr)	Pass-through CO_2 (lb/hr)
0.01	0.01	0.03	0.00	0.01	0.01	5.40	0.00	0.00	3.76

Notes:

a Except for SOx, CO_2, CH_4 and N_2O, Hourly emissions [lb/hr] = Engine rating [hp] x Emission factor [g/bhp-hr] / 453.6 [g/lb]

SOx and pass-though CO_2 hourly emissions [lb/hr] = Biogas input [scfh] x Emission factor [g/scf] / 453.6 [g/lb]

Combustion CO_2, CH_4 and N_2O hourly emisisons [lb/hr] = Heat input [MMBtu/hr] x Emission factor [g/MMBtu] / 453.6 [g/lb]

Biogas CHP Hourly Emission Factors (startup)[a]

ROC (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	SO_x (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	Combustion CO_2 (lb/hr)	CH_4 (lb/hr)	N_2O (lb/hr)	Pass-through CO_2 (lb/hr)
0.05	0.06	0.32	0.00	0.01	0.01	5.40	0.00	0.00	3.76

Note:

a Start-up is 30 minutes with no CO, ROC, or NO_x control by SCR/catalyst system. Emissions are for one-hour period that includes 30 minute start-up.

Flare Emissions - Normal Operations

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Combustion CO_2	CH_4	N_2O	Pass-through CO_2	CO_2e
lb/day[a]										
0.01	0.00	0.01	0.01	0.00	0.00	5.40	0.00	0.00	3.76	9.18
ton/year[b]						MT/year[b]				
0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.31	0.75

Notes:

a Assumes normal operation of CHP and excess gas sent to flare for 1 hour per day.

b Assumes 180 days of operation per year.

Flare Emission Factors

Type	Biogas Flow Rate (scfh)[a]	Heat Input (MMBtu/hr)[a]	Daily Operation (hr/day)	ROC (lb/MMBtu)[b]	NO_x (lb/MMBtu)[c]	CO (lb/MMBtu)[d]	SO_x (g/scf)[e]	PM_{10} (lb/MMBtu)[f]	$PM_{2.5}$ (lb/MMBtu)[f]	Combustion CO_2 (g/MMBtu)[g]	CH_4 (g/MMBtu)[h]	N_2O (g/MMBtu)[h]	Pass-through CO_2 (g/scf)[i]
Solar Spark CF-5	80.29	0.05	1	0.2	0.068	0.31	0.0576	0.02	0.02	52070	3.2	0.63	21.23

Notes:

Biogas sulfur = 200 ppmv

Biogas CO_2 fraction = 0.41 Conservative estimate

a Assumes a maximum flowrate of 1,927 cubic feet per day.

b SBCAPCD February 2016 flare study.

c AP-42, Table 13.5-1

d AP-42, Table 13.5-2

e Mass balance calculation from SBCAPCD Flare Emission Calculations (Version 2.0)

f AP-42, Chapter 1.4

g From Table C-1 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

h From Table C-2 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

i "Pass-through" CO_2 emission factor [g/scf] = Biogas CO_2 volume fraction [unitless] x 44 [lb/lb-mole CO_2] / 385.5 [scf/lb-mole] x 453.6 g/lb

Flare Hourly Emission Factors

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Combustion CO_2	CH_4	N_2O	Pass-through CO_2
0.01	0.00	0.01	0.01	0.00	0.00	5.40	0.00	0.00	3.76

Notes:

Except for SO_x and pass-through CO_2, Hourly emissions [lb/hr] = Heat input [MMBtu/hr] x Emission factor [lb/MMBtu]

SO_x and pass-through CO_2 hourly emissions [lb/hr] = Biogas input [scfh] x Emission factor [g/scf] / 453.6 [g/lb]

Flare Emissions - Normal Operations

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Combustion CO_2	CH_4	N_2O	Pass-through CO_2	CO_2e
lb/day[a]										
0.23	0.08	0.35	0.24	0.02	0.02	129.49	0.01	0.00	90.19	220.34
ton/year[b]						MT/year[b]				
0.02	0.01	0.03	0.02	0.00	0.00	10.57	0.00	0.00	7.36	17.99

Notes:

a Assumes the CHP is down and operation of flare for 24 hours per day.

b Assumes 180 days of operation per year.

Flare Emission Factors

Type	Biogas Flow Rate (scfh)[a]	Heat Input (MMBtu/hr)[a]	Daily Operation (hr/day)	ROC (lb/MMBtu)[b]	NO_x (lb/MMBtu)[c]	CO (lb/MMBtu)[d]	SO_x (g/scf)[e]	PM_{10} (lb/MMBtu)[f]	$PM_{2.5}$ (lb/MMBtu)[f]	Combustion CO_2 (g/MMBtu)[g]	CH_4 (g/MMBtu)[h]	N_2O (g/MMBtu)[h]	Pass-through CO_2 (g/scf)[i]
Solar Spark CF-5	80.29	0.05	24	0.2	0.068	0.31	0.0576	0.02	0.02	52070	3.2	0.63	21.23

Notes:

Biogas sulfur = 200 ppmv

Biogas CO_2 fraction = 0.41 Conservative estimate

a Assumes a maximum flowrate of 1,927 cubic feet per day.

b SBCAPCD February 2016 flare study.

c AP-42, Table 13.5-1

d AP-42, Table 13.5-2

e Mass balance calculation from SBCAPCD Flare Emission Calculations (Version 2.0)

f AP-42, Chapter 1.4

g From Table C-1 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

h From Table C-2 of Title 40, Code of Federal Regulations, Subpart 98 for natural gas. Biogas assumed same as natural gas because heat content is primarily from methane. Does not include "pass-through" CO_2 from biogas.

i "Pass-through" CO_2 emission factor [g/scf] = Biogas CO_2 volume fraction [unitless] x 44 [lb/lb-mole CO_2] / 385.5 [scf/lb-mole] x 453.6 g/lb

Flare Hourly Emission Factors

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Combustion CO_2	CH_4	N_2O	Pass-through CO_2
0.01	0.00	0.01	0.01	0.00	0.00	5.40	0.00	0.00	3.76

Notes:

Except for SO_x and pass-through CO_2, Hourly emissions [lb/hr] = Heat input [MMBtu/hr] x Emission factor [lb/MMBtu]

SO_x and pass-through CO_2 hourly emissions [lb/hr] = Biogas input [scfh] x Emission factor [g/scf] / 453.6 [g/lb]

Emergency Generator Emissions

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
lb/day[a]									
0.05	0.96	1.19	0.00	0.01	0.01	116.76	0.00	0.00	117.16
ton/year[b]						MT/year[b]			
0.00	0.02	0.03	0.00	0.00	0.00	2.65	0.00	0.00	2.66

Notes:

a Assumes 2 hours per day.

b Assumes 50 days of operation per year based on 2 hours per day and 50 hours for maintenance and testing.

CHP Emission Factors Normal Operation

Type	Engine Rating (hp)	Daily Operation (hr/day)	Daily Fuel Consumption (gallons)	ROC (g/bhp-hr)[a]	NO_x (g/bhp-hr)[a]	CO (g/bhp-hr)[a]	SO_x (g/bhp-hr)[b]	PM_{10} (g/bhp-hr)[a]	$PM_{2.5}$ (g/bhp-hr)[a]	CO_2 (kg/mmBtu)[c]	CH_4 (kg/mmBtu)[d]	N_2O (kg/mmBtu)[d]
Emergency Generator	49	2	5.2	0.235	4.465	5.5	0.0055	0.03	0.03	73.96	0.003	0.0006

Notes:

Emission factors are taken from the SBCAPCD DICE Emergency Standby Emissions Calculations Worksheet (Ver 1.0)

Assumes a Caterpillar XQ35 Tier 4 Engine rated at 49 horsepower.

a EPA Tier 4 for 19 to 37 kw engines. Assumes 95% NOx and 5% NMHC for the NMHC+NOx emission factor.

b EPA AP-42, Table 3.3-2, Calculated Value

c From Table C-1 of Title 40, Code of Federal Regulations, Subpart 98 for Distillate Fuel Oil No. 2.

d From Table C-2 of Title 40, Code of Federal Regulations, Subpart 98 for petroleum.

	kg CO2/mmBtu	kg CH4/mmBtu	kg N2O/mmBtu	mmBtu/gallon
Distillate Fuel Oil No2	73.96	0.003	0.0006	0.138

From Table C-1 of Title 40, Code of Federal Regulations, Subpart 98 for Distillate Fuel Oil No. 2.

From Table C-2 of Title 40, Code of Federal Regulations, Subpart 98 for petroleum.

	100% load (gal/hr)
Fuel Consumption	2.6

Assumes a Caterpillar XQ35 Tier 4 Engine rated at 49 horsepower.

Boiler Emissions

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
lb/day[a]									
0.08	0.53	4.36	0.25	0.11	0.11	2,035.79	0.10	0.02	2,044.01
ton/year[b]						MT/year[b]			
0.01	0.05	0.39	0.02	0.01	0.01	166.22	0.01	0.00	166.89

Notes:

a Assumes 24 hours per day.

b Assumes 180 days of operation per year.

Boiler Emission Factors Normal Operation

Type	Boiler Rating (MMBtu/hr)	Daily Operation (hr/day)	ROC (lb/MMBtu)[a]	NO_x (lb/MMBtu)[b]	CO (lb/MMBtu)[b]	SO_x (lb/MMBtu)[c]	PM_{10} (lb/MMBtu)[a]	$PM_{2.5}$ (lb/MMBtu)[a]	Combustion CO_2 (g/MMBtu)[d]	CH_4 (g/MMBtu)[e]	N_2O (g/MMBtu)[e]
Cleaver-Brooks CFH-700-15-15ST	0.612	24	0.0054	0.036	0.297	0.017	0.0075	0.0075	62870	3	0.6

Notes:

Emission factors are taken from the SBCAPCD Boiler and Steam Generator Emissions Calculations Worksheet (Ver 7.0)

Assumes 0.612 MMBtu/hr, 24 hours per day, and 180 days per year.

Boiler will be operated off of commercial grade propane.

a AP-42, Section 1.4

b SBCAPCD Rule 360 (30 ppmvd @ 3% O_2)

c Mass Balance Calculation based on SBCAPCD Gaseous Fuel SOx Emission Factor (Version 1.0)

d From Table C-1 of Title 40, Code of Federal Regulations, Subpart 98 for Propane.

e From Table C-2 of Title 40, Code of Federal Regulations, Subpart 98 for petroleum.

Offroad Equipment Emissions

ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
lb/day[a]									
0.06	0.76	0.87	0.00	0.04	0.03	129.40	0.04	0.02	135.79
ton/year[b]						MT/year[b]			
0.00	0.06	0.07	0.00	0.00	0.00	9.16	0.00	0.00	9.61

Notes:

a Assumes 5 hours per day.

b Assumes 156 days of operation per year.

OFFROAD Equipment Emission Factors

Equipment Type	Year	Low HP	High HP	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
				g/bhp-hr								
Skid Steer Loaders	2018	51	120	0.215828	2.859999	3.282036	0.004873	0.139781746	0.128599	490.0935	0.152573	0.068395
				lb/bhp-hr								
Skid Steer Loaders	2018	51	120	0.000476	0.006305	0.007236	1.07E-05	0.000308161	0.000284	1.080453	0.000336	0.000151

Notes: Emission factors from 2011 OFFROAD.

N2O emission factor based on scaling of CH4 to N2O for diesel fuel from Climate Registry 2017 Default Emission Factors Table 13.7.

