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Raven SR Bioenergy Project Initial Study

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Appendix

1. General Project Information

1.1 Project Title

Raven SR Bioenergy Project

1.2 Lead Agency Name and Address

City of Richmond (City)
Planning and Building Services Department
450 Civic Center Plaza
PO Box 4046
Richmond, CA 94804-1630

1.3 Project Case File Number

City Project Case Number: PLN21-282

1.4 Contact Person and Phone Number

Lina Velasco, Director of Community Development
Community Development Department
Lina_Velasco@ci.richmond.ca.us
(510) 620-6841

1.5 Project Location

1 Parr Boulevard, Richmond, California (generally).

The proposed Raven SR Project location is within the West Contra Costa Sanitary Landfill (WCCSL) facility located in the northwest area of the City of Richmond, in Contra Costa County, California. For purpose of this environmental document, the project would occur within approximately 2.5 acres of the existing Republic Services Bulk Materials Processing Center (BMPC) within "Area A" of the WCCSL.[1,2] The property is located approximately 0.25 miles west of Parr Boulevard (approximately 0.25 miles west from Richmond Parkway) via an unpaved access road. The northern boundary of the project site is the City of Richmond / Contra Costa County jurisdiction line; the project site is located wholly within the City of Richmond, except for use of an existing access/egress road located within the County. The project site is located within Assessor's Parcel Number (APN) 408-140-009.

[1] Actual project operations will occur on a subset area of approximately 1.3 acres that Raven SR will lease from BMPC.

[2] "Area A" of the WCCSL is approximately 12 acres in the upland portion of the property that encompasses pollution control facilities and stockpile areas (separate from the closed Class I and active Class II landfill areas, the runoff ponds or lagoons delineated as "Area B", and tidal waters delineated as "Area C"). Shown in Figure 3-1, Vicinity Map, of the *Environmental Impact Report on the West Contra County Sanitary Landfill Bulk Materials Processing Center and Related Actions,* June 2004. SCH. 2002102057.

See **Figure 1-1, Regional Context**; **Figure 1-2, Local Context – North Richmond**; and **Figure 1-3, Project Site and Surrounding Landfill Setting**, on the following pages.

1.6 Project Applicant's Name and Address

Raven SR S1, LLC [3]
Matt W. Murdock CEO
PO Box 1360
Pinedale, WY 82941

1.7 Existing General Plan and Zoning Designations

The project site and surrounding area is located within the "Open Space" General Plan land use designation and "Open Space" zoning district.

1.8 Purpose and Intended Use of this Document

The purpose of this Draft Initial Study/Mitigated Negative Declaration (IS/MND) is to identify any potential environmental impacts that would result from implementation of the proposed project pursuant to California Environmental Quality Act (CEQA) Guidelines. As the project site is wholly located within the City limits, the City of Richmond has discretionary authority over the proposed project and is the lead agency in the preparation of this Draft IS/MND. The intended use of this document is disclose the potential environmental impacts and mitigation measures, if any, and to provide the basis for input from public agencies, organizations, and interested members of the public.

This CEQA document is a stand-alone analysis for the proposed project. Where appropriate and suitable, setting and context information from prior CEQA documents certified for the WCCSL/BMPC facility and operations is used in parts of this Draft IS/MND given that the project site is located within the WCCSL/BMPC facility.[4] However, no part of the proposed project affects existing WCCSL/BMPC operations; the proposed development and Raven SR system is a wholly independent utility, except that it would use feedstock available from the current BMPC operation. Mitigation measures identified in this document will apply solely to the proposed project and do not conflict with any applicable mitigation measures identified in the previously certified WCCSL/BMPC CEQA documents. Similarly, and addressed separately from this CEQA document, the proposed project requires approval of a City of Richmond Conditional Use Permit (see Section 1.11, below), which is wholly independent from the existing City Conditional Use Permit (CU 1101132 as amended) and Contra Costa County Land Use Permit (LUP 2054-92 as amended) for the WCCSL/BMPC, as well as any existing permits, control

[3] The project applicant is referred to throughout as "Raven SR". "Raven SR" also refers to the multi-patented process/system. "Raven" refers to the proposed facility.

[4] *Environmental Impact Report on the West Contra County Sanitary Landfill Bulk Materials Processing Center and Related Actions,* June 2004; and *Addendum to the Final EIR for the WCCSL BMPC and Related Actions*, 2009. SCH. 2002102057.

2021\D2021003820 - Raven SR Bioenergy ISMND/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Raven LLC, 2022

Raven SR Bioenergy Project Initial Study

Figure 1-1
Regional Context

ESA

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SOURCE: Raven LLC, 2022

Raven SR Bioenergy Project Initial Study

Figure 1-2
Local Context - North Richmond

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SOURCE: Raven LLC, 2022; ESA, 2022

Raven SR Bioenergy Project Initial Study

Figure 1-3
Project Site and Surrounding Landfill Context

ESA

measures or cooperative agreements executed by various regulatory agencies that have permitting authority for the WCCSL/BMPC.

The remainder of this **Section 1** provides an overview of the project's primary characteristics and its environmental setting and required discretionary approvals. **Section 2** describes the project in more detail, **Section 3** is the draft environmental declaration, and **Section 4** is the environmental checklist that evaluates the potential environmental impacts that may result from construction or operation of the proposed project. **Section 5** contains the List of Preparers.

1.9 Project Overview

The Raven SR Bioenergy Project (project) proposes to construct and operate a bioenergy system composed of the Raven SR multi-patented Steam/CO_2 Reformation process at the project site.[5] The non-combustion process would convert blended green waste and food waste, obtained from the existing BMPC operation adjacent to the project site, into renewable, transportation grade hydrogen that would be exported offsite for various renewable energy products. No long-term hydrogen storage would occur onsite. The project would involve the erection of a modular structure and industrial canopy.

1.10 Environmental Setting

As shown in Figure 1-2, industrial use and natural waterways create the environment setting of the project site. The WCCSL facility spans approximately 340 acres generally between Parr Boulevard and San Pablo Bay, south of San Pablo Creek. This area is composed of expansive planted disposal areas/landfill mounds, runoff control ponds and lagoons, the organic material processing facility and composting areas, and the location of the proposed project (within part of the BMPC area), is situated in the southeast area of the WCCSL facility. San Pablo Creek and the San Pablo and Wildcat Creek tidal marshlands exist north and south of the WCCSL facility. Open water of San Pablo Bay is approximately 0.25 miles west from the project site.

Figure 1-3 shows the closest structure and development is the Golden Bear Waste Recycling Facility approximately 300 feet southwest of the proposed project location, and the West County Wastewater District Treatment Plant and the Wildcat Marsh Trail and trail head parking exist approximately 1,000 feet east of the project location. The surrounding uses are industrial, commercial and open space; the nearest sensitive receptors to the project site are residential uses, an elementary school, and a health clinic, all within approximately 0.75 to 1.2 miles southeast in the North Richmond area.

1.11 Required Discretionary Approvals

- **City of Richmond (Lead Agency)**: Adoption of the CEQA Documentation, Mitigated Negative Declaration; Conditional Use Permit for a new activity and facility to convert

[5] CO_2 is carbon dioxide.

organic waste to hydrogen[6]; and various development permits, including but not limited to site preparation, construction and building activities.

1.12 Other Agencies Whose Review or Approval Is Required

- **Bay Area Air Quality Management District (BAAQMD)**: Issuance of an Authority to Construct (ATC) for the associated air pollutant emissions. Raven SR has applied for an ATC air permit to be issued by BAAQMD. This permit application is currently undergoing review.

- **State Water Resources Control Board:** Raven SR would submit Notices of Intent (NOI) to the State Water Board. Raven SR would submit the Construction NOI prior to any grading on the project site obtain coverage under both the statewide General Permit for Discharges of Storm Water Associated with Construction Activity and General Permit for Storm Water Discharges Associated with Industrial Activities. The Industrial NOI would be submitted prior to operation of the waste conversion system.

- **State Department of Resource Recovery and Recycling (CalRecycle) and Local Enforcement Agency (LEA):** Issuance of Solid Waste Facility Permit (SWFP).

1.13 California Native American Tribes Consultation

Pursuant to Public Resources Code section 21080.3.1, on May 4, 2022, the City received a response for consultation from a representative of the Confederated Villages of Lisjan. Consultation occurred on May 18, 2022, during which the tribe posed no concerns with the proposed project or potential mitigation measures as it relates to impacts to tribal cultural resources and cultural resources. See Section 4.16, *Tribal Cultural Resources*, of this checklist for more detail.

[6] The existing WCCSL facility operates under an existing City of Richmond Conditional Use Permit (CUP) and other resources agency permits.

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2. Project Description

2.1 Existing Site Conditions and Ownership

Existing conditions of the project site are shown in **Figure 2-0, Birdseye View of Project Site and Surrounding**. The proposed Raven SR operation would be developed on approximately 1.3 acres that Raven SR would lease within part of the existing Republic Services BMPC property shown in Figure 2-0, however it would operate separately from the existing BMPC operation, which extends west of the project site. **Figure 2-1, Project Site and Raven SR Facility Areas**, delineates the proposed 2.5-acres that is referred to as the "project site" and highlights the 1.3 acres where the Raven facilities and operations would occur. The project site is relatively flat and partially paved, with the remainder consisting of compacted soil and ruderal groundcover along the north edge. No trees or landscaping exist.

The existing landfill power plant and maintenance building are primary structures near the project site, and both would remain. Existing trailers housing ancillary uses on the site would be removed, and remnant concrete foundations from previous uses exist on the north portion of the site. (See Figure 2-0).

The project site is currently served by utility infrastructure and services by East Bay Municipal Utilities District (EBMUD), West County Wastewater District, PG&E, and City of Richmond police, fire and emergency services departments.

The owner of the property is West County Sanitary Landfill, Inc., a subsidiary of Republic Services, Inc.

2.2 Surrounding Uses and Conditions

As highlighted in Figure 2-1, the project site is bound by existing fencing on the north, east and south, and connects to the surrounding WCCSL areas and operations via existing service road. Not part of the proposed project, but within part of the BMPC property shown in Figure 2-0, the existing WCCSL maintenance building, power plant, and a leachate treatment facility sit within 50 to 100 feet of the site, and leachate tanks operate just west of the north driveway into the property from the main WCCSL access road.