Equipment Type	Horsepower	Load Factor
Skid Steer Loaders	65	0.37

Note:

1. Based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in 2011 OFFROAD

Vehicle Emissions

Vehicle	Trips Per Day	One-Way Distance	Miles Per Day	Miles Per Year
Heavy Duty	8	8.3	66.4	5,179
Worker Vehicles	10	8.3	83	21,580

Vehicle	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
	lb/day									
Heavy Duty	0.01	0.11	1.61	0.00	0.01	0.01	474.89	0.29	0.10	510.94
Worker Vehicles	0.00	0.02	0.20	0.00	0.01	0.00	51.97	0.02	0.00	52.83
Total	**0.02**	**0.13**	**1.82**	**0.00**	**0.02**	**0.01**	**526.86**	**0.30**	**0.10**	**563.76**
	ton/year						MT/year			
Heavy Duty	0.00	0.00	0.06	0.00	0.00	0.00	16.80	0.01	0.00	18.08
Worker Vehicles	0.00	0.00	0.03	0.00	0.00	0.00	6.13	0.00	0.00	6.23
Total	**0.00**	**0.01**	**0.09**	**0.00**	**0.00**	**0.00**	**22.93**	**0.01**	**0.00**	**24.31**

Notes: [1] Emission factors from the CARB EMFAC 2017 database.

[2] CH4 emission factors from the Climate Registry's 2017 Default Emission Factors.

Digester Biogas Venting

# of Digesters	Headspace (ft3)[1]	Number of Venting Episodes Per Year[2]	Total Volume Vented Per Year (ft3)	Methane Content (%)[3]	Methane Vented Per Year (ft3)	Density of Methane (lb/ft3)[4]	Methane Vented Per Year (lb)	Methane Vented Per Year (MT)	Methane Vented Per Year (MT CO2e)
2	3.5	26	182	60	109.2	0.0447	4.88	0.00	0.06

Notes: [1] Headspace represents 1/3 of total digester volume

[2] Assumes 1 venting episode per week, 180 days per year.

[3] Methane content from project applicant.

[4] Density of methane from engineeringtoolbox.com.

ATTACHMENT B

Operational Health Risk Assessment

DUDEK

621 CHAPALA STREET
SANTA BARBARA, CALIFORNIA 93101
T 805.963.0651 F 805.963.2074

MEMORANDUM

To:	Steve Wagner, Goleta Sanitary District
From:	Adam Poll, Dudek
Subject:	Operational Health Risk Assessment for the Organic Materials to Energy Demonstration Project
Date:	April 6, 2018
cc:	Jim Dunbar, Lystek
	Jane Gray, Dudek
Attachment A:	TAC Emissions Calculations
Attachment B:	AERMOD and HARP Output Files

1 INTRODUCTION

1.1 Purpose

In support of the air quality technical memorandum preparation, Dudek has prepared a health risk assessment (HRA) modeling analysis to estimate health risk impacts on proximate sensitive receptors from exposure to toxic air contaminant (TAC) emissions from operation of the Organic Materials to Energy Demonstration Project (proposed project).

The analysis in this HRA uses air dispersion modeling methodology to evaluate potential public health risks associated with the proposed project. Results of the modeling analysis are compared with the most recent California Environmental Quality Act (CEQA) significance thresholds established by the Santa Barbara County Air Pollution Control District (SBCAPCD).

Per CEQA Guidelines, Appendix G (14 CCR 15000 et seq.), the HRA directly addresses question (d): Would the project expose sensitive receptors to substantial pollutant concentrations?

1.2 Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure or acute (short-term) and/or chronic (long-term) non-cancer health effects. A toxic substance released into the air is considered a TAC. Examples include certain aromatic and chlorinated hydrocarbons, diesel particulate matter

(DPM), certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and non-carcinogenic effects. Non-carcinogenic effects typically affect one or more target organ systems and may be experienced through either acute or chronic exposure to a given TAC.

California's air toxics control program began in 1983 with the passage of Assembly Bill 1807, the Toxic Air Contaminant Identification and Control Act, better known as the Tanner Bill. The Tanner Bill established a regulatory process for the scientific and public review of individual toxic compounds. When a compound becomes listed as a TAC under the Tanner Bill, the California Air Resources Board (CARB) normally establishes minimum statewide emission-control measures to be adopted by air quality management districts and air pollution control districts. By 1992, 18 of the 189 federal hazardous air pollutants had been listed by CARB as state TACs. In April 1993, CARB added 171 substances to the state program to make the state TAC list equal to the federal list of hazardous air pollutants. In 1998, CARB designated DPM as a TAC (CARB 1998). The exhaust from diesel engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. DPM has established cancer risk factors and relative exposure values for chronic health hazard impacts. No acute relative exposure values are established for DPM; therefore, acute impacts of DPM are not addressed in this HRA.

The second major component of California's air toxics program, supplementing the Tanner process, was provided by the passage of Assembly Bill 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Assembly Bill 2588 currently regulates over 600 compounds, including all of the Tanner Bill–designated TACs.

Additionally, Proposition 65, passed by California voters in 1986, requires that a list of carcinogenic and reproductive toxicants found in the environment be compiled; the discharge of these toxicants into drinking water be prohibited; and warnings of public exposure by air, land, or water be posted if a significant adverse public health risk is posed. The emission of any listed substances by a facility would require a public warning unless health risks could be demonstrated to be less than significant. For carcinogens, Proposition 65 defines the "no significant risk level" as the level of exposure that would result in an increased cancer risk of greater than 1 in 100,000 over a 70-year lifetime (27 CCR 25711). The "no significant risk level" is 1 in 1,000 of the "no observable effect level" for reproductive toxicants.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80% decrease in statewide diesel health risk by 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy-Duty Diesel Vehicle (In-Use) Regulation, On-Road Heavy-Duty (New) Vehicle Program, In-Use Off-Road Diesel Vehicle Regulation, and New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

1.3 Cancer Risk

Cancer risk is defined as the increase in lifetime probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased probability in 1 million. The cancer risk from inhalation of a TAC is estimated by calculating the inhalation (and if applicable, ingestion) dose in units of milligrams/kilogram body weight per day (mg/kg-day) based on an ambient concentration in units of micrograms per cubic meter ($\mu g/m^3$), breathing rate, and exposure period and multiplying the dose by the inhalation cancer potency factor, expressed as $(mg/kg\text{-}day)^{-1}$. Cancer risks are typically calculated for all carcinogenic TACs and summed to calculate the overall increase in cancer risk to an individual. The calculation procedure assumes that cancer risk is proportional to concentrations at any level of exposure and that risks due to different carcinogens are additive. This approach is generally considered a conservative assumption at low doses and is consistent with the current Office of Environmental Health Hazard Assessment (OEHHA) regulatory approach. Exposure to carcinogenic TACs does not imply that the exposed individual would contract cancer; rather, the cancer risk is a probability of developing cancer if other factors (e.g., heredity, exposure to environmental or workplace risks that compromise the immune system, overall health) would result in an increased susceptibility to developing cancer.

The cancer risk calculations were performed by multiplying the predicted dispersion modeled output data by the TAC emissions and the appropriate risk values. The exposure and risk equations that were used to calculate the cancer risk at receptors are integrated in the CARB Hotspots Analysis and Reporting Program, Version 2 (HARP2) (CARB 2015) model, in accordance with the 2015 Risk Assessment Guidelines Manual (OEHHA 2015).

The following equations were used to calculate the cancer risk using the model output data and estimated TAC emissions associated with the project operation:

$$\text{Cancer risk} = DOSE * CPF * ASF * ED/AT * FAH,$$

$$DOSE = (C_{air} * DBR * A * EF * 10^{-6}),$$

$$C_{air} = ER * X/Q,$$

where

$DOSE$ = daily inhalation dose (mg/kg-day),

CPF = cancer potency factor $(\text{mg/kg-day})^{-1}$,

ASF = age sensitivity factor for a specified age group (unitless),

ED = exposure duration (in years) for a specified age group,

AT = averaging time for lifetime cancer risk (years),

FAH = Fraction of time spent at home (unitless),

C_{air} = average air concentration of TAC from the air dispersion model ($\mu g/m^3$),

DBR = daily breathing rate (L/kg body weight-day),

EF = exposure frequency (unitless), days/365 days,

A = inhalation absorption factor (unitless),

10^{-6} = micrograms to milligrams conversion, liters to cubic meters conversion,

ER = emission rates (grams/second),

X/Q = model output data ($\mu g/m^3$)/(grams/second).

1.4 Non-Cancer Health Impacts

The non-cancer health impact of an inhaled TAC is measured by the hazard quotient, which is the ratio of the ambient concentration of a TAC in units of $\mu g/m^3$ divided by the reference exposure level (REL), also in units of $\mu g/m^3$. The REL is the concentration at or below which no adverse health effects are anticipated. The REL is typically based on health effects on a particular target organ system, such as the respiratory system, liver, or central nervous system. Hazard quotients of individual TACs are then summed for each target organ system to obtain a hazard index. For DPM, the target organ system is the respiratory system.

In addition to the potential cancer risk, certain TACs have chronic (i.e., long-term) non-cancer health impacts. The chronic hazard index (HIC) for TACs was calculated by dividing the maximum modeled annual average concentration of TACs by its REL as implemented by HARP2.

The chronic hazard quotients were calculated for DPM using the following equations (OEHHA 2015):

$$HIC = (C_{air} / REL),$$

where

HIC = chronic hazard index,

C_{air} = annual average concentration ($\mu g/m^3$),

REL = chronic reference exposure level ($\mu g/m^3$).

2 GUIDANCE AND THRESHOLDS

2.1 Office of Environmental Health Hazard Assessment's Guidance

OEHHA's most recent guidance is the 2015 Risk Assessment Guidelines Manual (OEHHA 2015), which was adopted in 2015 to replace the 2003 HRA Guidance Manual. The Children's Environmental Health Protection Act of 1999 (Senate Bill 25), which requires explicit consideration of infants and children in assessing risks from air toxics, requires revisions of the methods for both non-cancer and cancer risk assessment and of the exposure assumptions in the 2003 HRA Guidance Manual. In response to Senate Bill 25, OEHHA released three technical support documents addressing RELs (OEHHA 2008), cancer potency (OEHHA 2009), and exposure assessment and stochastic analysis (OEHHA 2012) and adopted the 2015 Risk Assessment Guidelines Manual (OEHHA 2015). The technical support document for RELs and continuing work to reevaluate TACs to ensure adequate protection for infants and children has led to revisions of RELs for approximately 10 chemicals and chemical families. The basic methodology for evaluating acute and chronic health effects using the RELs otherwise remained the same as in the previous guidance manual. Moreover, RELs are designed to protect the most sensitive individuals in the population, including infants and children, by selecting appropriate toxicological data and including margins of safety. Accordingly, the evaluation methods are assumed to protect children and other sensitive subpopulations (groups of more highly susceptible individuals) from adverse health effects in the event of exposure (OEHHA 2008).

The cancer risk methodology described in the exposure assessment and stochastic analysis technical support document and the 2015 Risk Assessment Guidelines Manual accounts for the higher sensitivity of infants and children by applying age-specific daily breathing rates and age-sensitivity factors. According to the technical support document, "accounting for effects of early-in-life exposure requires accounting for both the increased potency of early in life exposure to carcinogens and the greater exposure on a per [kilogram] body weight that occurs early in life due to behavioral and physiological differences between infants and children, and adults" (OEHHA 2012). In part, early-life periods are accounted for through the use of age-sensitivity factors. Compared to the previous guidance, which relied on a single breathing rate for all ages, the revised guidance includes age-specific daily breathing rates that reflect the differences for infants, children, and adults. This HRA uses HARP2, which incorporates RELs and cancer potency factors, which are periodically updated, and health effects calculations based on the 2015 Risk Assessment Guidelines Manual. Accordingly, this HRA evaluates and reflects conservative, health-protective methodologies to assess health impacts to adults, as well as infants, children, and other sensitive subpopulations.

2.2 Santa Barbara County Air Pollution Control District Guidance

The SBCAPCD's Form 15i – Modeling Guidelines for Health Risk Assessment (SBCAPCD 2017) provides guidance to perform HRAs within the South Central Coast Air Basin. Although the SBCAPCD Guidance specifically targets health risk from air toxic emissions from stationary source operations, the thresholds were adapted here for informational purposes. The SBCAPCD's current thresholds of significance for TAC emissions from the operations of permitted and non-permitted sources are presented in Table 1.

Table 1
SBCAPCD TAC Emissions Thresholds

Carcinogens	Non-Carcinogens
	Chronic
Maximally exposed individual risk equals or exceeds 10 in one million	Hazard index equals or exceeds 1 for the maximally exposed individual

Source: SBCAPCD 2017.
Notes: SBCAPCD = Santa Barbara County Air Pollution Control District; TAC = toxic air contaminant.

3 EMISSION CALCULATIONS

Emissions from the operational phase of the project were estimated using a spreadsheet based model and emissions factors from OFFROAD2007 (CARB 2011) and the U.S. Environmental Protection Agency's AP-42 (EPA 2018). The following calculation worksheets were also used to

guide emissions calculations from the SBCAPD: Boiler and Steam Generator Emission Calculations (Version 7.0); DICE Emergency Standby Emission Calculations (Version 1.0); and Oilfield Flare Emission Calculations (Version 2.0). Detailed emission calculations and results are provided in Attachment A.

Stationary Sources

The project has several stationary sources located on site that will emit criteria air pollutants during operation. As part of the food waste conversion process, biogas composed of approximately 60% methane will be generated. The biogas will be combusted using a combined heat and power (CHP) unit to generate electricity onsite. The electricity generated will be stored in batteries and then used to charge electric golf carts used at the Goleta Sanitary District. The CHP is rated at 49 horsepower and emissions were calculated based on assumptions derived within the Tajiguas Landfill Resource Recovery Project EIR (AECOM 2014). It was assumed that the unit would combust up to 80.29 cubic feet per hour of biogas (Design 2 Operate 2017).

There are three scenarios in which the CHP would not be used to combust the biogas: when the biogas flow rate is insufficient for the CHP; when the biogas flowrate exceeds the needs of the CHP; and when the CHP is inoperable. In any of these cases the biogas will be sent to a portable flare, Solar Spark Passive Vent Flare Model CF-5. In order to conservatively estimate emissions, the scenario in which the CHP is inoperable and the flare operates (24 hours per day, 180 days per year) was modeled to represent a worst-case scenario.

Once the food waste has been processed via anaerobic digestion, any solids are processed using the Lystek technology. Part of the Lystek process requires heating of the material. A 0.612-million-British-thermal-unit-per-hour (MMBtu/hr) boiler would be used to provide steam to heat the material during the Lystek process. The boiler would operate on commercial-grade propane. The Cleaver-Brooks Model CFH-700-15-15ST boiler is a South Coast Air Quality Management District Rule 1146.2 certified boiler. It was assumed that the boiler would operate 24 hours per day and 180 days per year.

The project would also include an emergency generator in the case that the power is not available from the grid. It was assumed that the generator would power just one component at a time, not the entire project. The generator would be a Tier 4 Final diesel engine (Caterpillar XQ35) rated at 49 horsepower.

Mobile Sources

Mobile sources for the project would primarily be motor vehicles (automobiles, light-duty trucks, and refuse trucks) traveling to and from the project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Based on conservative estimates for vehicular movement, the project is anticipated to have up to 8 one-way trips per day from heavy duty trucks and up to 10 one-way trips per day from worker vehicles. Emission factors representing the vehicle mix and emissions for Year 2018 from CARB's EMFAC2017 model (CARB 2018) were used to estimate emissions associated with full buildout of the project. It was assumed that the heavy-duty refuse trucks would be powered by natural gas, which is consistent with what MarBorg Industries (the Santa Barbara County solid waste contractor) uses (MarBorg 2018).

Off-Road Equipment

The project would use a skidsteer loader as part of the operation for loading food waste into the components. The size of the loader was based on the weighted average horsepower (by equipment population) and load factors for the mode of engine groupings in CARB's OFFROAD2007 model (CARB 2011). The loader was assumed to operate up to 5 hours per day and 3 days per week.

4 MODELING METHODOLOGY

4.1 Dispersion Model

For risk assessment purposes, coarse particulate matter (PM_{10}) in diesel exhaust is considered DPM, originating mainly from off-road equipment operating at a defined location for a given length of time at a given distance from sensitive receptors. These emissions, as well as other TAC emissions from on-site sources, could result in elevated concentrations of TACs at nearby receptors, which could lead to an increase in the risk of cancer or other health impacts. The dispersion modeling was performed using American Meteorological Society/U.S. Environmental Protection Agency Regulatory Model (AERMOD) View Version 9.5.0, which is the model SBCAPCD recommends for atmospheric dispersion of emissions. AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of surface and elevated sources, building downwash, and simple and complex terrain (EPA 2017).

Principal parameters of AERMOD for project construction include the following:

- **Dispersion Model:** AERMOD was run with all sources emitting unit emissions (1 gram/second) to obtain the X/Q values. "X/Q" is a dispersion factor that is the average effluent concentration normalized by source strength, and is used as a way to simplify the representation of emissions from many sources. The X/Q values of ground-level concentrations were determined for construction emissions using AERMOD and the maximum concentrations determined for the 1-hour and Period averaging periods.
- **Meteorological Data:** The latest 5-year meteorological data (2012–2016) for the Santa Barbara Airport station (Station ID 23190) from SBCAPCD were downloaded, and then input to AERMOD. For cancer or chronic non-cancer risk assessments, the average cancer risk of all years modeled was used.
- **Urban and Rural Options:** Typically, urban areas have more surface roughness and structures and low-albedo surfaces that absorb more sunlight, and thus, more heat, relative to rural areas. However, according to SBCAPCD guidelines, the rural dispersion option was selected due to the predominantly rural area within 3 kilometers of the project site.
- **Terrain Characteristics:** The terrain in the vicinity of the modeled project site is generally flat. The elevation of the modeled site is approximately 13 feet above sea level. Digital elevation model files were imported into AERMOD so that complex terrain features were evaluated as appropriate.
- **Discrete Receptors:** A uniform Cartesian grid was placed over the project site with 20-meter (66-foot) spacing and converted into discrete receptors to represent the maximally exposed individual resident and the maximally exposed individual worker. Property boundary receptors were also included to determine the point of maximum impact.
- **Source Equipment Operating Scenarios:** Air dispersion modeling of operational equipment and diesel vehicles was conducted using emissions generated using a spreadsheet model, conservatively assuming the emissions would occur 24 hours per day, 180 days per year. The CHP, boiler, flare, and emergency generator were modeled as point sources. The off-road equipment and heavy-duty vehicles were modeled as raised area sources.
- **Source Release Characterizations:** For modeling operational emissions impacts using AERMOD, it was assumed that the activities would occur on site over a 2-year period, consistent with the project description.

4.2 Health Risk Assessment Methodology

In March 2015, the OEHHA approved the new 2015 Risk Assessment Guidelines Manual (OEHHA 2015). The SBCAPCD requires that all HRAs prepared for CEQA documents follow SBCAPCD policies in conjunction with the 2015 Risk Assessment Guidelines Manual. To implement the OEHHA guidance based on project information, the SBCAPCD has developed a three-tiered approach where each successive tier is progressively more refined, with each progressive level being less conservative. SBCAPCD's Tier 1 approach is a screening assessment methodology that incorporates very conservative assumption methodologies when specific information about a project and its impact locations to actual or assumed receptor locations are unknown. The Tier 2 approach provides a more accurate analysis because it requires specific modeling input for project sources and proximate receptors that refine the Tier 1 approach. Based on the known information pertaining to the project site, construction activities, and proximate sensitive receptors, the Tier 2 analysis was performed for the HRA. For the residential health risk associated with operation, the HRA assumes that exposure would start in the third trimester of pregnancy and occur 24 hours per day, 5 days per week, for 24 months to account for the short-term project duration.

5 RECEPTORS USED FOR EVALUATING MODELED IMPACTS

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air-pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). SBCAPCD considers schools, daycare centers, hospitals, and care facilities (adult/elderly) within 2 kilometers (1.2 miles) of the facility as sensitive receptor land uses (SBCAPCD 2017). The closest sensitive receptor to the project site is a residence 2,156 feet to the east.

6 HRA RESULTS

The results of the HRA are provided in Table 2. AERMOD and HARP2 outputs are contained in Attachment B.

Table 2
Operational Activity Health Risk Assessment Results

Impact Parameter	Units	Proposed Project Impact	CEQA Threshold	Level of Significance
PMI – cancer risk	Per million	0.2	10.0	Less than significant
PMI – HIC	Not applicable	0.001	1.0	Less than significant
MEIR – cancer risk	Per million	0.002	10.0	Less than significant
MEIR – HIC	Not applicable	0.000001	1.0	Less than significant
MEIW – cancer risk	Per million	0.0002	10.0	Less than significant
MEIW – HIC	Not applicable	0.00005	1.0	Less than significant

Source: Attachment B.
Notes: CEQA = California Environmental Quality Act; PMI = point of maximum impact; HIC = chronic hazard index; MEIR = maximally exposed individual receptor; MEIW = maximally exposed individual worker.

Based on this analysis, the sensitive receptors in close proximity to the project would not be exposed to TACs at levels above significance thresholds established by SBCAPCD. Therefore, with respect to CEQA Appendix G, air quality question (d), TAC emissions from construction of the proposed project would not expose sensitive receptors to substantial pollutant concentrations. The results determined in this analysis reflect reasonable estimates of source emissions and exhaust characteristics, available meteorological data near the project site, and the use of currently approved air quality models. Given the limits of available tools for such an analysis, the actual impacts may vary from the estimates in this assessment. However, the combined use of the AERMOD dispersion model and the health impact calculations required by OEHHA and SBCAPCD tend to over-predict impacts such that they produce conservative (i.e., health-protective) results. Accordingly, the health impacts are not expected to be higher than those estimated in this assessment.

7 REFERENCES

13 CCR 2025. Final Regulation Order to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and Other Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles.