Figure 1-3 shows the nearby Golden Bear Waste Recycling Facility, located approximately 300 feet southwest of the property. Also, the West County Wastewater District Treatment Plant and the Wildcat Marsh Trail and trail head parking exist approximately 1,000 feet southeast of the property. Figure 1-2 and Figure 1-3 show the surrounding expanse consists of components of the 340-acre WCCSL facility, which consists of several distinct operations that function as a whole. Notably, these areas and uses include grass-covered disposal areas that are landfill mounds, runoff control ponds and lagoons, and composting areas, in addition to the tidal marshlands of San Pablo and Wildcat Creek tidal marshlands. Open water of San Pablo Bay is approximately 0.25 miles westward from the project site. (WCCSL BMPC Draft EIR, 2003)

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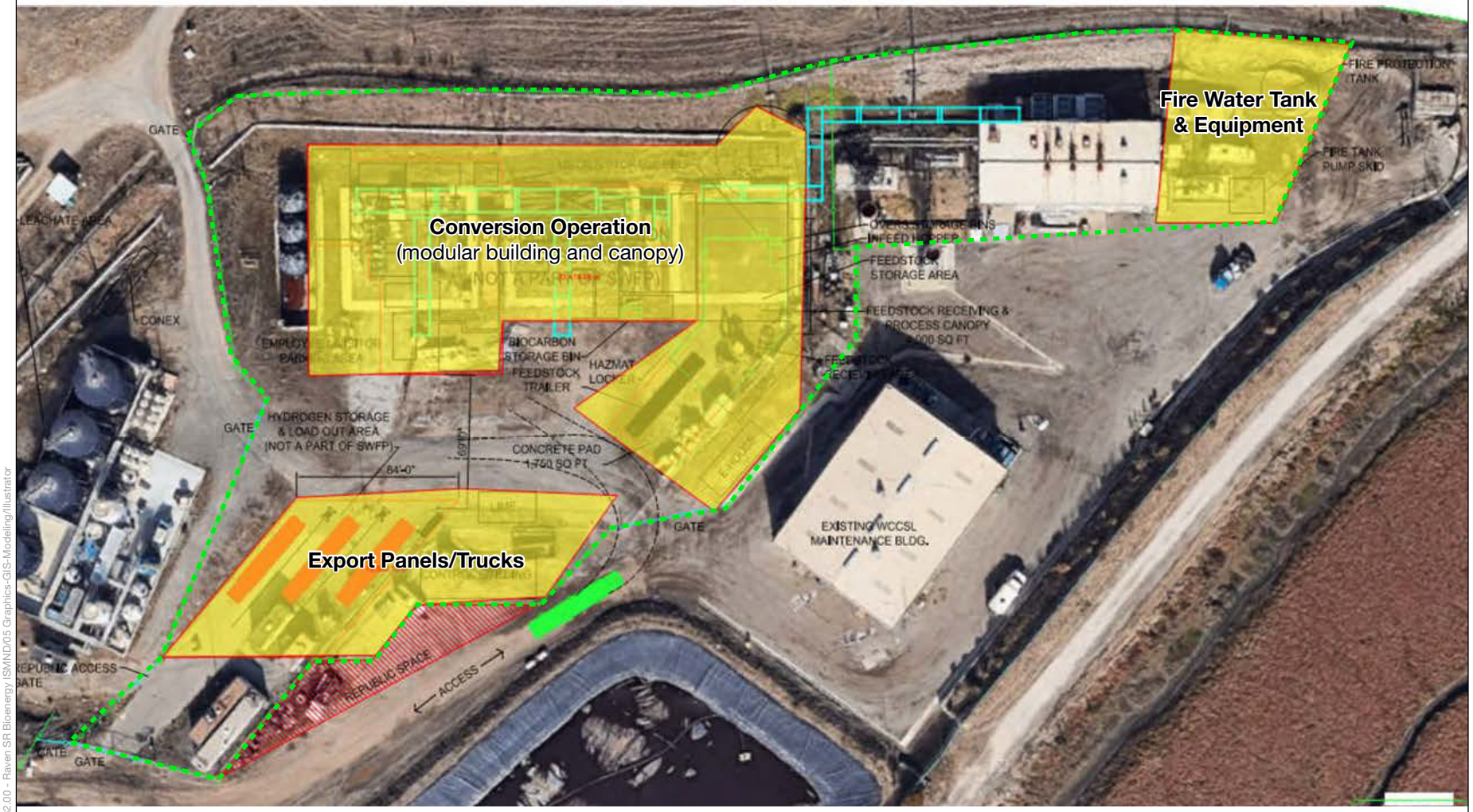
SOURCE: ESA, 2022; Google Earth, 2022

Raven SR Bioenergy Project Initial Study

Figure 2-0
Birdseye View of Project Site and Surrounding (from SE)

ESA



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SOURCE: Raven LLC, 2022; ESA, 2022

Raven SR Bioenergy Project Initial Study

Figure 2-1
Project Site and Raven SR Facility Areas

ESA

2.3 Site Plan and Structures

Figure 2-2, Simulated 3D Site Development, illustrates the proposed facility and key operation components simulated in a birds-eye view. All Raven SR's materials handling systems would be located inside a proposed modular structure. The proposed project would erect a new stand-alone modular structure where storage uses and remnant foundations currently exist at the north edge of the property. The proposed modular structure and industrial metal canopy for the feed (or input) area would contain three primary areas for the three-stage process of the operation described below.

Figures 2-3a and 2-3b, South Elevations, illustrate the proposed facility and key operations in elevation, and **Figure 2-4, Detailed Site Layout and Raven SR Facility Plan**, identifies each component in detail. The total new building area would be approximately 40,000 square feet. The industrial feed material handler would be up to 31 feet tall and the tallest facility element. Other elements of height and size include the nitrogen tank (30 feet tall); the cooling tower and the fire water tank (both 25.5 feet tall); and the industrial metal canopy over the feed/unload storage area, the adjacent steam reformer structure, and the nitrogen tank (each 26 feet tall).

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SOURCE: Raven LLC, 2022

Raven SR Bioenergy Project Initial Study

Figure 2-2
Simulated 3D Site Development

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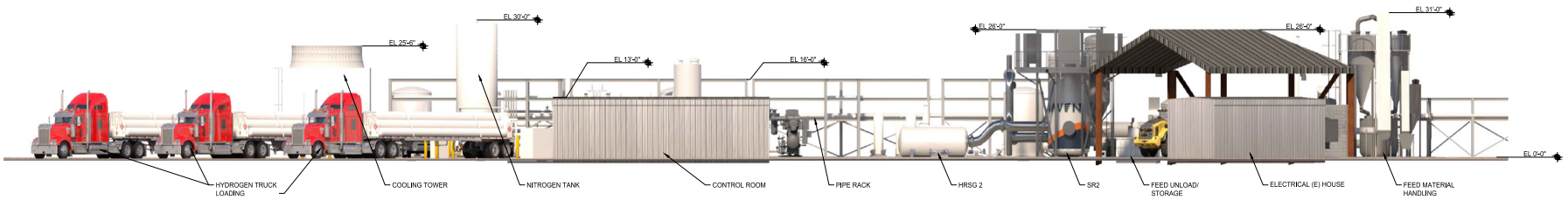

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SOURCE: Raven LLC, 2022

Raven SR Bioenergy Project Initial Study

Figure 2-3a
South Elevation (West End)

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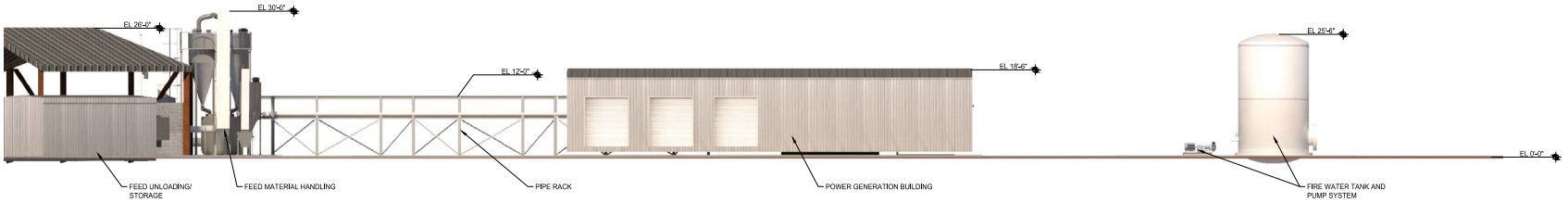

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SOURCE: Raven LLC, 2022

Raven SR Bioenergy Project Initial Study

Figure 2-3b
South Elevation (East End)

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2021\D2021003820.00 - Raven SR Bioenergy ISMND/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Raven LLC, 2022

Raven SR Bioenergy Project Initial Study

Figure 2-4
Detailed Site Layout and Raven SR Facility Plan

ESA

2.4 Technology

Raven SR's multi-patented Steam/CO_2 Reformation technology can convert a variety of organic waste feedstocks into a hydrogen-rich synthesis gas (syngas) through a three-step process shown in **Figure 2-5, Raven SR Process Diagram**.[7] Organic feedstocks include biomass, municipal solid waste, bio-solids, industrial waste, sewage, medical waste, or a combination of these, obtained from the existing WCCSL. The first stage of the process to turn feedstock into a raw syngas begins with an externally-heated "biomass steam reformer" and a "syngas steam reformer". The raw syngas is then polished, and then processed through purification of hydrogen to make the hydrogen product: transportation-grade hydrogen-rich syngas.

The technology is strictly non-combustion (i.e., anoxic, indirect heating), low pressure, and a catalyst-free process. As indicated in Figure 2-5, early in the process, the system sequesters solid carbon in a byproduct, biocarbon (also referred to as "biochar"), which is a salable product that can be used for fertilizer or filler for concrete, for example. The biocarbon mixture also includes elements within the organic waste feedstock (dirt, glass, grit, rocks, inorganic salts, etc.) that are inert to the process, not gasified, and drop out in the first stage, avoiding slag and tars.[8] The amount of biocarbon mixture is approximately 15 to 20 percent of the volume of dry feedstock input. (Also see Section 2.5, *Safety and Controls, Non-Combustion*, below.)