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

27 CCR 25711. Safe Drinking Water and Toxic Enforcement Act of 1986, Levels Based on State or Federal Standards.

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ATTACHMENT A

TAC Emissions Calculations

Flare Toxic Air Contaminant Emissions from Biogas Combustion

Compound	CAS Number	Emission Factor (lb/MMscf)	Emission Factor Source[a]	Hourly Emission Rate (lb/hr)[b]	Annual Emission Rate (lb/yr)[c]
Indeno(1,2,3-cd)pyrene	193-39-5	5.60E-02	CATEF	4.50E-06	1.94E-02
Manganese	7439-96-5	2.92E-03	Source Test	2.34E-07	1.01E-03
Naphthalene	91-20-3	1.75E-04	Source Test	1.41E-08	6.07E-05
Nickel	7440-02-0	1.43E-03	Source Test	1.15E-07	4.96E-04
Perylene	198-55-0	7.48E-05	CATEF	6.01E-09	2.59E-05
Phenanthrene	85-01-8	9.85E-04	Source Test	7.91E-08	3.42E-04
Pyrene	129-00-0	3.04E-05	Source Test	2.44E-09	1.05E-05
Toluene	108-88-3	1.09E+02	CATEF	8.75E-03	3.78E+01
Trichloroethene	79-01-6	1.13E+00	CATEF	9.07E-05	3.92E-01
Vinyl Chloride	75-01-4	7.64E-02	CATEF	6.13E-06	2.65E-02
Xylene (m,p)	1330-20-7	4.61E-01	CATEF	3.70E-05	1.60E-01
Xylene (o)	95-47-6	3.35E-01	CATEF	2.69E-05	1.16E-01
Zinc	7440-66-6	4.28E+00	CATEF	3.44E-04	1.48E+00
1,1,1-Trichloroethane	71-55-6	3.37E-01	CATEF	2.71E-05	1.17E-01
1,1-Dichloroethane	75-34-3	4.37E-01	CATEF	3.51E-05	1.52E-01
1,2-Dichloroethane	107-06-2	1.35E+00	CATEF	1.08E-04	4.68E-01
1,4-Dioxane	123-91-1	4.55E-03	Source Test	3.65E-07	1.58E-03
2-Methylnaphthalene	91-57-6	9.56E-05	Source Test	7.68E-09	3.32E-05
Acenaphthene	83-32-9	7.04E-06	Source Test	5.65E-10	2.44E-06
Acenaphthylene	208-96-8	1.09E-04	Source Test	8.75E-09	3.78E-05
Acetaldehyde	75-07-0	6.53E-01	CATEF	5.24E-05	2.26E-01
Acetonitrile	75-05-8	7.96E+00	CATEF	6.39E-04	2.76E+00
Acrolein	107-02-8	9.33E-02	CATEF	7.49E-06	3.24E-02
Acrylonitrile	107-13-1	4.50E-03	Source Test	3.61E-07	1.56E-03
Anthracene	120-12-7	1.10E-05	Source Test	8.83E-10	3.82E-06
Arsenic	7440-38-2	5.91E-02	Source Test	4.75E-06	2.05E-02
Benzene	71-43-2	8.59E-01	CATEF	6.90E-05	2.98E-01
Benzo(a)anthracene	56-55-6	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(a)pyrene	50-32-8	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(b)fluoranthene	205-99-2	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(e)pyrene	192-97-2	7.48E-05	CATEF	6.01E-09	2.59E-05
Benzo(g,h,i)perylene	191-24-2	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(k)fluoranthene	207-08-9	5.60E-02	CATEF	4.50E-06	1.94E-02
Cadmium	7440-43-9	1.43E-03	Source Test	1.15E-07	4.96E-04
Carbon Tetrachloride	56-23-5	3.76E-02	CATEF	3.02E-06	1.30E-02
Chlorobenzene	108-90-7	8.69E-01	CATEF	6.98E-05	3.01E-01
Chloroform	67-66-3	5.60E-02	CATEF	4.50E-06	1.94E-02
Chromium (Hex)	18540-29-9	1.21E-05	Source Test	9.72E-10	4.20E-06
Chromium (Total)	7440-47-3	4.64E-03	Source Test	3.73E-07	1.61E-03
Chrysene	218-01-9	6.51E-06	Source Test	5.23E-10	2.26E-06
Copper	7440-50-8	4.86E+00	CATEF	3.90E-04	1.69E+00
Dibenz(a,h)anthracene	53-70-3	5.60E-02	CATEF	4.50E-06	1.94E-02
Dichloromethane	75-09-2	4.29E-01	CATEF	3.44E-05	1.49E-01
Fluoranthene	206-44-0	1.40E-05	Source Test	1.12E-09	4.86E-06
Fluorene	86-73-7	2.84E-04	Source Test	2.28E-08	9.85E-05
Formaldehyde	50-00-0	1.77E-01	Source Test	1.42E-05	6.14E-02
HCl	7647-01-0	1.61E-03	Source Test	1.29E-07	5.58E-04
HF	7664-39-3	2.15E-01	Source Test	1.73E-05	7.46E-02
Hourly Biogas flow rate =	80.29	scfh			
Total Annual biogas flow rate	346,853				

a CATEF = Maximum emission factors from California Air Toxics Emission Factors http://www.arb.ca.gov/app/emsinv/catef_form.html for flare fired on landfill gas based on assumption that biogas composition is similar to landfill gas

Source Test = September 9-11 2010 source tests on Santa Maria Landfill flare combusting LFG. Non-detects set to detection limit.

b Hourly emission rate [lb/hr] = Emission factor [lb/MMscf] x Biogas flow rate [scfh] / 10^6 [scf/MMscf]

b Annual emission rate [lb/yr] = Emission factor [lb/MMscf] x Annual biogas flow rate [scf/yr] / 10^6 [scf/MMscf]

CHP Engine Toxic Air Contaminant Emissions from Biogas Combustion

Compound	CAS Number	Emission Factor (lb/MMscf)[a]	Hourly Emission Rate (lb/hr)[b]	Annual Emission Rate (lb/yr)[c]
Benzene	71-43-2	9.48E-03	7.61E-07	3.29E-03
Benzo(a)anthracene	56-55-6	1.60E-06	1.28E-10	5.55E-07
Benzo(a)pyrene	50-32-8	2.70E-07	2.17E-11	9.37E-08
Benzo(b)fluoranthene	205-99-2	4.88E-07	3.92E-11	1.69E-07
Benzo(k)fluoranthene	207-08-9	2.70E-07	2.17E-11	9.37E-08
Carbon Tetrachloride	56-23-5	1.14E-04	9.15E-09	3.95E-05
Chloroform	67-66-3	1.13E-04	9.07E-09	3.92E-05
Chrysene	218-01-9	5.87E-06	4.71E-10	2.04E-06
Dibenz(a,h)anthracene	53-70-3	2.70E-07	2.17E-11	9.37E-08
Ethylene Dibromide	106-93-4	1.12E-04	8.99E-09	3.88E-05
Ethylene Dichloride	106-93-4	5.08E-03	4.08E-07	1.76E-03
Formaldehyde	50-00-0	1.49E+00	1.20E-04	5.17E-01
Hydrochloric Acid	7647-01-0	2.07E+00	1.66E-04	7.18E-01
Indeno(1,2,3-cd)pyrene	193-39-5	2.70E-07	2.17E-11	9.37E-08
Methyl Chloroform	71-55-6	1.11E-04	8.91E-09	3.85E-05
Methylene Chloride	75-09-2	1.30E-04	1.04E-08	4.51E-05
Napthtalene	91-20-3	7.38E-04	5.93E-08	2.56E-04
Perchloroethylene	127-18-4	5.84E-04	4.69E-08	2.03E-04
Trichloroethylene	79-01-6	1.49E-03	1.20E-07	5.17E-04
Vinyl Chloride	75-01-4	1.63E-04	1.31E-08	5.65E-05
Biogas flow rate =	80.29	scfh		
346,853	scf/year	Hourly biogas [scfh] x Annual op. hours [hr/year]		

a Santa Barbara County Air Pollution Control District approved emission factors for landfill gas-fired IC engines with oxidation catalyst

b Hourly emission rate [lb/hr] = Emission factor [lb/MMscf] x biogas flow rate [scfh] / 10^6 [scf/MMsc]
Molar volume [scf/lb-mole] x (1 - Engine destruction efficiency [%] / 100) x (1 - Oxidation catalyst efficiency [%] / 100)

c Annual emission rate [lb/yr] = Emission factor [lb/MMscf] x annual biogas flow rate [scf/year] / 10^6 [scf/MMsc]

Skip-Loader

Compound	CAS Number	Emission Factor (lb/1,000 gal)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.1863	5.03E-04	3.92E-01
Formaldehyde	50-00-0	1.7261	4.66E-03	3.64E+00
Acetaldehyde	75-07-0	0.7833	2.11E-03	1.65E+00
Acrolein	107-02-8	0.0339	9.15E-05	7.14E-02
1,3-Butadiene	106-99-0	0.2174	5.87E-04	4.58E-01
Toluene	108-88-3	0.1054	2.85E-04	2.22E-01
Xylenes	1330-20-7	0.0424	1.14E-04	8.93E-02
Hydrogen chloride	7647-01-0	0.1863	5.03E-04	3.92E-01
Arsenic	7440-38-2	0.0016	4.32E-06	3.37E-03
Copper	7440-50-8	0.0041	1.11E-05	8.63E-03
Mercury	7439-97-6	0.0020	5.40E-06	4.21E-03
Nickel	7440-02-0	0.0039	1.05E-05	8.21E-03
DPM	9901	-	9.92E-02	4.96E+00
Hourly fuel use =	2.7	gal/hr	780	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for Diesel Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

On-Site Motor Vehicles Entrance to/from Facility

Compound	CAS Number	Emission Factor (lb/MMBtuH)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.0080	1.60E-05	8.32E-04
Formaldehyde	50-00-0	0.0170	3.40E-05	1.77E-03
PAH	56-55-3	0.0004	8.00E-07	4.16E-05
naphthalene	91-20-3	0.0003	6.00E-07	3.12E-05
Acetaldehyde	75-07-0	0.0043	8.60E-06	4.47E-04
Acrolein	107-02-8	0.0027	5.40E-06	2.81E-04
Propylene	115-07-1	0.7310	1.46E-03	7.60E-02
Toluene	108-88-3	0.0366	7.32E-05	3.81E-03
Xylenes	1330-20-7	0.0272	5.44E-05	2.83E-03
Ethyl Benzene	100-41-4	0.0095	1.90E-05	9.88E-04
Hexane	110-54-3	0.0063	1.26E-05	6.55E-04
Hourly fuel use =	2	MMBtu/h	52	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for natural gas Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

Emergency Generator

Compound	CAS Number	Emission Factor (lb/1,000 gal)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.1863	2.14E-03	1.07E-01
Formaldehyde	50-00-0	1.7261	1.99E-02	9.93E-01
Acetaldehyde	75-07-0	0.7833	9.01E-03	4.50E-01
Acrolein	107-02-8	0.0339	3.90E-04	1.95E-02
1,3-Butadiene	106-99-0	0.2174	2.50E-03	1.25E-01
Toluene	108-88-3	0.1054	1.21E-03	6.06E-02
Xylenes	1330-20-7	0.0424	4.88E-04	2.44E-02
Hydrogen chloride	7647-01-0	0.1863	2.14E-03	1.07E-01
Arsenic	7440-38-2	0.0016	1.84E-05	9.20E-04
Copper	7440-50-8	0.0041	4.72E-05	2.36E-03
Mercury	7439-97-6	0.0020	2.30E-05	1.15E-03
Nickel	7440-02-0	0.0039	4.49E-05	2.24E-03
DPM	9901	-	3.24E-03	1.62E-01
Hourly fuel use =	11.5	gal/hr	50	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for diesel Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

Boiler

Compound	CAS Number	Emission Factor (lb/MMBtuH)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.0080	5.16E-06	7.43E-03
Formaldehyde	50-00-0	0.0170	1.10E-05	1.58E-02
PAH	56-55-3	0.0004	2.58E-07	3.72E-04
naphthalene	91-20-3	0.0003	1.94E-07	2.79E-04
Acetaldehyde	75-07-0	0.0043	2.77E-06	3.99E-03
Acrolein	107-02-8	0.0027	1.74E-06	2.51E-03
Propylene	115-07-1	0.7310	4.71E-04	6.79E-01
Toluene	108-88-3	0.0366	2.36E-05	3.40E-02
Xylenes	1330-20-7	0.0272	1.75E-05	2.53E-02
Ethyl Benzene	100-41-4	0.0095	6.13E-06	8.82E-03
Hexane	110-54-3	0.0063	4.06E-06	5.85E-03
Hourly fuel use =	0.645	MMBtu/h	1440	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for natural gas Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

ATTACHMENT B

AERMOD and HARP Output Files

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** MODEL SETUP OPTIONS SUMMARY ***

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.

**Other Options Specified:
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: VARIOUS

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 6 Source(s); 1 Source Group(s); and 411 Receptor(s)

with: 4 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 2 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 16216

**Output Options Selected:

Model Outputs Tables of PERIOD Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 2.74 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.7 MB of RAM.