Solid material that goes through the feed handling system, including any volatile material (such as plastics, refrigerants, batteries) that may incidentally flow through to the rotary reformer would be converted to syngas as they thermally decompose by exposure to temperatures in the range of 1,400 degrees F. Any volatile material would become part of the syngas, and non-volatile, inert material would report to the biocarbon solid phase. No emissions would be generated by any volatile materials that may inadvertently enter the process. (Also see *Feedstock Processing*, below.)

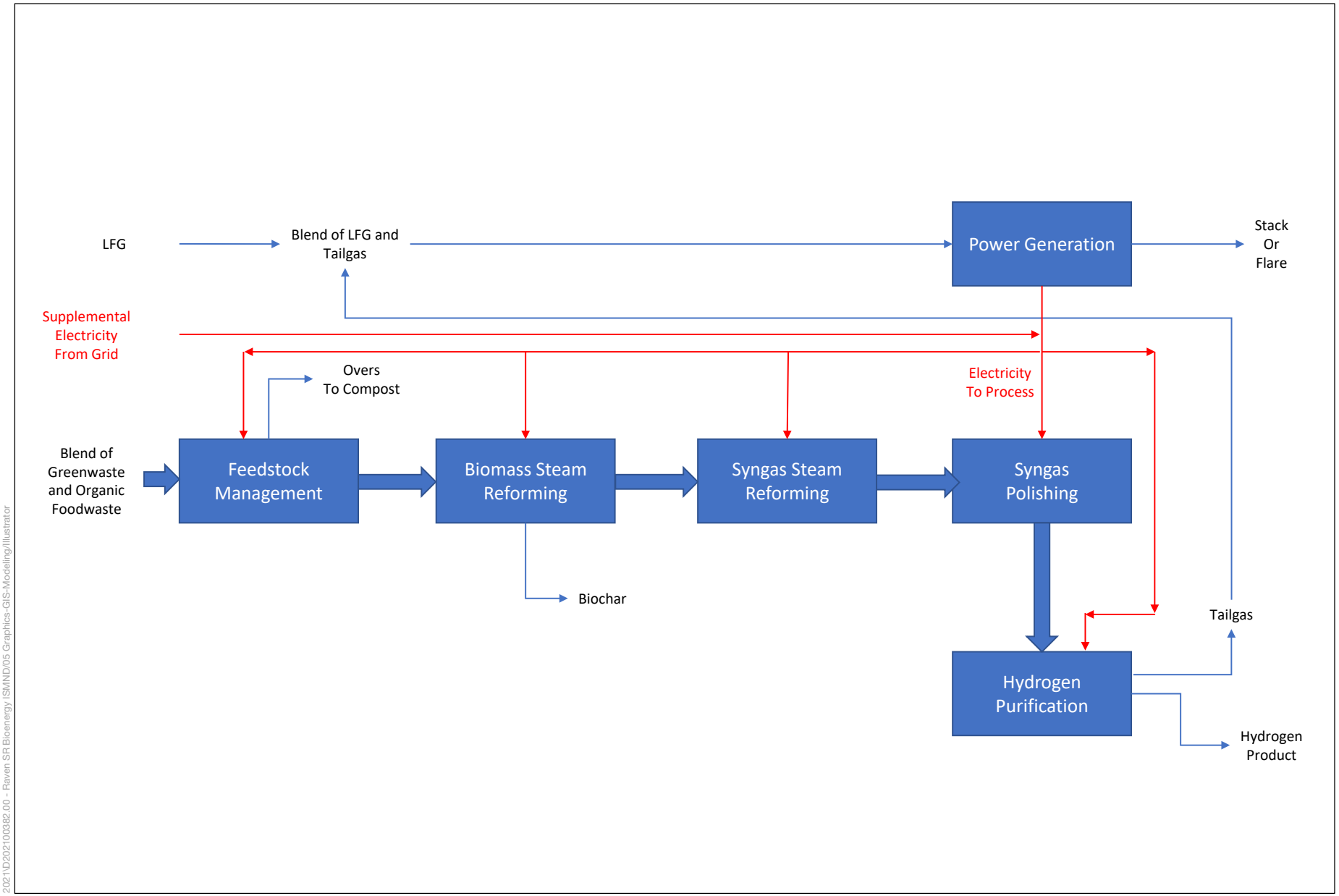
As also shown in Figure 2-5, the waste heat or "tail gas" from the conversion process can be blended with existing landfill gas (LFG, gas produced from the decomposition of organic solid wastes in the landfill) to generate power and increase the efficiency of the process. At some point in the cycle, the tail gas would no longer recycle into the process and instead go to the stack or flare, described below.

Flare System

Raven SR anticipates use of its flare system as a backup for the evacuation or venting of syngas and, on rare occasion, vent hydrogen product. The flare system would be in the constant state of readiness through a hooded, continuous propane pilot system. Use of the flare would be no more than 100 hours per year and occur on three typical instances:

[7] Hydrogen-rich, 55 to 63 percent H_2.

[8] The biocarbon is considered sterile following thermal treatment by the first stage of the process, when biological pathogens (if any) are destroyed by elevated temperature and residence time of approximately 45 minutes.



2021\D202100382.00 - Raven SR Bioenergy ISMND/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Raven LLC, 2022

Raven SR Bioenergy Project Initial Study

Figure 2-5
Raven SR Process Diagram

ESA

1. System start-up: During start-up of the system, off-spec syngas would be generated and evacuated from the system to the flare for destruction of volatiles.

2. System shut-down: Whether for emergency shut-down or planned shutdown, the system would require its inventory of syngas to be vented to the flare for destruction of volatiles.

3. No off-take available: On the rare occasion when a product load-out truck is not available (e.g., traffic, breakdown, etc.) or an unplanned outage on the export equipment is experienced, and arrangements are in process for replacement and/or repair, Raven SR must vent valuable hydrogen product to the flare as it would have no provision for emergency storage.

These instances have been quantified in Raven SR's air permit application to BAAQMD.

In 1993, the California Environmental Protection Agency's Department of Toxic Substances Control (DTSC) determined that the Raven SR process for the production of syngas from biomass and other carbonaceous solids was not categorized as either incineration or combustion and was therefore a suitable technology for use in California.[9]

2.5 Operations

Pre-Processing and Load Checks

The origin of the feedstock and the pre-processing and screening redundancies built into the system processes would to ensure that little or no material contamination that is incompatible with the Raven SR process would be introduced to the conversion system. First, Republic Services would grind and screen the incoming mix of green waste and organic food waste before delivering the feedstock to Raven. Any non-compostable material and other prohibited wastes would be minimized through Republic's screening and load checking programs that occur at its compost facility. [10]

After screening and load checking, the organic material is pre-processed by grinding to reduce volume, provide for a uniform mixture of material and particle size, and further screen out any remaining contaminants. The pre-processed organic material would then be delivered approximately 2,500 feet from the compost area to the Raven SR facility by Republic personnel and vehicles. The trucks would consist of self-unloading transfer trucks or other suitable vehicles that would discharge loads as directed by a spotter onto the floor of Raven SR's material

[9] According to the definitions listed in Section 260.10, Title 40, Code of Federal Regulations (40 CFR) and Section 66260.10, Title 22, California Code of Regulations (22 CCR). Also, since 2017, a Raven pilot engineering unit, sized at 100 wet pounds per day of feedstock, has been operating at the UC Berkeley's Richmond Field Station and is permitted for operation by the Bay Area Air Quality Management District (BAAQMD) under permit Nos. 23993 and 23320.

[10] A load checking program are developed in compliance with Title 14, Code of California Regulations (CCR), §17409.5, and generally address the number of load checks to be performed; the location for the storage of prohibited wastes removed during the load checking process that is separately secured or isolated; records of load checks and the personnel training.

receiving area. There the material would be visually inspected and then pushed by a loader into storage bunkers or other designated material storage areas. The pre-processed feedstock material would be fed into a metering hopper to cross a screen to remove any oversized material, and then a magnetic separator to remove any unexpected metal. Any oversized material would be returned to Republic's composting facility, and any recovered metal would be sent for recycling.

As discussed above in 2.4, *Technology*, if any materials are missed by the screening processes and enters the rotary reformer, those materials become part of process feed and would eventually become syngas or biocarbon.

Daily Quantities and Operations

The Raven facility would receive up to 99.9 wet tons per day of blended green waste and food waste feedstock to produce approximately 14 tons per day of biocarbon and up to 4,800 kilograms (kg) (5.3 tons) of hydrogen per day.[11] Feedstock would be weighed on Republic scales before arriving at the Raven SR site, and the commodities that come out of the process would be weighed on Republic scales outside of the Raven SR site. The WCCSL material that would be diverted to the Raven SR facility by Republic represents a portion of their permitted 250 tons per day of compost processing capacity.

The Raven SR process and facility is designed for continuous operation without many start-ups or shut-downs. Accordingly, the Raven SR system would run up to 24 hours per day, seven days per week, although an average of 1.5 days per month are planned down times. This totals approximately 8,300 hours of operation per year.

Energy and Fuel Use

The plant would consume approximately 6.0+ MW of electricity (MWe) to operate and produce the 4,800 kg of hydrogen per day (200 kg of hydrogen per hour). The majority of the power would come from onsite power generation using newly installed engines, that would replace existing, inefficient engines. The fuel to be used for the generation is the existing LFG from the Republic Services BMPC, combined with the tail gas from the pressure swing absorber (PSA) unit to purify the hydrogen product. Republic Services would receive approximately 0.5 MW from the power generation for its onsite operation needs and the rest would be used to power the proposed project. Any additional electrical power required beyond that generated onsite would come from an existing PG&E power drop to the site, as also indicated in Figure 2-5.

Safety and Controls

No Combustion. The Raven SR's facility's controls would be distributed through the various process islands, taking their direction from a central Human-Machine Interface in the control room with centralized data collection. Process setpoints would be bounded by high/low alarm

[11] While Raven SR can produce synthetic liquid fuels, the proposed Richmond location proposes to only produce transportation grade hydrogen due to the interest of the local and regional markets for non-fossil fuel based hydrogen.

limitations to draw the operator's attention to the specific problem. The control system would represent state-of-the-art digital technology with redundant instrumentation where necessary to ensure safe operation.

Because the process itself is oxygen-free, there would be no opportunity within the process for explosion. Piping and vessels would be periodically scanned with infrared equipment to identify hot spots or gas leaks that may threaten safety. If hot spots or leaks were identified, immediate steps would be taken to correct or mediate the condition. Also, remote monitoring of the facility by Raven SR corporate provides oversight of the operation and early identification of problems as they development. The facility would maintain a "Plant Safety Handbook" and establish procedures to be followed if events threaten the safety of the facility or surroundings. The facility would maintain and evolve Standard Operating Procedures for aspects of the plant that require frequent intervention, for example, accepted procedures to accept a truck for loading of hydrogen product, to fill to regulated maximum allowable pressures, to ensure a cool-down period to allow the pressurized gas to shed the heat of compression, etc.

Safety Standards and Maintenance. Raven SR units are equipped with continuous monitoring systems and can automatically shut down plant operations without human intervention. The project would comply with applicable Environmental Protection Agency (EPA) risk management plan (RMP) and Occupational Safety and Health Administration (OSHA) process safety management (PSM) guidelines, as may be applied to the facility to ensure the safety of its operations staff and the surrounding community. A maintenance program of regular and preventative maintenance would also be implemented to maintain equipment in a reliable manner.

Fugitive Emissions. The system is a closed process once the organic feedstock input is managed. Mechanical seals prevent fugitive emission from the first-stage reformer which operates under mild pressure. The first stage vessel (SR1) has mechanical seals with pressurized nitrogen, which would prohibit the release of fugitive emissions. Tail gas generated by the process is combined with LFG and used as a fuel to generate additional energy.

Odor Control. Odors may exist from the organic feedstock input that is already produced and processed at the WCCSL. Nuisance odor from Raven is unlikely since feedstock material would only be on the feedstock management area floor for relatively short periods of time. However, odor control for the proposed Raven SR operation would be in place to minimize possible odors. Also, the proposed industrial metal canopy would be placed over the feedstock floor and infeed equipment to prevent stormwater contact. Odor control would be added to the management area if objectionable odors occur. The facility could also store topical treatment solutions (non-toxic and biodegradable) onsite, which would be applied to neutralize odors if an immediate need arises.

Hydrogen Storage and Export Panel. The hydrogen product is compressed for short term storage before being exported via truck-mounted tube trailers for delivery to facilities using hydrogen for transportation or processes needing green hydrogen. There is no compression tank in the design. The produced hydrogen would be onboarded by a hydrogen gas export panel designed by a global manufacturer of hydrogen fueling stations to industry standards,

incorporating best-practice Health, Safety, Security and Environment (HSSE) design. The panel is compliant with National Fire Protection Association (NFPA) industry standards for handling hydrogen.

Onsite Water Tank / Fire Equipment. A new 250,000-gallon integrated fire water tank and diesel engine is proposed in the northeast corner of the site emergency use, as required by fire department regulations The fire water tank would be up to 25.5 feet tall . (Shown in Figures 2-1 through 2-4.)

2.6 Employment

Raven would employ approximately three to four employees per shift for the operation of the Raven facility, for a total of nine to 12 new employees to cover all shifts and provide necessary support of the facility. The facility would not involve customers onsite.

2.7 Transportation and Circulation

As indicated under "Safety Controls" above, the proposed project would export the produced hydrogen offsite via truck-mounted tube trailers (shown in Figures 2-2 through 2-4). The operation would involve up to approximately 12 hydrogen tube trucks and up to approximately 15 biocarbon trucks (total 37 trucks) per week, each with an average trip of 40 miles after leaving the site. Considering this with other trucks and employees coming to and leaving the project site daily, the project is estimated to generate about 130 vehicle trips on a typical weekday.

In addition, the Raven SR system would only use feedstock from ongoing existing BMPC operations on the property that would not leave the WCCSL site. Figures 2-2 and 2-4 show where WCCSL feedstock supply trucks would approach and exit the Raven facility from the feedstock prep area, and in addition to Figure 2-3a show three stalls where the tube trucks would connect to a hose and receive the hydrogen product. The tube trailers would idle for no more than five minutes once at project site, as required per State regulations.

2.8 Construction, Site Coverage and Drainage

Raven anticipates initiating construction activity on the project site in Fourth Quarter of 2022, which would continue for approximately eight months. Start-up of the plant is projected to begin in early the Second or Third Quarter of 2023.

Construction proposed is to demolish the existing materials and remove existing equipment from the project site, lightly regrade the site, add up to six inches of fill, and erect the new facility. The existing project site is mostly paved and partially pervious compacted soil and ruderal groundcover (see Figure 2-1). Existing materials to be excavated include remnant concrete foundations that would be pulverized and partially used as fill material.

The maximum depth of excavation would be up to 2.5 feet. All excavation spoils and remaining concrete debris would remain on the landfill site. Minimal fill, approximately 250 cubic yards,

would be hauled on site for grading; only demolition materials (asphalt and concrete) would be off hauled.

Approximately 0.76 acres of the 2.5-acre project site is currently impervious concrete or asphalt. The proposed project would repave the existing 0.76 acres in addition to adding approximately 1.21 acres of impervious area (including modular structures), resulting in a total of 1.97 acres (or 78 percent) of impervious area on the site. Approximately 0.53 acres of unpaved area along the north edge of the site would remain undisturbed. There are no natural drainage paths on the site.

The project would adhere to all applicable regulatory stormwater runoff controls and would pursue its own National Pollutant Discharge Elimination System (NPDES) permit. The project's stormwater plan would be integrated into the existing WCCSL system and ensure drainage from the proposed project site would drain towards existing stormwater runoff control ponds (or bioretention facility) to which the rest of the WCCSL property currently drains.

2.9 Off-site Improvements: Landscaping

As part of the proposed project, off-site landscaping improvements to the Wildcat Marsh Trail and trail head parking located approximately 1,000 feet east of the project location. Due to limited space and potential safety hazards, no new plants or vegetation would be installed within the Raven project site. Instead, new trees would be added to the public parking area near the trailhead.

Eleven drought-tolerant trees would be planted: either six large Coast Live Oak (*Quercus agrifolia*) or Big Leaf Maple (*Acer macrophyllum*), and five small California Buckeye (*Aesculus californica*). Both species are on City's approved list of trees. Tree size planted would be associated with 15-gallon containers

3. Environmental Factors Potentially Affected

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

☐ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☐ Biological Resources	☒ Cultural Resources	☐ Energy
☐ Geology, Soils and Seismicity	☐ Greenhouse Gas Emissions	☐ Hazards /Hazardous Materials
☐ Hydrology and Water Quality	☐ Land Use and Planning	☐ Mineral Resources
☐ Noise/Vibration	☐ Population and Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities and Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

Determination: (To be completed by Lead Agency)

On the basis of this initial study:

☐ 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 EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental documentation is required.

Lydia Elias
Signature

10/07/2022
Date

Lydia Elias
Printed Name

For

4. Environmental Checklist and Evaluation

4.1 Aesthetics

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Aesthetics *Except as provided in Public Resources Code Section 21099, 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 building within a State Scenic Highway?				☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			☒	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			☒	

Setting

The project site is within the WCCSL within an industrial, commercial, and open space setting of North Richmond. It is an integrated solid waste management and disposal facility and does not have significant visual value. Grading on the site over the years has resulted in topographic variations created by the hill forms or mounds that are the grass-covered landfills. The hill forms range from between elevations 110 and 160 feet above mean sea level, with up to an additional seven feet of soil layer (WCCSL BMPC Draft EIR, 2003). The area has little or no distinctive visual features, except for leachate treatment ponds, runoff control ponds and lagoons, and marshlands of Wildcat Creek.

Despite the absence of significant visual value within the WCCSL itself, the site provides extensive views in all directions, including unobstructed panoramic views of San Pablo Bay, San Pablo Ridge and Mt. Tamalpais across the Bay. The visual quality of the WCCSL has been assessed in numerous CEQA analyses over the years, and each determined that no aspect of the WCCSL operations would significantly affect visual quality. (WCCSL BMPC Draft EIR, 2003)

Evaluation

a) **Have a substantial adverse effect on a scenic vista?**

Less than Significant Impact. Visual access the WCCSL from nearby public areas are distant and limited, largely because the surrounding areas are mostly at lower elevations than that of the WCCSL; distant views are blocked by buildings or landscaping. Views toward the WCCSL and the project site from Richmond Parkway are blocked by trees and the property is difficult to distinguish from adjacent and background across the Bay. Northbound and southbound motorists on the Richmond Parkway can view the WCCSL, but views are limited, short-term and sometimes obscured or blocked by median landscaping or intervening trees and buildings. The proposed project site within part of the BMPC area is not visible from offsite areas as it is at an even lower elevation and behind intervening berms and levees.

Figure 4.1-1, Wildcat Marsh Trail Approach Toward Project Site (from East), captures part of the project site that would be visible to users of this public trail. The viewshed from this location does not capture any scenic vistas in the direction of the project site. Views toward the opposite direction of the site from the trail provides direct expansive views of the Wildcat Creek Marsh. Moreover, once developed, the facilities will appear consistent with the industrial nature of the existing visible facilities. The project would not have an adverse effect on a scenic vista. The impact would be less than significant.

b) **Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic building within a State Scenic Highway?**

No Impact. No designated scenic highways currently exist within the City of Richmond, according to California Scenic Highway Program mapping system. (Caltrans, 2016) While the City's prior 1994 General Plan and General Plan EIR identified portions of Richmond Parkway as having a positive aesthetic value, the proposed project site is not visible from the parkway. (Richmond, 2011)

c) **In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?**

2021\D2021100382.00 - Raven SR Bioenergy ISMND\05 Graphics-GIS-Modeling\Illustrator

SOURCE: ESA, 2022

Raven SR Bioenergy Project Initial Study

Figure 4.1-1
Wildcat Marsh Trail Approach Toward Project Site (from East)

ESA

Less than Significant Impact. The 340-acre WCCSL facility, in which the project site sits, consists of several distinct operations that function as a whole. Notably, these operations and areas include grass-covered disposal areas, notably the main central, landfill hill, runoff control ponds and lagoons, and composting areas, in addition to the tidal marshlands of Wildcat Creek. As previously stated in this section, numerous environmental reviews pursuant to CEQA have been conducted on all WCCSL activities, all of which determined that none of the activities would significantly affect the visual quality of the facility.