**Detailed Error/Message File: GSD Foodwaste.err
**File for Summary of Results: GSD Foodwaste.sum

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: SBA12-16\SBA12-16.SFC Met Version: 16216
Profile file: SBA12-16\SBA12-16.PFL

Surface format: FREE
Profile format: FREE
Surface station no.: 23190 Upper air station no.: 93214
Name: SANTA_BARBARA/FAA_AIRPORT Name: UNKNOWN
Year: 2012 Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-1.8	0.043	-9.000	-9.000	-999.	21.	3.9	0.08	0.45	1.00	1.04	49.	10.0	278.8	2.0
12	01	01	1	02	-1.1	0.032	-9.000	-9.000	-999.	14.	2.9	0.08	0.45	1.00	0.79	336.	10.0	277.0	2.0
12	01	01	1	03	-1.7	0.041	-9.000	-9.000	-999.	20.	3.7	0.08	0.45	1.00	0.99	31.	10.0	277.0	2.0
12	01	01	1	04	-0.4	0.023	-9.000	-9.000	-999.	9.	3.0	0.08	0.45	1.00	0.57	334.	10.0	277.0	2.0
12	01	01	1	05	-0.7	0.027	-9.000	-9.000	-999.	10.	2.4	0.08	0.45	1.00	0.65	356.	10.0	277.0	2.0
12	01	01	1	06	-0.8	0.028	-9.000	-9.000	-999.	11.	2.5	0.08	0.45	1.00	0.67	30.	10.0	276.4	2.0
12	01	01	1	07	-1.4	0.038	-9.000	-9.000	-999.	18.	3.4	0.08	0.45	1.00	0.92	351.	10.0	276.4	2.0
12	01	01	1	08	-0.8	0.028	-9.000	-9.000	-999.	11.	2.7	0.08	0.45	0.57	0.69	51.	10.0	277.5	2.0
12	01	01	1	09	11.5	0.054	-9.000	-9.000	-999.	30.	-1.2	0.08	0.45	0.31	0.35	25.	10.0	283.1	2.0
12	01	01	1	10	44.2	0.083	-9.000	-9.000	-999.	58.	-1.2	0.06	0.45	0.22	0.60	81.	10.0	288.8	2.0
12	01	01	1	11	67.0	0.222	-9.000	-9.000	-999.	251.	-14.9	0.15	0.45	0.19	1.86	169.	10.0	289.2	2.0
12	01	01	1	12	79.1	0.256	-9.000	-9.000	-999.	311.	-19.3	0.17	0.45	0.18	2.10	241.	10.0	289.9	2.0
12	01	01	1	13	79.3	0.330	-9.000	-9.000	-999.	455.	-41.1	0.17	0.45	0.17	2.93	256.	10.0	288.8	2.0
12	01	01	1	14	68.3	0.345	-9.000	-9.000	-999.	485.	-54.4	0.17	0.45	0.18	3.13	258.	10.0	288.1	2.0
12	01	01	1	15	46.3	0.326	-9.000	-9.000	-999.	447.	-68.0	0.17	0.45	0.21	3.01	254.	10.0	287.0	2.0
12	01	01	1	16	15.2	0.335	-9.000	-9.000	-999.	464.	-224.4	0.17	0.45	0.29	3.27	263.	10.0	285.9	2.0
12	01	01	1	17	-9.5	0.180	-9.000	-9.000	-999.	201.	56.5	0.17	0.45	0.54	2.23	260.	10.0	283.1	2.0
12	01	01	1	18	-12.8	0.226	-9.000	-9.000	-999.	258.	82.2	0.17	0.45	1.00	2.64	268.	10.0	283.1	2.0
12	01	01	1	19	-2.4	0.058	-9.000	-9.000	-999.	78.	7.3	0.07	0.45	1.00	1.45	294.	10.0	282.0	2.0
12	01	01	1	20	-2.1	0.052	-9.000	-9.000	-999.	29.	6.0	0.07	0.45	1.00	1.30	292.	10.0	280.4	2.0
12	01	01	1	21	-3.8	0.074	-9.000	-9.000	-999.	48.	9.5	0.08	0.45	1.00	1.77	311.	10.0	281.4	2.0
12	01	01	1	22	-1.5	0.045	-9.000	-9.000	-999.	23.	5.8	0.08	0.45	1.00	1.11	341.	10.0	279.9	2.0
12	01	01	1	23	-1.7	0.042	-9.000	-9.000	-999.	21.	4.1	0.08	0.45	1.00	1.01	318.	10.0	277.5	2.0
12	01	01	1	24	-1.2	0.041	-9.000	-9.000	-999.	20.	5.2	0.08	0.45	1.00	0.99	353.	10.0	279.2	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.0	1	49.	1.04	278.8	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF VARIOUS IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE

GRID-ID
- -

ALL 1ST HIGHEST VALUE IS 322.93075 AT (239647.80, 3812574.85, 8.20, 20.00, 0.00) DC
2ND HIGHEST VALUE IS 313.71284 AT (239657.58, 3812574.85, 8.13, 21.00, 0.00) DC
3RD HIGHEST VALUE IS 305.78381 AT (239638.02, 3812574.85, 8.41, 19.00, 0.00) DC
4TH HIGHEST VALUE IS 283.06975 AT (239628.24, 3812574.85, 8.67, 19.00, 0.00) DC
5TH HIGHEST VALUE IS 254.52072 AT (239618.45, 3812574.85, 8.93, 8.93, 0.00) DC
6TH HIGHEST VALUE IS 241.47375 AT (239667.36, 3812574.85, 8.06, 21.00, 0.00) DC
7TH HIGHEST VALUE IS 219.86492 AT (239608.67, 3812574.85, 8.81, 8.81, 0.00) DC
8TH HIGHEST VALUE IS 214.74080 AT (239706.48, 3812574.85, 6.19, 21.00, 0.00) DC
9TH HIGHEST VALUE IS 207.24400 AT (239716.26, 3812574.85, 5.86, 21.00, 0.00) DC
10TH HIGHEST VALUE IS 199.83897 AT (239696.70, 3812574.85, 6.75, 21.00, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
*** AERMOD - VERSION 16216r *** *** C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\GSD Foodwas *** 03/05/18
*** AERMET - VERSION 16216 *** *** *** 16:25:30
PAGE 5
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF VARIOUS IN MICROGRAMS/M**3 **

GROUP ID AVERAGE CONC DATE (YYMMDDHH) NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
- -

ALL HIGH 1ST HIGH VALUE IS 16909.45871 ON 14040807: AT (239657.58, 3812574.85, 8.13, 21.00, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
*** AERMOD - VERSION 16216r *** *** C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\GSD Foodwas *** 03/05/18
*** AERMET - VERSION 16216 *** *** *** 16:25:30
PAGE 6
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 0 Warning Message(s)
A Total of 1076 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 347 Calm Hours Identified

A Total of 729 Missing Hours Identified (1.66 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

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

HARP2 - HRACalc (dated 17023) 3/12/2018 10:18:40 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 2

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 2
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerCancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 17023) 3/12/2018 10:19:52 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 2

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resCancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCAcuteRiskSumByRec.csv
HRA ran successfully

APPENDIX B

Operational Health Risk Assessment

DUDEK

621 CHAPALA STREET
SANTA BARBARA, CALIFORNIA 93101
T 805.963.0651 F 805.963.2074

MEMORANDUM

To:	Steve Wagner, Goleta Sanitary District
From:	Adam Poll, Dudek
Subject:	Operational Health Risk Assessment for the Organic Materials to Energy Demonstration Project
Date:	April 6, 2018
cc:	Jim Dunbar, Lystek
	Jane Gray, Dudek
Attachment A:	TAC Emissions Calculations
Attachment B:	AERMOD and HARP Output Files

1 INTRODUCTION

1.1 Purpose

In support of the air quality technical memorandum preparation, Dudek has prepared a health risk assessment (HRA) modeling analysis to estimate health risk impacts on proximate sensitive receptors from exposure to toxic air contaminant (TAC) emissions from operation of the Organic Materials to Energy Demonstration Project (proposed project).

The analysis in this HRA uses air dispersion modeling methodology to evaluate potential public health risks associated with the proposed project. Results of the modeling analysis are compared with the most recent California Environmental Quality Act (CEQA) significance thresholds established by the Santa Barbara County Air Pollution Control District (SBCAPCD).

Per CEQA Guidelines, Appendix G (14 CCR 15000 et seq.), the HRA directly addresses question (d): Would the project expose sensitive receptors to substantial pollutant concentrations?

1.2 Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure or acute (short-term) and/or chronic (long-term) non-cancer health effects. A toxic substance released into the air is considered a TAC. Examples include certain aromatic and chlorinated hydrocarbons, diesel particulate matter

(DPM), certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and non-carcinogenic effects. Non-carcinogenic effects typically affect one or more target organ systems and may be experienced through either acute or chronic exposure to a given TAC.

California's air toxics control program began in 1983 with the passage of Assembly Bill 1807, the Toxic Air Contaminant Identification and Control Act, better known as the Tanner Bill. The Tanner Bill established a regulatory process for the scientific and public review of individual toxic compounds. When a compound becomes listed as a TAC under the Tanner Bill, the California Air Resources Board (CARB) normally establishes minimum statewide emission-control measures to be adopted by air quality management districts and air pollution control districts. By 1992, 18 of the 189 federal hazardous air pollutants had been listed by CARB as state TACs. In April 1993, CARB added 171 substances to the state program to make the state TAC list equal to the federal list of hazardous air pollutants. In 1998, CARB designated DPM as a TAC (CARB 1998). The exhaust from diesel engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. DPM has established cancer risk factors and relative exposure values for chronic health hazard impacts. No acute relative exposure values are established for DPM; therefore, acute impacts of DPM are not addressed in this HRA.

The second major component of California's air toxics program, supplementing the Tanner process, was provided by the passage of Assembly Bill 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Assembly Bill 2588 currently regulates over 600 compounds, including all of the Tanner Bill–designated TACs.

Additionally, Proposition 65, passed by California voters in 1986, requires that a list of carcinogenic and reproductive toxicants found in the environment be compiled; the discharge of these toxicants into drinking water be prohibited; and warnings of public exposure by air, land, or water be posted if a significant adverse public health risk is posed. The emission of any listed substances by a facility would require a public warning unless health risks could be demonstrated to be less than significant. For carcinogens, Proposition 65 defines the "no significant risk level" as the level of exposure that would result in an increased cancer risk of greater than 1 in 100,000 over a 70-year lifetime (27 CCR 25711). The "no significant risk level" is 1 in 1,000 of the "no observable effect level" for reproductive toxicants.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80% decrease in statewide diesel health risk by 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy-Duty Diesel Vehicle (In-Use) Regulation, On-Road Heavy-Duty (New) Vehicle Program, In-Use Off-Road Diesel Vehicle Regulation, and New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

1.3 Cancer Risk

Cancer risk is defined as the increase in lifetime probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased probability in 1 million. The cancer risk from inhalation of a TAC is estimated by calculating the inhalation (and if applicable, ingestion) dose in units of milligrams/kilogram body weight per day (mg/kg-day) based on an ambient concentration in units of micrograms per cubic meter ($\mu g/m^3$), breathing rate, and exposure period and multiplying the dose by the inhalation cancer potency factor, expressed as $(mg/kg\text{-}day)^{-1}$. Cancer risks are typically calculated for all carcinogenic TACs and summed to calculate the overall increase in cancer risk to an individual. The calculation procedure assumes that cancer risk is proportional to concentrations at any level of exposure and that risks due to different carcinogens are additive. This approach is generally considered a conservative assumption at low doses and is consistent with the current Office of Environmental Health Hazard Assessment (OEHHA) regulatory approach. Exposure to carcinogenic TACs does not imply that the exposed individual would contract cancer; rather, the cancer risk is a probability of developing cancer if other factors (e.g., heredity, exposure to environmental or workplace risks that compromise the immune system, overall health) would result in an increased susceptibility to developing cancer.

The cancer risk calculations were performed by multiplying the predicted dispersion modeled output data by the TAC emissions and the appropriate risk values. The exposure and risk equations that were used to calculate the cancer risk at receptors are integrated in the CARB Hotspots Analysis and Reporting Program, Version 2 (HARP2) (CARB 2015) model, in accordance with the 2015 Risk Assessment Guidelines Manual (OEHHA 2015).