The proposed project could be visible from points along the adjacent and lower Bay Trail, since segments of the Trail allow users to observe, from a safe distance, some recycling activities within the WCCSL property. To the extent that the proposed project facilities and operation could be visible, the views would be distant and would not be adverse relative to other visible WCCSL activities. **Figure 4.1-2, Onsite View Toward Project Site**, shows the existing visual character in which the proposed project would exists.

All feedstock material for the proposed operation would be organic materials sorted from the existing BMPC operation; no feedstock would be brought directly to the Raven facility from offsite. Product from the project operation would leave the project site in hydrogen tube trucks and biocarbon trucks. Therefore, operations of the Raven facility are not expected to be a source of litter that could exacerbate litter and dumping in the nearby neighborhoods.

Overall, the project's effect on existing visual character or quality of public views of the site and its surroundings would be less than significant.

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

Less than Significant Impact. Many activities within the WCCSL facility operate 24 hours a day, seven days per week, including the BMPC activities and waste recovery operations. Other onsite processing operations operate until midnight. All existing operations operate under approved County and City use permits, which requires all lighting systems to reduce glare and to not substantially impact area residents. Existing lighting is varied and includes various sizes of portable and directional flood lights on certain operations.

2021\D2021100382.00 - Raven SR Bioenergy ISMND\05 Graphics-GIS-Modeling/Illustrator

SOURCE: ESA, 2022

Raven SR Bioenergy Project Initial Study

Figure 4.1-2
Onsite View Toward Project Site

ESA

The proposed project would also operate 24 hours a day, seven days per week, and would be developed within an existing, functional area of the BMPC operation, which is currently lighted. The project proposes LED lighting mounted on 30-foot-tall poles. Like the existing WCCSL and BMPC conditions, the additional lighting would be focused and shaded, incorporating directional shading (down-shot reflectors) to limit light pollution during night operations. The project would place nine single-light fixtures at throughout the site and three double-light fixtures in the truck loading area in the south portion of the site. Also, the continuous propane pilot light that fuels the flare system used as needed to evacuate or vent organic syngas or on rare occasion vent hydrogen product, would be hooded, thus minimizing its visibility from offsite.

Given existing lighting conditions and that the proposed project site is located within the varied topography of the WCCSL and would not be directly visible from offsite locations, the proposed project would not substantially alter current lighting conditions. Moreover, any new lighting would not affect nighttime views in the area. This impact would be less than significant.

References

California Department of Transportation (Caltrans), 2016. Scenic Highways Program. Available at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed June 3, 2022.

City of Richmond, 2011. *General Plan 2030 EIR*. August 2011.

Contra Costa County, 2003. *Draft Environmental Impact Report on the West Contra County Sanitary Landfill Bulk Materials Processing Center and Related Actions,* SCH# 2002102057. November 2003.

4.2 Agriculture and Forestry Resources

Environmental Issues	Potentially Significant Impact	Less than Significant Impact 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 Dept. 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?				☒

Setting

The project site and its surroundings are zoned for "Open Space", and has no history of agricultural uses (Richmond, 2012). Richmond sanitary service operations initiated within the area that is now the WCCSL in the early 1950s on previously undeveloped land.

Evaluation

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 (FMMP) of the California Resources Agency, to non-agricultural use?)**

No Impact. The project site is located entirely within an area of and surrounded by industrial, commercial and open space uses. The site is not identified as Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance by the FMMP, but is designated as Other Land, and is surrounded by lands designated as Urban Land and Other Land. The proposed project would have no impact on important farmland. (DLRP, 2012)

b) **Conflict with existing zoning for agricultural use, or a Williamson Act contract?**

No Impact. The project site and its surroundings are zoned for "Open Space", and has no history of agricultural uses (Richmond, 2012). Also, the site is not covered by a Williamson Act contract (DLRP, 2012) Therefore, the proposed project would have no impact regarding existing agricultural zoning 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))?**

No Impact. The proposed project site is not zoned as forest land or timberland, and there are no forests on the project site. No impact would occur with implementation of the proposed project.

d, e) **Result in the loss of forest land or conversion of forest land to non-forest use? 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. As stated above, the proposed project is not zoned as forest land and there are no forests on the project site. The project would not result in the loss of forest land or conversion of forest land to non-forest uses, and would have no impact.

Also, the project would be constructed and operated entirely within a previously developed area within the WCCSL that is designated as Other Land by the FMMP. The project site does not contain farmland or forest land and there are no aspects of the project that would affect any agricultural land or forest land off-site. Therefore, the proposed project would not result in conversion of farmland or forest land, on-site or off-site, to a non-agricultural use or non-forest use. The project would have no impact.

References

California Department of Conservation, Division of Land Resource Protection (DLRP), 2012. Contra Costa County Williamson Act FY 2012/2013. Available at: ftp://ftp.consrv.ca.gov/pub/dlrp/wa/. Accessed May 12, 2022.

DLRP, 2014. Farmland Mapping and Monitoring Program. Contra Costa County Important Farmland Available at: www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx. Accessed May 12, 2022.

City of Richmond, 2012. *Richmond General Plan 2030: Land Use Element.* April 25, 2012.

4.3 Air Quality

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Air Quality *Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.* *Would the project:*				
a) Conflict with or obstruct implementation of the applicable air quality plan?			☒	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?		☒		
c) Expose sensitive receptors to substantial pollutant concentrations?			☒	
d) Result in other emissions (such as those leading to odors or) adversely affecting a substantial number of people?			☒	

Setting

The project site is located in Contra Costa County, which is in the San Francisco Bay Area Air Basin (SFBAAB), within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The SFBAAB is currently designated as a nonattainment area for state and national ozone standards and national particulate matter ambient air quality standards. Development projects can contribute to a region's adverse air quality impacts on a cumulative basis so the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable when developing thresholds of significance for air pollutants. The significance thresholds used for project construction and operational impact analyses are based on thresholds set in the BAAQMD's CEQA Guidelines (BAAQMD 2017b).

For the purposes of this air quality analysis, sensitive receptors are defined as facilities and land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these types of uses include schools, hospitals, and daycare centers. Residential areas are also considered sensitive to poor air quality because these sensitive individuals could be present there, and people usually stay home for extended periods of time, which results in greater exposure to ambient air quality. There are no sensitive receptors within 1,000 feet of the project site. The nearest sensitive receptors to the project site are residences at generally West Gertrude Avenue/Malcolm Drive (approximately 0.75 miles southeast), Verde Elementary School at 2000 Giaramita Street (approximately 1.1 miles southeast), and Contra Costa Health Clinic at 1501 Fred Jackson Way (approximately 1.2 miles southeast).

Evaluation

a) **Conflict with or obstruct implementation of the applicable air quality plan?**

Less than Significant Impact. BAAQMD is the regional air quality authority in the project area. Primary goals of BAAQMD's adopted *2017 Clean Air Plan* are to protect public health by achieving attainment of air quality standards (BAAQMD, 2017a). The plan includes a wide range of proposed control measures, which consist of actions to reduce the non-attainment pollutants: state and federal 8-hour ozone standard, the state 1-hour ozone standard, the state PM_{10} standard, and the state and federal $PM_{2.5}$ standards. BAAQMD guidance states that "if approval of a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation, the project would be considered consistent with the Clean Air Plan" (BAAQMD 2017b). As indicated in the discussion of criteria "b" and "c" below, the project would not result in significant air quality impacts. Therefore, this impact would less than significant.

b) **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?**

Construction

Emissions from the construction phase of the project would be generated primarily from heavy duty equipment such as excavators, cranes, and forklifts. Criteria air pollutant emissions from equipment and on-road vehicle exhaust were estimated using CalEEMod (version 2020.4.0); modeling output files are included in **Appendix A** to this checklist. Construction is assumed to take place over an eight-month period. Project specific data for construction phasing schedule and equipment fleet provided by the Project Applicant was used in the model to estimate emissions for the construction period. The total emissions (without mitigation) generated over the duration of construction were divided by the number of construction days for each partial construction year to determine average annual emissions from construction. Emissions from equipment and vehicle exhaust are presented in **Table 4.3-1**. As shown in the table, emissions of reactive organic gases (ROG) and nitrogen oxides (NOx), which are ozone precursors, and particulate matter (PM_{10} and $PM_{2.5}$) would all be below their respective significance thresholds, which for construction have been established by BAAQMD in terms of average annual emissions.

TABLE 4.3-1
AVERAGE DAILY CONSTRUCTION-RELATED CRITERIA POLLUTANT EMISSIONS (TONS PER YEAR) WITHOUT MITIGATION

Project Average Daily Construction Emissions by Year	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$
2022	0.11	1.00	0.04	0.04
2023	0.06	0.48	0.02	0.02
BAAQMD Threshold for Significant Construction Impacts	10	10	15	10
Potential Significant Impact?	No	No	No	No

SOURCE: ESA (Appendix A to this checklist)

Operations

After the project is built, operational emissions, including stationary, mobile, and area sources, are anticipated to occur continuously throughout the project's lifetime. The project is anticipated to begin operations in 2023.

The Project Applicant has submitted an air permit application that includes multiple stationary sources, shown in **Table 4.3-2**. According to the applicant's air permit application, the majority of emissions would be generated from the biogas engine combustion process, where the engines emit exhaust that heats up a green waste rotary drier. The biogas engines are included in the list of proposed permitted sources, along with a green waste storage pile of up to 200 tons, a sheltered storage of limestone pellets would be used as a co-feed to the feedstock needed to reduce acid gas formation in the system process, a diesel-fired fire pump engine, as well as a flare that is a backup for the evacuation or venting of organic syngas or on rare occasion vent hydrogen product.

Fugitive emissions from piping components such as valves and pumps are also anticipated. Cooling towers, pressure storage tanks, raw water storage tanks, treated water storage tanks, bisulfite storage tanks, anti-scalant storage tanks, and condensate recovery tanks are exempt from the permit requirement under BAAQMD Regulation 2, Rule 1 (BAAQMD 2017c), as described in the permit application. **Table 4.3-3** shows the anticipated emissions from the permitted sources.

Notably, the project would replace an existing biogas-fired engine with three (3) newer, lower emitting, and more efficient Waukesha or Jenbacher engines. This replacement would result in a lower emissions profile in contrast to operating the facility using the existing engine. The project is also expected to increase the functional use of landfill-produced biogas, thereby reducing the amount of organic gas sent to a flare for venting or evacuation and ultimately reducing the flare-based emissions.

Operational-related mobile source activities, such as employee commuting, truck trips for delivery and materials hauling, use of landscape equipment, and other sources would generate emissions of criteria air pollutants, their precursors, and toxic air contaminants (TACs). Area sources generally include fuel combustion from space and water heating,

landscape maintenance equipment, and fireplaces/stoves, evaporative emissions from architectural coatings, and consumer products. **Table 4.3-4** shows the emissions from operational emission sources that are not part of the air permit application.

TABLE 4.3-2
AIR PERMIT APPLICATION'S AVERAGE ANNUAL OPERATIONAL CRITERIA POLLUTANT EMISSIONS
(TONS PER YEAR)

Project Operations Emissions by Source	CO	NO_x	VOC/ROG	SO_2	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Biogas engines	50.69	7.19	5.70	6.63	5.13	5.13
Green waste off gas	N/A	N/A	2.38	N/A	N/A	N/A
Fugitive component leaks	N/A	N/A	0.63	N/A	N/A	N/A
Limestone handling	N/A	N/A	N/A	N/A	0.003	0.0005
Limestone storage	N/A	N/A	N/A	N/A	0.016	0.0024
Flare	0.092	0.16	0.0098	0.0002	0.0086	0.0086
Fire pump engine	0.055	0.04	0.0022	0.00009	0.0033	0.0033
Total	**50.84**	**7.39**	**8.72**	**6.64**	**5.16**	**5.14**

SOURCE: Ramboll Permit Application (Raven, 2022a)

TABLE 4.3-3
CALEEMOD AVERAGE ANNUAL OPERATIONAL-RELATED CRITERIA POLLUTANT EMISSIONS
(TONS PER YEAR)

Project Operations Emissions by Category	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Area	0.18	0	0	0
Energy	<0.01	0.05	<0.01	<0.01
Mobile	0.14	0.16	<0.01	<0.01
Offroad	0.15	1.45	0.05	0.04
Waste	N/A	N/A	0	0
Water	N/A	N/A	0	0
Total	**0.47**	**1.66**	**0.05**	**0.05**

SOURCE: ESA (Appendix A to this checklist)

TABLE 4.3-4
AVERAGE ANNUAL OPERATIONAL- RELATED CRITERIA POLLUTANT EMISSIONS
(TONS PER YEAR)

Project Operations Emissions	NO_x	VOC/ROG	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Air Permit	7.39	8.72	5.16	5.14
CalEEMod	1.66	0.47	0.05	0.05
Overall Total	**9.05**	**9.19**	**5.21**	**5.19**
BAAQMD Threshold for Significant Operational Impacts	*10*	*10*	*15*	*10*
Potential Significant Impact?	No	No	No	No

Source: ESA (Appendix A to this checklist) and Ramboll Permit Application (Raven, 2022a)

These tables show that on a project-level assessment, emissions do not exceed significant thresholds determined by BAAQMD for criteria pollutants emitted during operations, and therefore are less than significant.

Construction Air Emissions

Less than Significant Impact. Construction activities would result in emissions of the following non-attainment pollutants: reactive organic gases (ROG) and nitrogen oxides (NOx), which are ozone precursors, and particulate matter (PM_{10} and $PM_{2.5}$). These pollutant emissions would be generated in the form of fugitive dust (PM_{10} and $PM_{2.5}$) and in the form of exhaust by construction equipment, on-road vehicle trips of haul trucks for delivering construction material, water trucks for site dust control, and construction worker commutes to and from the project site.

Construction Dust

Less than Significant Impact, after Mitigation. Activities that generate dust include excavation and equipment movement across unpaved construction sites. Dust can be an irritant causing watering eyes or irritation to the lungs, nose, and throat. Excavation, grading, and other construction activities can cause wind-blown dust that adds PM_{10} and $PM_{2.5}$ to the local atmosphere. The BAAQMD has taken a qualitative approach to addressing fugitive dust emissions during construction, such that any project that implements the BAAQMD Basic Construction Mitigation Measures Recommended for All Projects (Best Management Practices) would not result in a significant impact with respect to fugitive dust (BAAQMD 2017b). Mitigation Measure AQ-1: Best Management Practices, provided below, specifies BAAQMD recommended measures and would apply to all individual projects to address construction dust. In conclusion, while air emissions from construction equipment are all below the BAAQMD CEQA thresholds construction dust emissions are always considered significant within the SFBAAB unless the mitigation measures below are applied.

Mitigation Measures

AQ-1: Best Management Practices.

All subsequent projects, regardless of size, shall implement the following best management practices to reduce construction impacts, particularly fugitive dust, to a less-than-significant level:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, except when not required for dust control.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Operational Air Emissions

Less than Significant Impact. Based on the operational emissions modelled and summarized in Table 4.3-4 above, activities related to operating the bioenergy system would all be below significance thresholds.

c) **Expose sensitive receptors to substantial pollutant concentrations?**

Construction

Less than Significant Impact. Construction equipment and associated heavy-duty truck traffic generate diesel exhaust, which is a known TAC. Construction exhaust emissions may pose health risks for sensitive receptors. However, there are no sensitive receptors

nearby the project site, which is zoned for open space uses. The nearest sensitive receptors are 0.75 miles southeast, or more than 1,000 feet, which is the distance considered in the BAAQMD CEQA Guidelines. Therefore, any concentrations of diesel particular matter (DPM) generated during construction would be less than significant.

Operations

Less than Significant Impact. The proposed project would introduce a new source of DPM and $PM_{2.5}$ emissions due to the installation of an emergency diesel generator at the centralized treatment facility that would use California Air Resources Board (CARB)-certified diesel fuel. Emergency generators would be subject to BAAQMD permit requirements, which would ensure that operation of these generators would not significantly impact nearby receptors. These activities would result in minimal TAC emissions for emergency operations only (typically less than 50 hours per year), and therefore have negligible associated health risks to existing sensitive receptors in the area, the nearest being 0.75 miles from the project site. Other annual TAC concentrations from non-emergency operations of the generator were estimated in an annual emissions summary for operations at the project site (Raven, 2022a). An HRA was not conducted due to there not being any sensitive receptors within 1,000 feet of the project site and trigger levels not applying to the project. There would also be a rubber-tired loader associated with operations that would run 24 hours a day 7 days a week. Emissions from the loader were calculated using CalEEMod and included in the operational emissions, shown in **Table 4.3-4.**

d) **Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Less than Significant Impact. Existing uses on and near the WCCSL include operations that are among typical odor sources of concern. These include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, chemical manufacturing facilities, and auto body shops. As a hydrogen production facility, the project would include organic feedstock processed during operations at the WCCSL, which is known to create odors. WCCSL implements various control measures to minimize odors associated with operation of the mixed waste processing.

The nearest sensitive receptors to the project site are residences at generally West Gertrude Avenue/Malcolm Drive, approximately 0.75 miles southeast. This is closer than the 1.0-mile odor screening distance for greenwaste handling established in the BAAQMD's CEQA Guidelines. Also, an elementary school and a health clinic exist approximately 1.1 and 1.2 miles, respectively, from the project site - slightly beyond the screening distance. Uses between the project site and these the nearest sensitive receptors to the southeast include the West County Wastewater District Treatment Plant, EBMUD's North Richmond Water Reclamation Plant, the Richmond Sanitary District, and other refuse services, automobile repair and towing businesses, and lawn services, etc. Topography in the area is relative flat, and no substantial areas of vegetation exist.

The prevailing wind direction in this area for the majority of the year (February through November) is from the south, blowing away from area of sensitive receptors. This prevailing wind direction shifts to the north, blowing toward the sensitive receptor area, for approximately two months of the year (December and January).

Nuisance odor from Raven is unlikely since feedstock material would only be on the feedstock management area floor for relatively short periods of time. Nor would the system's tail gas or the as-needed flare generate noticeable odor. Also, other than the input of organic feedstock within the system, the process would not involve the storage or processing of other potentially odorous materials nor contribute to odor from nearby existing WCCSL activities. Regardless, as described in Section 2, *Project Description,* the project would involve odor control mechanisms to minimize possible additional odors from its operation. The proposed industrial metal canopy would be placed over the feedstock floor and infeed equipment to prevent stormwater contact. The project may incorporate control measures similar to those current employed by WCCSL, such as ensuring the input of feedstock into the system within a designated period of time from receiving it from WCCSL's onsite organic material processing facility to prevent potential odor buildup; routine cleaning of floors, walls, and equipment; use of odor suppressants as deemed necessary. Odor control would be added to the management area if objectionable odors occur. The Raven facility could also store topical treatment solutions (non-toxic and biodegradable) onsite, which would be applied to neutralize odors if an immediate need arises. To the extent that any new sources of odor is attributable to the proposed project, the project applicant shall promptly log and respond to any complaints and remediated.

Therefore, any odor impacts from the proposed project would not be considered substantial nor likely contribute substantially to any existing odor sources of the WCCSL. The impact would be less than significant.

References

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4.4 Biological Resources

Environmental Issues	Potentially Significant Impact	Less than Significant Impact 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 Wildlife or United States Fish and Wildlife Service?		☒		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?				☒
c) Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of 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?				☒

Setting

The project site is located in the upland area of the approximately 340-acre WCCSL, within the context of expansive grasslands and hills. The WCCSL borders San Pablo Bay and tidal marshland of naturalized portions of San Pablo and Wildcat creeks. The broader surrounding area of the WCCSL property is a low density industrial and open space area.