The following equations were used to calculate the cancer risk using the model output data and estimated TAC emissions associated with the project operation:

$$\text{Cancer risk} = DOSE * CPF * ASF * ED/AT * FAH,$$

$$DOSE = (C_{air} * DBR * A * EF * 10^{-6}),$$

$$C_{air} = ER * X/Q,$$

where

$DOSE$ = daily inhalation dose (mg/kg-day),

CPF = cancer potency factor $(\text{mg/kg-day})^{-1}$,

ASF = age sensitivity factor for a specified age group (unitless),

ED = exposure duration (in years) for a specified age group,

AT = averaging time for lifetime cancer risk (years),

FAH = Fraction of time spent at home (unitless),

C_{air} = average air concentration of TAC from the air dispersion model ($\mu g/m^3$),

DBR = daily breathing rate (L/kg body weight-day),

EF = exposure frequency (unitless), days/365 days,

A = inhalation absorption factor (unitless),

10^{-6} = micrograms to milligrams conversion, liters to cubic meters conversion,

ER = emission rates (grams/second),

X/Q = model output data ($\mu g/m^3$)/(grams/second).

1.4 Non-Cancer Health Impacts

The non-cancer health impact of an inhaled TAC is measured by the hazard quotient, which is the ratio of the ambient concentration of a TAC in units of $\mu g/m^3$ divided by the reference exposure level (REL), also in units of $\mu g/m^3$. The REL is the concentration at or below which no adverse health effects are anticipated. The REL is typically based on health effects on a particular target organ system, such as the respiratory system, liver, or central nervous system. Hazard quotients of individual TACs are then summed for each target organ system to obtain a hazard index. For DPM, the target organ system is the respiratory system.

In addition to the potential cancer risk, certain TACs have chronic (i.e., long-term) non-cancer health impacts. The chronic hazard index (HIC) for TACs was calculated by dividing the maximum modeled annual average concentration of TACs by its REL as implemented by HARP2.

The chronic hazard quotients were calculated for DPM using the following equations (OEHHA 2015):

$$HIC = (C_{air} / REL),$$

where

HIC = chronic hazard index,

C_{air} = annual average concentration ($\mu g/m^3$),

REL = chronic reference exposure level ($\mu g/m^3$).

2 GUIDANCE AND THRESHOLDS

2.1 Office of Environmental Health Hazard Assessment's Guidance

OEHHA's most recent guidance is the 2015 Risk Assessment Guidelines Manual (OEHHA 2015), which was adopted in 2015 to replace the 2003 HRA Guidance Manual. The Children's Environmental Health Protection Act of 1999 (Senate Bill 25), which requires explicit consideration of infants and children in assessing risks from air toxics, requires revisions of the methods for both non-cancer and cancer risk assessment and of the exposure assumptions in the 2003 HRA Guidance Manual. In response to Senate Bill 25, OEHHA released three technical support documents addressing RELs (OEHHA 2008), cancer potency (OEHHA 2009), and exposure assessment and stochastic analysis (OEHHA 2012) and adopted the 2015 Risk Assessment Guidelines Manual (OEHHA 2015). The technical support document for RELs and continuing work to reevaluate TACs to ensure adequate protection for infants and children has led to revisions of RELs for approximately 10 chemicals and chemical families. The basic methodology for evaluating acute and chronic health effects using the RELs otherwise remained the same as in the previous guidance manual. Moreover, RELs are designed to protect the most sensitive individuals in the population, including infants and children, by selecting appropriate toxicological data and including margins of safety. Accordingly, the evaluation methods are assumed to protect children and other sensitive subpopulations (groups of more highly susceptible individuals) from adverse health effects in the event of exposure (OEHHA 2008).

The cancer risk methodology described in the exposure assessment and stochastic analysis technical support document and the 2015 Risk Assessment Guidelines Manual accounts for the higher sensitivity of infants and children by applying age-specific daily breathing rates and age-sensitivity factors. According to the technical support document, "accounting for effects of early-in-life exposure requires accounting for both the increased potency of early in life exposure to carcinogens and the greater exposure on a per [kilogram] body weight that occurs early in life due to behavioral and physiological differences between infants and children, and adults" (OEHHA 2012). In part, early-life periods are accounted for through the use of age-sensitivity factors. Compared to the previous guidance, which relied on a single breathing rate for all ages, the revised guidance includes age-specific daily breathing rates that reflect the differences for infants, children, and adults. This HRA uses HARP2, which incorporates RELs and cancer potency factors, which are periodically updated, and health effects calculations based on the 2015 Risk Assessment Guidelines Manual. Accordingly, this HRA evaluates and reflects conservative, health-protective methodologies to assess health impacts to adults, as well as infants, children, and other sensitive subpopulations.

2.2 Santa Barbara County Air Pollution Control District Guidance

The SBCAPCD's Form 15i – Modeling Guidelines for Health Risk Assessment (SBCAPCD 2017) provides guidance to perform HRAs within the South Central Coast Air Basin. Although the SBCAPCD Guidance specifically targets health risk from air toxic emissions from stationary source operations, the thresholds were adapted here for informational purposes. The SBCAPCD's current thresholds of significance for TAC emissions from the operations of permitted and non-permitted sources are presented in Table 1.

Table 1
SBCAPCD TAC Emissions Thresholds

Carcinogens	Non-Carcinogens
	Chronic
Maximally exposed individual risk equals or exceeds 10 in one million	Hazard index equals or exceeds 1 for the maximally exposed individual

Source: SBCAPCD 2017.
Notes: SBCAPCD = Santa Barbara County Air Pollution Control District; TAC = toxic air contaminant.

3 EMISSION CALCULATIONS

Emissions from the operational phase of the project were estimated using a spreadsheet based model and emissions factors from OFFROAD2007 (CARB 2011) and the U.S. Environmental Protection Agency's AP-42 (EPA 2018). The following calculation worksheets were also used to

guide emissions calculations from the SBCAPD: Boiler and Steam Generator Emission Calculations (Version 7.0); DICE Emergency Standby Emission Calculations (Version 1.0); and Oilfield Flare Emission Calculations (Version 2.0). Detailed emission calculations and results are provided in Attachment A.

Stationary Sources

The project has several stationary sources located on site that will emit criteria air pollutants during operation. As part of the food waste conversion process, biogas composed of approximately 60% methane will be generated. The biogas will be combusted using a combined heat and power (CHP) unit to generate electricity onsite. The electricity generated will be stored in batteries and then used to charge electric golf carts used at the Goleta Sanitary District. The CHP is rated at 49 horsepower and emissions were calculated based on assumptions derived within the Tajiguas Landfill Resource Recovery Project EIR (AECOM 2014). It was assumed that the unit would combust up to 80.29 cubic feet per hour of biogas (Design 2 Operate 2017).

There are three scenarios in which the CHP would not be used to combust the biogas: when the biogas flow rate is insufficient for the CHP; when the biogas flowrate exceeds the needs of the CHP; and when the CHP is inoperable. In any of these cases the biogas will be sent to a portable flare, Solar Spark Passive Vent Flare Model CF-5. In order to conservatively estimate emissions, the scenario in which the CHP is inoperable and the flare operates (24 hours per day, 180 days per year) was modeled to represent a worst-case scenario.

Once the food waste has been processed via anaerobic digestion, any solids are processed using the Lystek technology. Part of the Lystek process requires heating of the material. A 0.612-million-British-thermal-unit-per-hour (MMBtu/hr) boiler would be used to provide steam to heat the material during the Lystek process. The boiler would operate on commercial-grade propane. The Cleaver-Brooks Model CFH-700-15-15ST boiler is a South Coast Air Quality Management District Rule 1146.2 certified boiler. It was assumed that the boiler would operate 24 hours per day and 180 days per year.

The project would also include an emergency generator in the case that the power is not available from the grid. It was assumed that the generator would power just one component at a time, not the entire project. The generator would be a Tier 4 Final diesel engine (Caterpillar XQ35) rated at 49 horsepower.

Mobile Sources

Mobile sources for the project would primarily be motor vehicles (automobiles, light-duty trucks, and refuse trucks) traveling to and from the project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Based on conservative estimates for vehicular movement, the project is anticipated to have up to 8 one-way trips per day from heavy duty trucks and up to 10 one-way trips per day from worker vehicles. Emission factors representing the vehicle mix and emissions for Year 2018 from CARB's EMFAC2017 model (CARB 2018) were used to estimate emissions associated with full buildout of the project. It was assumed that the heavy-duty refuse trucks would be powered by natural gas, which is consistent with what MarBorg Industries (the Santa Barbara County solid waste contractor) uses (MarBorg 2018).

Off-Road Equipment

The project would use a skidsteer loader as part of the operation for loading food waste into the components. The size of the loader was based on the weighted average horsepower (by equipment population) and load factors for the mode of engine groupings in CARB's OFFROAD2007 model (CARB 2011). The loader was assumed to operate up to 5 hours per day and 3 days per week.

4 MODELING METHODOLOGY

4.1 Dispersion Model

For risk assessment purposes, coarse particulate matter (PM_{10}) in diesel exhaust is considered DPM, originating mainly from off-road equipment operating at a defined location for a given length of time at a given distance from sensitive receptors. These emissions, as well as other TAC emissions from on-site sources, could result in elevated concentrations of TACs at nearby receptors, which could lead to an increase in the risk of cancer or other health impacts. The dispersion modeling was performed using American Meteorological Society/U.S. Environmental Protection Agency Regulatory Model (AERMOD) View Version 9.5.0, which is the model SBCAPCD recommends for atmospheric dispersion of emissions. AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of surface and elevated sources, building downwash, and simple and complex terrain (EPA 2017).

Principal parameters of AERMOD for project construction include the following:

- **Dispersion Model:** AERMOD was run with all sources emitting unit emissions (1 gram/second) to obtain the X/Q values. "X/Q" is a dispersion factor that is the average effluent concentration normalized by source strength, and is used as a way to simplify the representation of emissions from many sources. The X/Q values of ground-level concentrations were determined for construction emissions using AERMOD and the maximum concentrations determined for the 1-hour and Period averaging periods.
- **Meteorological Data:** The latest 5-year meteorological data (2012–2016) for the Santa Barbara Airport station (Station ID 23190) from SBCAPCD were downloaded, and then input to AERMOD. For cancer or chronic non-cancer risk assessments, the average cancer risk of all years modeled was used.
- **Urban and Rural Options:** Typically, urban areas have more surface roughness and structures and low-albedo surfaces that absorb more sunlight, and thus, more heat, relative to rural areas. However, according to SBCAPCD guidelines, the rural dispersion option was selected due to the predominantly rural area within 3 kilometers of the project site.
- **Terrain Characteristics:** The terrain in the vicinity of the modeled project site is generally flat. The elevation of the modeled site is approximately 13 feet above sea level. Digital elevation model files were imported into AERMOD so that complex terrain features were evaluated as appropriate.
- **Discrete Receptors:** A uniform Cartesian grid was placed over the project site with 20-meter (66-foot) spacing and converted into discrete receptors to represent the maximally exposed individual resident and the maximally exposed individual worker. Property boundary receptors were also included to determine the point of maximum impact.
- **Source Equipment Operating Scenarios:** Air dispersion modeling of operational equipment and diesel vehicles was conducted using emissions generated using a spreadsheet model, conservatively assuming the emissions would occur 24 hours per day, 180 days per year. The CHP, boiler, flare, and emergency generator were modeled as point sources. The off-road equipment and heavy-duty vehicles were modeled as raised area sources.
- **Source Release Characterizations:** For modeling operational emissions impacts using AERMOD, it was assumed that the activities would occur on site over a 2-year period, consistent with the project description.