The local context in Figure 1-2 shows the project site located approximately 0.25-mile east of the San Pablo Bay shoreline, mudflats, and open water. The tidal marshland of San Pablo Creek is approximately 0.3 miles north/northeast of the project site, bordering the WCCSL north boundary which is an elevated levee. As shown in Figure 2-0, the marshlands of Wildcat Creek sit

approximately 280 feet south/southeast of the project site, bordering the WCCSL south boundary, which is also an elevated levee. A closed Class I landfill is immediately north of the project site and the main access road supports a cover of non-native grassland and ruderal vegetation species. No trees exist on the project site. Several landscape trees occur at the Golden Bear Waste Recycling Facility, located approximately 300 feet southwest of the project site.

Biological resources were characterized through the review and compilation of existing information and a biological reconnaissance survey conducted by ESA biologists on June 29, 2022. The study area included the project construction area plus a 250-foot buffer, to account for potential indirect impacts to special-status species. The study area for special-status plant species includes the project construction area, plus a 10-foot buffer due to the lack of potential for indirect impacts to plants. No detailed surveys were conducted for special-status plants or wildlife or are deemed necessary based on the developed and manipulated conditions of the project site and surroundings, the scope of the proposed project's construction and operations, and the proposed standard methods to minimize disturbance to sensitive resources in the vicinity.

Species / Habitats

The uplands of the WCCSL are either devoid of vegetation from on-going landfill operations and roadways, or are dominated by nonnative grasses and forbs. Plant species observed in the grassland at the periphery of the project site are dominated by non-native species such as Italian rye grass (*Festuca perennis*), wild oats (*Avena* spp.), storksbill (*Erodium cicutarium*), bristly ox-tongue (*Helminthotheca echioides*), and ribwort (*Plantago lanceolata*). Several weedy species are also present along the margins of the site, including fennel (*Foeniculum vulgare*), wild radish (*Raphanus* spp.), black mustard (*Brassica nigra*), curly dock (*Rumex crispus*), prickly lettuce (*Lactuca serriola*), and iceplant (*Carpobrotus edulis*). Clumps of native coyote brush (*Baccharis pilularis*) are scattered through grasslands, road margins, and upper edge of the marshlands and levees.

While the highly disturbed project site provides little habitat that is suitable for special-status plants and wildlife, the surrounding grasslands and wetlands provide habitat for a variety of wildlife and plant species. Wildlife observed in the surrounding study area during the site reconnaissance survey include American crow (*Corvus brachyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), western bluebird (*Sialia mexicana*), barn swallow (*Hirundo rustica*), common raven (*Corvus corax*), Canada goose (*Branta canadensis*), wild turkey (*Meleagris gallopavo*), black-necked stilt (*Himantopus mexicanus*), turkey vulture (*Cathartes aura*), mallards (*Anas platyrhynchos*), killdeer (*Charadrius vociferus*), and several gull species (*Larus* spp.).

Sensitive aquatic habitats occur outside of the project boundary, and include wetlands, sloughs, creek channels, and the San Pablo Bay shoreline. San Pablo Creek is located approximately 600 feet east/northeast of the project site and is separated from WCCSL developed areas by a levee. San Pablo Creek is tidally influenced and flows into the San Francisco Bay after flowing through San Pablo Creek Marsh. Emergent salt marsh vegetation occurs approximately 280 feet south/southwest of the project site within Wildcat Marsh, 0.3 miles north/northeast of the project site. Numerous shorebirds, waterfowl, and other wildlife use the marsh and mudflats for foraging and resting; however, the marsh is beyond the 250-foot project study area.

A number of special-status animal species have been reported from nearby creeks and marshes, including the state and federally-endangered salt marsh harvest mouse (*Reithrodontomys raviventris*) and California Ridgway's rail (*Rallus longirostris obsoletus*), state-threatened California black rail (*Laterallus jamaicensis coturniculus*), and several other species considered to be California Species of Special Concern and Fully Protected by the State. **Appendix B** presents the special-status species considered in the analysis, including each species' legal or protective status, habitat requirements, and blooming period (for plants), and the potential for occurrence within study areas. Higher elevations of the marsh typically provide important refuge for small mammals and birds during storms and high tides. However, due to the extent of developed and otherwise disturbed habitat on the project site, the narrow band of cover along the levee slope, and the intensity of human activity, the project site is not expected to provide upland retreat habitat for wildlife species, including species associated with salt marsh and other wetland habitats.

Several special-status plant species are known from the uplands and coastal salt marsh habitats along the shoreline of San Francisco and San Pablo Bays, but none have been reported from the vicinity of the WCCSL. A single occurrence of fragrant fritillary (*Fritillaria liliacea*) was reported from the Point Richmond area in 1900, but this occurrence is believed to have been extirpated by development, and suitable habitat is absent on the site. Other special-status plant species known from marshland habitat along the shoreline of San Pablo Bay include: the State rare soft-haired bird's beak (*Chloropyron molle* ssp. *molle*), Mason's lilaeopsis (*Lilaeopsis masonii*), and San Francisco gumplant (*Grindelia hirsutula* var. *maritima*). These California Rare Plant Rank 1B species are considered rare under Section 13580 of the California Environmental Quality Act (CEQA) Guidelines. None have been reported from the WCCSL, and suitable habitat is absent on portions of the site proposed for improvements.

Wetlands

No wetlands or other aquatic resources occur within the project site. Jurisdictional wetlands and unvegetated waters extend over the northern coastal salt marsh, open water habitat, and San Pablo Creek channel. The sloughs, creek channel, and bay shoreline which border the WCCSL property are all under tidal influence. The upland portions of the WCCSL property do not support wetlands, and the engineered basins designed for runoff control and leachate treatment, including basins located to the south and west of the project site, are exempt from state and federal wetland jurisdiction.

Evaluation

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 Wildlife or United States Fish and Wildlife Service?**

A list of special-status species that occur in the project region was identified based upon review of existing information, including queries of the California Natural Diversity Database (CNDDB), U.S. Fish and Wildlife Service (USFWS) Official Species List, and

the California Native Plant Society (CNPS). Habitats at the project area were assessed for their potential to support special-status species using information about local species occurrences and species' habitat requirements, in combination with the site visit described above (Appendix B).

Plants

No special-status plant species are expected to occur on the disturbed project site. Site preparation for the project would involve minimal grading for the erection of the modular building and the replacement of existing compacted soil, ruderal groundcover and partially paved areas where special-status plants are not expected to occur. Hence, no impacts would occur to special-status plants.

Wildlife

The project site exists within a previously disturbed upland portion of the WCCSL that does not provide habitat for special-status wildlife species. Due to the extent of past development, no special-status wildlife species are expected to occur within the project site. Additionally, basins and runoff control ponds located to the south and west of the project site do not provide suitable habitat for special-status species.

Beyond the site boundaries, surrounding wetland and annual grassland habitat may provide habitat for special-status wildlife species. The following species are considered to have the potential to occur within these areas: short-eared owl (*Asio flammeus*), western burrowing owl (*Athene cunicularia hypugaea*), northern harrier (*Circus hudsonius*), loggerhead shrike (*Lanius ludovicianus*), California black rail (*Laterallus jamaicensis coturniculus*), and California Ridgway's rail (*Rallus longirostris obsoletus*). Short-eared owl, western burrowing owl, northern harrier, and loggerhead shrike are California Species of Special Concern. Uplands and wetlands outside of the project site provide potential foraging habitat for these species. Upland grassland and ruderal habitats provide potential nesting habitat. Short-eared owl and northern harrier are ground nesting species, while loggerhead shrikes nest in shrubs and occasionally items such as brush piles, generally between two and four feet off the ground. Western burrowing owls nest underground in burrows dug by mammals such as California ground squirrels (*Otospermophilus beecheyi*).

California Ridgway's is listed as endangered under both the Federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA), and is a state fully-protected species. Ridgway's rails are found in tidal and brackish marshes where they typically construct nests in or under dense marsh vegetation, such as marsh gumplant and pickleweed at an elevation high enough to avoid inundation during high tides. California black rail is listed as threatened under CESA and is a state fully-protected species. This species nests and forages in tidal emergent wetland. Suitable marsh habitat for both of these species is present within 500 feet of the project site and multiple occurrences are known from marshes adjacent to or nearby the project site.

In addition to the aforementioned special-status species, common raptors and other bird species may forage in uplands and marshes on the edges of the study area. While no trees exist on the project site, trees approximately 300 feet southwest of the project site at the Golden Bear Waste Recycling Facility have potential to support raptor nesting. Current activity on the project site involves large truck traffic, human activity, operation of machinery and elevated noise levels. Regardless, some bird species, such as killdeer (*Charadrius vociferus*) and American crow (*Corvus brachyrhynchos*), tend to be highly tolerant of human disturbance and may still nest in areas with relatively high levels of human activity.

Construction

***Less than Significant Impact, after Mitigation*.** Bird species listed under FESA and CESA, as well as non-ESA-listed birds, are afforded conservation protections. Breeding birds are protected under California Fish and Game Code (FGC) Section 3503 and raptors are protected under Section 3503.5. In addition, FGC Section 3513 and the Federal MBTA (16 USC, Sec. 703 Supp. I, 1989) prohibit the killing, possession, or trading of migratory birds. Finally, FGC Section 3800 prohibits the taking of non-game birds, which are defined as birds occurring naturally in California that are not game birds or fully protected species. Impacts during the non-breeding season are not considered significant, primarily due to the birds' mobility and ability to access other high-quality foraging habitat in the region. Also, the project site is disturbed and provides poor habitat for nesting birds. However, equipment staging and project construction could render the site and adjacent areas temporarily unsuitable for breeding birds due to the noise, vibration, and increased activity levels associated with grubbing, earth moving, heavy equipment operation, and increased human presence even when the nest itself is unaffected. These activities could cause birds that have established a nest prior to the start of construction to change their behavior or even abandon an active nest, putting eggs and nestlings at risk for mortality. This would be considered a significant impact.

Implementation of Mitigation Measure BIO-1: Avoid and Minimize Impacts to Nesting Birds, Except Rails, and Mitigation Measure BIO-2: Avoid and Minimize Impacts to California Black Rail and California Ridgway's Rail would reduce potential construction-related impacts to nesting special-status birds to a less-than-significant level by requiring avoidance of construction-related work during the nesting bird season, or if avoidance of the nesting season is not possible, pre-construction nesting bird surveys and establishment of no-construction buffer zones around active bird nests. With implementation of Mitigation Measures BIO-1 and BIO-2, construction-related impacts would be less than significant.