4.2 Health Risk Assessment Methodology

In March 2015, the OEHHA approved the new 2015 Risk Assessment Guidelines Manual (OEHHA 2015). The SBCAPCD requires that all HRAs prepared for CEQA documents follow SBCAPCD policies in conjunction with the 2015 Risk Assessment Guidelines Manual. To implement the OEHHA guidance based on project information, the SBCAPCD has developed a three-tiered approach where each successive tier is progressively more refined, with each progressive level being less conservative. SBCAPCD's Tier 1 approach is a screening assessment methodology that incorporates very conservative assumption methodologies when specific information about a project and its impact locations to actual or assumed receptor locations are unknown. The Tier 2 approach provides a more accurate analysis because it requires specific modeling input for project sources and proximate receptors that refine the Tier 1 approach. Based on the known information pertaining to the project site, construction activities, and proximate sensitive receptors, the Tier 2 analysis was performed for the HRA. For the residential health risk associated with operation, the HRA assumes that exposure would start in the third trimester of pregnancy and occur 24 hours per day, 5 days per week, for 24 months to account for the short-term project duration.

5 RECEPTORS USED FOR EVALUATING MODELED IMPACTS

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air-pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). SBCAPCD considers schools, daycare centers, hospitals, and care facilities (adult/elderly) within 2 kilometers (1.2 miles) of the facility as sensitive receptor land uses (SBCAPCD 2017). The closest sensitive receptor to the project site is a residence 2,156 feet to the east.

6 HRA RESULTS

The results of the HRA are provided in Table 2. AERMOD and HARP2 outputs are contained in Attachment B.

Table 2
Operational Activity Health Risk Assessment Results

Impact Parameter	Units	Proposed Project Impact	CEQA Threshold	Level of Significance
PMI – cancer risk	Per million	0.2	10.0	Less than significant
PMI – HIC	Not applicable	0.001	1.0	Less than significant
MEIR – cancer risk	Per million	0.002	10.0	Less than significant
MEIR – HIC	Not applicable	0.000001	1.0	Less than significant
MEIW – cancer risk	Per million	0.0002	10.0	Less than significant
MEIW – HIC	Not applicable	0.00005	1.0	Less than significant

Source: Attachment B.
Notes: CEQA = California Environmental Quality Act; PMI = point of maximum impact; HIC = chronic hazard index; MEIR = maximally exposed individual receptor; MEIW = maximally exposed individual worker.

Based on this analysis, the sensitive receptors in close proximity to the project would not be exposed to TACs at levels above significance thresholds established by SBCAPCD. Therefore, with respect to CEQA Appendix G, air quality question (d), TAC emissions from construction of the proposed project would not expose sensitive receptors to substantial pollutant concentrations. The results determined in this analysis reflect reasonable estimates of source emissions and exhaust characteristics, available meteorological data near the project site, and the use of currently approved air quality models. Given the limits of available tools for such an analysis, the actual impacts may vary from the estimates in this assessment. However, the combined use of the AERMOD dispersion model and the health impact calculations required by OEHHA and SBCAPCD tend to over-predict impacts such that they produce conservative (i.e., health-protective) results. Accordingly, the health impacts are not expected to be higher than those estimated in this assessment.

7 REFERENCES

13 CCR 2025. Final Regulation Order to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and Other Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles.

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

27 CCR 25711. Safe Drinking Water and Toxic Enforcement Act of 1986, Levels Based on State or Federal Standards.

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ATTACHMENT A

TAC Emissions Calculations

Flare Toxic Air Contaminant Emissions from Biogas Combustion

Compound	CAS Number	Emission Factor (lb/MMscf)	Emission Factor Source[a]	Hourly Emission Rate (lb/hr)[b]	Annual Emission Rate (lb/yr)[c]
Indeno(1,2,3-cd)pyrene	193-39-5	5.60E-02	CATEF	4.50E-06	1.94E-02
Manganese	7439-96-5	2.92E-03	Source Test	2.34E-07	1.01E-03
Naphthalene	91-20-3	1.75E-04	Source Test	1.41E-08	6.07E-05
Nickel	7440-02-0	1.43E-03	Source Test	1.15E-07	4.96E-04
Perylene	198-55-0	7.48E-05	CATEF	6.01E-09	2.59E-05
Phenanthrene	85-01-8	9.85E-04	Source Test	7.91E-08	3.42E-04
Pyrene	129-00-0	3.04E-05	Source Test	2.44E-09	1.05E-05
Toluene	108-88-3	1.09E+02	CATEF	8.75E-03	3.78E+01
Trichloroethene	79-01-6	1.13E+00	CATEF	9.07E-05	3.92E-01
Vinyl Chloride	75-01-4	7.64E-02	CATEF	6.13E-06	2.65E-02
Xylene (m,p)	1330-20-7	4.61E-01	CATEF	3.70E-05	1.60E-01
Xylene (o)	95-47-6	3.35E-01	CATEF	2.69E-05	1.16E-01
Zinc	7440-66-6	4.28E+00	CATEF	3.44E-04	1.48E+00
1,1,1-Trichloroethane	71-55-6	3.37E-01	CATEF	2.71E-05	1.17E-01
1,1-Dichloroethane	75-34-3	4.37E-01	CATEF	3.51E-05	1.52E-01
1,2-Dichloroethane	107-06-2	1.35E+00	CATEF	1.08E-04	4.68E-01
1,4-Dioxane	123-91-1	4.55E-03	Source Test	3.65E-07	1.58E-03
2-Methylnaphthalene	91-57-6	9.56E-05	Source Test	7.68E-09	3.32E-05
Acenaphthene	83-32-9	7.04E-06	Source Test	5.65E-10	2.44E-06
Acenaphthylene	208-96-8	1.09E-04	Source Test	8.75E-09	3.78E-05
Acetaldehyde	75-07-0	6.53E-01	CATEF	5.24E-05	2.26E-01
Acetonitrile	75-05-8	7.96E+00	CATEF	6.39E-04	2.76E+00
Acrolein	107-02-8	9.33E-02	CATEF	7.49E-06	3.24E-02
Acrylonitrile	107-13-1	4.50E-03	Source Test	3.61E-07	1.56E-03
Anthracene	120-12-7	1.10E-05	Source Test	8.83E-10	3.82E-06
Arsenic	7440-38-2	5.91E-02	Source Test	4.75E-06	2.05E-02
Benzene	71-43-2	8.59E-01	CATEF	6.90E-05	2.98E-01
Benzo(a)anthracene	56-55-6	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(a)pyrene	50-32-8	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(b)fluoranthene	205-99-2	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(e)pyrene	192-97-2	7.48E-05	CATEF	6.01E-09	2.59E-05
Benzo(g,h,i)perylene	191-24-2	5.60E-02	CATEF	4.50E-06	1.94E-02
Benzo(k)fluoranthene	207-08-9	5.60E-02	CATEF	4.50E-06	1.94E-02
Cadmium	7440-43-9	1.43E-03	Source Test	1.15E-07	4.96E-04
Carbon Tetrachloride	56-23-5	3.76E-02	CATEF	3.02E-06	1.30E-02
Chlorobenzene	108-90-7	8.69E-01	CATEF	6.98E-05	3.01E-01
Chloroform	67-66-3	5.60E-02	CATEF	4.50E-06	1.94E-02
Chromium (Hex)	18540-29-9	1.21E-05	Source Test	9.72E-10	4.20E-06
Chromium (Total)	7440-47-3	4.64E-03	Source Test	3.73E-07	1.61E-03
Chrysene	218-01-9	6.51E-06	Source Test	5.23E-10	2.26E-06
Copper	7440-50-8	4.86E+00	CATEF	3.90E-04	1.69E+00
Dibenz(a,h)anthracene	53-70-3	5.60E-02	CATEF	4.50E-06	1.94E-02
Dichloromethane	75-09-2	4.29E-01	CATEF	3.44E-05	1.49E-01
Fluoranthene	206-44-0	1.40E-05	Source Test	1.12E-09	4.86E-06
Fluorene	86-73-7	2.84E-04	Source Test	2.28E-08	9.85E-05
Formaldehyde	50-00-0	1.77E-01	Source Test	1.42E-05	6.14E-02
HCl	7647-01-0	1.61E-03	Source Test	1.29E-07	5.58E-04
HF	7664-39-3	2.15E-01	Source Test	1.73E-05	7.46E-02
Hourly Biogas flow rate =	80.29	scfh			
Total Annual biogas flow rate	346,853				

a CATEF = Maximum emission factors from California Air Toxics Emission Factors http://www.arb.ca.gov/app/emsinv/catef_form.html for flare fired on landfill gas based on assumption that biogas composition is similar to landfill gas

Source Test = September 9-11 2010 source tests on Santa Maria Landfill flare combusting LFG. Non-detects set to detection limit.

b Hourly emission rate [lb/hr] = Emission factor [lb/MMscf] x Biogas flow rate [scfh] / 10^6 [scf/MMscf]

b Annual emission rate [lb/yr] = Emission factor [lb/MMscf] x Annual biogas flow rate [scf/yr] / 10^6 [scf/MMscf]

CHP Engine Toxic Air Contaminant Emissions from Biogas Combustion

Compound	CAS Number	Emission Factor (lb/MMscf)[a]	Hourly Emission Rate (lb/hr)[b]	Annual Emission Rate (lb/yr)[c]
Benzene	71-43-2	9.48E-03	7.61E-07	3.29E-03
Benzo(a)anthracene	56-55-6	1.60E-06	1.28E-10	5.55E-07
Benzo(a)pyrene	50-32-8	2.70E-07	2.17E-11	9.37E-08
Benzo(b)fluoranthene	205-99-2	4.88E-07	3.92E-11	1.69E-07
Benzo(k)fluoranthene	207-08-9	2.70E-07	2.17E-11	9.37E-08
Carbon Tetrachloride	56-23-5	1.14E-04	9.15E-09	3.95E-05
Chloroform	67-66-3	1.13E-04	9.07E-09	3.92E-05
Chrysene	218-01-9	5.87E-06	4.71E-10	2.04E-06
Dibenz(a,h)anthracene	53-70-3	2.70E-07	2.17E-11	9.37E-08
Ethylene Dibromide	106-93-4	1.12E-04	8.99E-09	3.88E-05
Ethylene Dichloride	106-93-4	5.08E-03	4.08E-07	1.76E-03
Formaldehyde	50-00-0	1.49E+00	1.20E-04	5.17E-01
Hydrochloric Acid	7647-01-0	2.07E+00	1.66E-04	7.18E-01
Indeno(1,2,3-cd)pyrene	193-39-5	2.70E-07	2.17E-11	9.37E-08
Methyl Chloroform	71-55-6	1.11E-04	8.91E-09	3.85E-05
Methylene Chloride	75-09-2	1.30E-04	1.04E-08	4.51E-05
Napthtalene	91-20-3	7.38E-04	5.93E-08	2.56E-04
Perchloroethylene	127-18-4	5.84E-04	4.69E-08	2.03E-04
Trichloroethylene	79-01-6	1.49E-03	1.20E-07	5.17E-04
Vinyl Chloride	75-01-4	1.63E-04	1.31E-08	5.65E-05
Biogas flow rate =	80.29	scfh		
346,853	scf/year	Hourly biogas [scfh] x Annual op. hours [hr/year]		

a Santa Barbara County Air Pollution Control District approved emission factors for landfill gas-fired IC engines with oxidation catalyst

b Hourly emission rate [lb/hr] = Emission factor [lb/MMscf] x biogas flow rate [scfh] / 10^6 [scf/MMsc]
Molar volume [scf/lb-mole] x (1 - Engine destruction efficiency [%] / 100) x (1 - Oxidation catalyst efficiency [%] / 100)

c Annual emission rate [lb/yr] = Emission factor [lb/MMscf] x annual biogas flow rate [scf/year] / 10^6 [scf/MMsc]

Skip-Loader

Compound	CAS Number	Emission Factor (lb/1,000 gal)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.1863	5.03E-04	3.92E-01
Formaldehyde	50-00-0	1.7261	4.66E-03	3.64E+00
Acetaldehyde	75-07-0	0.7833	2.11E-03	1.65E+00
Acrolein	107-02-8	0.0339	9.15E-05	7.14E-02
1,3-Butadiene	106-99-0	0.2174	5.87E-04	4.58E-01
Toluene	108-88-3	0.1054	2.85E-04	2.22E-01
Xylenes	1330-20-7	0.0424	1.14E-04	8.93E-02
Hydrogen chloride	7647-01-0	0.1863	5.03E-04	3.92E-01
Arsenic	7440-38-2	0.0016	4.32E-06	3.37E-03
Copper	7440-50-8	0.0041	1.11E-05	8.63E-03
Mercury	7439-97-6	0.0020	5.40E-06	4.21E-03
Nickel	7440-02-0	0.0039	1.05E-05	8.21E-03
DPM	9901	-	9.92E-02	4.96E+00
Hourly fuel use =	2.7	gal/hr	780	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for Diesel Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

On-Site Motor Vehicles Entrance to/from Facility

Compound	CAS Number	Emission Factor (lb/MMBtuH)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.0080	1.60E-05	8.32E-04
Formaldehyde	50-00-0	0.0170	3.40E-05	1.77E-03
PAH	56-55-3	0.0004	8.00E-07	4.16E-05
naphthalene	91-20-3	0.0003	6.00E-07	3.12E-05
Acetaldehyde	75-07-0	0.0043	8.60E-06	4.47E-04
Acrolein	107-02-8	0.0027	5.40E-06	2.81E-04
Propylene	115-07-1	0.7310	1.46E-03	7.60E-02
Toluene	108-88-3	0.0366	7.32E-05	3.81E-03
Xylenes	1330-20-7	0.0272	5.44E-05	2.83E-03
Ethyl Benzene	100-41-4	0.0095	1.90E-05	9.88E-04
Hexane	110-54-3	0.0063	1.26E-05	6.55E-04
Hourly fuel use =	2	MMBtu/h	52	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for natural gas Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

Emergency Generator

Compound	CAS Number	Emission Factor (lb/1,000 gal)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.1863	2.14E-03	1.07E-01
Formaldehyde	50-00-0	1.7261	1.99E-02	9.93E-01
Acetaldehyde	75-07-0	0.7833	9.01E-03	4.50E-01
Acrolein	107-02-8	0.0339	3.90E-04	1.95E-02
1,3-Butadiene	106-99-0	0.2174	2.50E-03	1.25E-01
Toluene	108-88-3	0.1054	1.21E-03	6.06E-02
Xylenes	1330-20-7	0.0424	4.88E-04	2.44E-02
Hydrogen chloride	7647-01-0	0.1863	2.14E-03	1.07E-01
Arsenic	7440-38-2	0.0016	1.84E-05	9.20E-04
Copper	7440-50-8	0.0041	4.72E-05	2.36E-03
Mercury	7439-97-6	0.0020	2.30E-05	1.15E-03
Nickel	7440-02-0	0.0039	4.49E-05	2.24E-03
DPM	9901	-	3.24E-03	1.62E-01
Hourly fuel use =	11.5	gal/hr	50	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for diesel Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

Boiler

Compound	CAS Number	Emission Factor (lb/MMBtuH)[a]	Emissions (lb/hour)	Emissions (lb/year)
Benzene	71-43-2	0.0080	5.16E-06	7.43E-03
Formaldehyde	50-00-0	0.0170	1.10E-05	1.58E-02
PAH	56-55-3	0.0004	2.58E-07	3.72E-04
naphthalene	91-20-3	0.0003	1.94E-07	2.79E-04
Acetaldehyde	75-07-0	0.0043	2.77E-06	3.99E-03
Acrolein	107-02-8	0.0027	1.74E-06	2.51E-03
Propylene	115-07-1	0.7310	4.71E-04	6.79E-01
Toluene	108-88-3	0.0366	2.36E-05	3.40E-02
Xylenes	1330-20-7	0.0272	1.75E-05	2.53E-02
Ethyl Benzene	100-41-4	0.0095	6.13E-06	8.82E-03
Hexane	110-54-3	0.0063	4.06E-06	5.85E-03
Hourly fuel use =	0.645	MMBtu/h	1440	hours/year

a From Ventura County Air Pollution Control District AB 2588 Emission Factors for natural gas Fuel Internal Combustion.

http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf Only includes TACs with acute reference exposure levels.

ATTACHMENT B

AERMOD and HARP Output Files

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** MODEL SETUP OPTIONS SUMMARY ***

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.

**Other Options Specified:
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: VARIOUS

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 6 Source(s); 1 Source Group(s); and 411 Receptor(s)

with: 4 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 2 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 16216

**Output Options Selected:

Model Outputs Tables of PERIOD Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 2.74 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.7 MB of RAM.

**Detailed Error/Message File: GSD Foodwaste.err
**File for Summary of Results: GSD Foodwaste.sum

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: SBA12-16\SBA12-16.SFC Met Version: 16216
Profile file: SBA12-16\SBA12-16.PFL

Surface format: FREE
Profile format: FREE
Surface station no.: 23190 Upper air station no.: 93214
Name: SANTA_BARBARA/FAA_AIRPORT Name: UNKNOWN
Year: 2012 Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-1.8	0.043	-9.000	-9.000	-999.	21.	3.9	0.08	0.45	1.00	1.04	49.	10.0	278.8	2.0
12	01	01	1	02	-1.1	0.032	-9.000	-9.000	-999.	14.	2.9	0.08	0.45	1.00	0.79	336.	10.0	277.0	2.0
12	01	01	1	03	-1.7	0.041	-9.000	-9.000	-999.	20.	3.7	0.08	0.45	1.00	0.99	31.	10.0	277.0	2.0
12	01	01	1	04	-0.4	0.023	-9.000	-9.000	-999.	9.	3.0	0.08	0.45	1.00	0.57	334.	10.0	277.0	2.0
12	01	01	1	05	-0.7	0.027	-9.000	-9.000	-999.	10.	2.4	0.08	0.45	1.00	0.65	356.	10.0	277.0	2.0
12	01	01	1	06	-0.8	0.028	-9.000	-9.000	-999.	11.	2.5	0.08	0.45	1.00	0.67	30.	10.0	276.4	2.0
12	01	01	1	07	-1.4	0.038	-9.000	-9.000	-999.	18.	3.4	0.08	0.45	1.00	0.92	351.	10.0	276.4	2.0
12	01	01	1	08	-0.8	0.028	-9.000	-9.000	-999.	11.	2.7	0.08	0.45	0.57	0.69	51.	10.0	277.5	2.0
12	01	01	1	09	11.5	0.054	-9.000	-9.000	-999.	30.	-1.2	0.08	0.45	0.31	0.35	25.	10.0	283.1	2.0
12	01	01	1	10	44.2	0.083	-9.000	-9.000	-999.	58.	-1.2	0.06	0.45	0.22	0.60	81.	10.0	288.8	2.0
12	01	01	1	11	67.0	0.222	-9.000	-9.000	-999.	251.	-14.9	0.15	0.45	0.19	1.86	169.	10.0	289.2	2.0
12	01	01	1	12	79.1	0.256	-9.000	-9.000	-999.	311.	-19.3	0.17	0.45	0.18	2.10	241.	10.0	289.9	2.0
12	01	01	1	13	79.3	0.330	-9.000	-9.000	-999.	455.	-41.1	0.17	0.45	0.17	2.93	256.	10.0	288.8	2.0
12	01	01	1	14	68.3	0.345	-9.000	-9.000	-999.	485.	-54.4	0.17	0.45	0.18	3.13	258.	10.0	288.1	2.0
12	01	01	1	15	46.3	0.326	-9.000	-9.000	-999.	447.	-68.0	0.17	0.45	0.21	3.01	254.	10.0	287.0	2.0
12	01	01	1	16	15.2	0.335	-9.000	-9.000	-999.	464.	-224.4	0.17	0.45	0.29	3.27	263.	10.0	285.9	2.0
12	01	01	1	17	-9.5	0.180	-9.000	-9.000	-999.	201.	56.5	0.17	0.45	0.54	2.23	260.	10.0	283.1	2.0
12	01	01	1	18	-12.8	0.226	-9.000	-9.000	-999.	258.	82.2	0.17	0.45	1.00	2.64	268.	10.0	283.1	2.0
12	01	01	1	19	-2.4	0.058	-9.000	-9.000	-999.	78.	7.3	0.07	0.45	1.00	1.45	294.	10.0	282.0	2.0
12	01	01	1	20	-2.1	0.052	-9.000	-9.000	-999.	29.	6.0	0.07	0.45	1.00	1.30	292.	10.0	280.4	2.0
12	01	01	1	21	-3.8	0.074	-9.000	-9.000	-999.	48.	9.5	0.08	0.45	1.00	1.77	311.	10.0	281.4	2.0
12	01	01	1	22	-1.5	0.045	-9.000	-9.000	-999.	23.	5.8	0.08	0.45	1.00	1.11	341.	10.0	279.9	2.0
12	01	01	1	23	-1.7	0.042	-9.000	-9.000	-999.	21.	4.1	0.08	0.45	1.00	1.01	318.	10.0	277.5	2.0
12	01	01	1	24	-1.2	0.041	-9.000	-9.000	-999.	20.	5.2	0.08	0.45	1.00	0.99	353.	10.0	279.2	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.0	1	49.	1.04	278.8	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF VARIOUS IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE

GRID-ID
- -

ALL 1ST HIGHEST VALUE IS 322.93075 AT (239647.80, 3812574.85, 8.20, 20.00, 0.00) DC
2ND HIGHEST VALUE IS 313.71284 AT (239657.58, 3812574.85, 8.13, 21.00, 0.00) DC
3RD HIGHEST VALUE IS 305.78381 AT (239638.02, 3812574.85, 8.41, 19.00, 0.00) DC
4TH HIGHEST VALUE IS 283.06975 AT (239628.24, 3812574.85, 8.67, 19.00, 0.00) DC
5TH HIGHEST VALUE IS 254.52072 AT (239618.45, 3812574.85, 8.93, 8.93, 0.00) DC
6TH HIGHEST VALUE IS 241.47375 AT (239667.36, 3812574.85, 8.06, 21.00, 0.00) DC
7TH HIGHEST VALUE IS 219.86492 AT (239608.67, 3812574.85, 8.81, 8.81, 0.00) DC
8TH HIGHEST VALUE IS 214.74080 AT (239706.48, 3812574.85, 6.19, 21.00, 0.00) DC
9TH HIGHEST VALUE IS 207.24400 AT (239716.26, 3812574.85, 5.86, 21.00, 0.00) DC
10TH HIGHEST VALUE IS 199.83897 AT (239696.70, 3812574.85, 6.75, 21.00, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
*** AERMOD - VERSION 16216r *** *** C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\GSD Foodwas *** 03/05/18
*** AERMET - VERSION 16216 *** *** *** 16:25:30
PAGE 5
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF VARIOUS IN MICROGRAMS/M**3 **

GROUP ID AVERAGE CONC DATE (YYMMDDHH) NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
- -

ALL HIGH 1ST HIGH VALUE IS 16909.45871 ON 14040807: AT (239657.58, 3812574.85, 8.13, 21.00, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
*** AERMOD - VERSION 16216r *** *** C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\GSD Foodwas *** 03/05/18
*** AERMET - VERSION 16216 *** *** *** 16:25:30
PAGE 6
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 0 Warning Message(s)
A Total of 1076 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 347 Calm Hours Identified

A Total of 729 Missing Hours Identified (1.66 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

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

HARP2 - HRACalc (dated 17023) 3/12/2018 10:18:40 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 2

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 2
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerCancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-11-workerNCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 17023) 3/12/2018 10:19:52 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 2

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resCancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\Users\apoll\Desktop\HARP2\GSD Foodwaste\GSD Foodwaste\hra\GSD-12-resNCAcuteRiskSumByRec.csv
HRA ran successfully