Mitigation Measure BIO-1: Avoid and Minimize Impacts to Nesting Birds, Except Rails

To the extent practicable, project construction activities requiring heavy equipment, or any tree trimming, shall be performed outside of the bird nesting season (February 1st through August 31st) to avoid impacts to nesting birds. If these activities must be

performed during the nesting bird season, a qualified biologist shall be retained to conduct a pre-construction survey in the project construction and staging areas for nesting birds and verify the presence or absence of nesting birds no more than 14 calendar days prior to construction activities or after any construction breaks of 14 calendar days or more. Surveys shall be performed for the project construction and staging areas and suitable habitat within 250 feet of the project construction and staging areas in order to locate any active passerine (perching bird) nests and within 500 feet of the project construction and staging areas to locate any active raptor (birds of prey) nest, including potential burrowing owl burrows. If nesting birds and raptors do not occur within 250 and 500 feet of the project area, respectively, then no further action is required if construction begins within 14 calendar days.

If active nests are located during the pre-construction bird nesting surveys, no-disturbance buffer zones shall be established around nests, with a buffer size established by the qualified biologist. Typically, these buffer distances are between 50 feet and 250 feet for passerines and between 150 feet and 500 feet for raptors. These distances may be adjusted depending on the level of surrounding ambient activity and if an obstruction, such as a building or structure, is within line-of-sight between the nest and construction. Reduced buffers may be allowed if a full-time qualified biologist is present to monitor the nest and has authority to halt construction if bird behavior indicates continued activities could lead to nest failure. Buffered zones shall be avoided during construction-related activities until young have fledged or the nest is otherwise abandoned. If active burrowing owl dens are found within the survey area, the Project Applicant shall implement measures at least equal to the 2012 (or subsequent applicable) CDFW Staff Report (CDFG, 2012), as determined by the qualified biologist.

Mitigation Measure BIO-2: Avoid and Minimize Impacts to California Black Rail and California Ridgway's Rail

- To minimize or avoid the loss of individual California black rail and Ridgway's rail, construction activities requiring heavy equipment, adjacent to tidal marsh areas (within 500 feet [150 meters] or a distance determined in coordination with U.S. Fish and Wildlife (USFWS) or the California Department of Fish and Wildlife (CDFW)), shall be avoided during the breeding season from February 1 through August 31.

- If areas within 500 feet of rail habitat cannot be avoided during the breeding season (February 1 through August 31), protocol-level surveys shall be conducted to determine rail nesting locations. The surveys will focus on potential habitat that could be indirectly disturbed by construction activities during the breeding season to ensure that rails are not breeding within 500 feet of project activities.

  Survey methods for rails will follow the *Site-Specific Protocol for Monitoring Marsh Birds*, which was developed for use by USFWS and partners (Wood et al. 2017). Surveys are concentrated during the approximate period of peak detectability, January 15 to March 25 and are structured to efficiently sample an area in three rounds of surveys by broadcasting calls of target species during specific periods of each survey round. Call broadcast increase the probability of detection compared to passive surveys when no call broadcasting is employed. This protocol has since been

adopted by Invasive Spartina Project (ISP) and Point Blue Conservation Science to survey Ridgway's rails at sites throughout San Francisco Bay Estuary. The survey protocol for Ridgway's rail is summarized below.

  - Previously used survey locations (points) should be used when available to maintain consistency with past survey results. Adjacent points should be at least 200 meters apart along transects in or adjacent to areas representative of the marsh. Points should be located to minimize disturbances to marsh vegetation. Up to 8 points can be located on a transect.

  - At each transect, three surveys (rounds) are to be conducted, with the first round of surveys initiated between January 15 and February 6, the second round performed February 7 to February 28, and the third round March 1 to March 25. Surveys should be spaced at least one week apart and the period between March 25 to April 15 can be used to complete surveys delayed by logistical or weather issues. A Federal Endangered Species Act Section 10(a)(1)(A) permit is required to conduct active surveys.

  - Each point on a transect will be surveyed for 10 minutes each round. A recording of calls available from USFWS is broadcast at each point. The recording consists of 5 minutes of silence, followed by a 30-second recording of Ridgway's rail vocalizations, followed by 30 seconds of silence, followed by a 30-second recording of California black rail, followed by 3.5 minutes of silence.

- If no breeding Ridgway's rails or black rails are detected during surveys, or if their breeding territories can be avoided by 500 feet (150 meters), then project activities may proceed at that location.

- If protocol surveys determine that breeding Ridgway's rails or black rails are present in the project area, the following measures would apply to project activities conducted during their breeding season (February 1- August 31):

  - The applicant shall coordinate with the USFWS- and CDFW, as appropriate depending upon species, to determine if project activities can continue during the nesting season based on nest location, natural visual barriers (e.g., levees) between the project and marshlands, and the distance between proposed activities and identified activity centers. If impact cannot be avoided during the rail nesting season, activities would be delayed until after the nesting season.

Operations

Less than Significant Impact. Current activity on the project site involves large truck traffic, human activity, operation of machinery and elevated noise levels associated with the Republic Services BMPC property and the existing landfill power plant. The proposed Raven SR operation is not expected to significantly change the level of activity that is currently conducted within the project area and, therefore, long-term operation of the Raven SR operation is not expected to result in significant impacts to biological resources within the project area.

There is also existing permanent lighting associated with the current 24-hour activities of the BMPC and the project site. The proposed project would not substantially increase existing nighttime lighting to result in an adverse impact to existing bird species. The project proposes LED lighting mounted on 30-foot-tall poles. Similar to existing conditions, the project lighting would be focused and shaded, incorporating directional shading (down-shot reflectors) to limit light pollution during night operations. The project would place nine single-light fixtures at throughout the site and three double-light fixtures in the truck loading area in the south portion of the site.

No part of the proposed facility would exceed 31 feet in height, which is the height of the industrial feed material handler. Other elements of height and size include the nitrogen tank (30 feet tall); the cooling tower and the fire water tank (both 25.5 feet tall); and the industrial metal canopy over the feed/unload storage area, the adjacent steam reformer structure, and the nitrogen tank (each 26 feet tall). Therefore, no part of the project would exceed 45 feet in height, in which case the project would comply with the City of Richmond's Bird-Safe Buildings Municipal Ordinance.

Overall, the proposed project also would not alter any of the area's natural resources or native vegetation in a way that could adversely impact biological resources. The impact would be less than significant.

b) **Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?**

No Impact. The project site does not contain any riparian habitat or other sensitive natural communities. The nearest sensitive habitat is well-preserved coastal salt marsh occur along the San Pablo Bay shoreline, Wildcat Marsh, and along the upper banks of San Pablo Creek. The project site is located 0.25 miles east of the shoreline, approximately 0.3 miles south of San Pablo Creek's upper banks, and within 300 feet of Wildcat Marsh, which is separated from the project site by the Bay Trail levee. The proposed project does not involve any activity that would affect these areas. Therefore, the proposed project would have no impact.

c) **Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

No Impact. The project site does not contain any State or federally protected wetlands. The proposed development would not impact any waterbodies in any way and therefore would have no impact on protected wetlands.

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 wildlife nursery sites?**

Less than Significant Impact. The project site is not in a natural condition and contains development and current truck and other operations of the BMPC. Due to the existing developed nature of the site, the project site does not provide suitable habitat to be considered a wildlife nursery site. Additionally, wildlife movement within the project site is restricted by existing privacy fencing that surrounds the project area. While the surrounding uplands and wetlands provide habitat for the movement of native resident and migratory wildlife, activities associated with the project are not expected to directly impact these areas or impede wildlife movement. Therefore, this impact would be less than significant.

e) **Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Less than Significant Impact. Construction or operation of the proposed project would not conflict with any local policies or ordinances protecting biological resources. There are no existing trees on the project site, nor are any proposed due to limited space and potential safety hazards. However, as part of the proposed project, off-site landscaping improvements are proposed to the Wildcat Marsh Trail and trail head parking located approximately 1,000 feet east of the project site. Eleven drought-tolerant trees would be planted: either six large Coast Live Oak (*Quercus agrifolia*) or Big Leaf Maple (*Acer macrophyllum*), and five small California Buckeye (*Aesculus californica*). Both species are on City's approved list of trees. Tree size planted would be associated with 15-gallon containers. The project is subject to and would adhere to the City's local tree protection policies and regulations. Also, as addressed under Section 4.12, *Noise and Vibration*, of this checklist, the project would adhere to the City of Richmond Noise Ordinance regarding noise levels during temporary construction activity, as well as the operational noise levels. Therefore, this impact would be less than significant.

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?**

No Impact. The project site does not lie within the boundaries of any an adopted Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP) or any other approved local, regional, or State habitat conservation plan.

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4.5 Cultural Resources

Environmental Issues	Potentially Significant Impact	Less than Significant Impact 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 pursuant to Section 15064.5?				☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		☒		
c) Disturb any human remains, including those interred outside of formal cemeteries?		☒		

Setting

To determine the cultural resources sensitivity of the project site, ESA completed a records search and background research, including a review of historic maps, aerial imagery, and geologic/soils data. ESA staff conducted a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System on March 23, 2022 (File No. 21-1575). The purpose of the records search was to (1) determine whether known cultural resources have been recorded in the vicinity of the project site; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources. The records search consisted of an examination of the following documents:

- NWIC digitized base maps (USGS San Quentin, CA 7.5-minute topographic map), to identify recorded archaeological sites and studies within a 0.5-mile radius of the project site.
- NWIC digitized base maps (USGS San Quentin, CA 7.5-minute topographic map), to identify recorded historic-era resources of the built environment (building, structures, and objects) within and adjacent to the project site.
- Resource Inventories: *California Inventory of Historical Resources, California Historical Landmarks, Built Environment Resource Directory* (BERD) (through March 2020) and *Archaeological Determinations of Eligibility* (as of April 2012) for Contra Costa County.

No cultural resources have been previously recorded in the vicinity of the project site and there are no historic-age architectural resources in or adjacent to the project site. The nearest cultural resources are a series of pre-contact archaeological sites nearly 1 mile to the east that contribute to the Lower San Pablo Creek Archaeological District. These resources would not be impacted by the proposed project. The underlying geology of the project site consists of artificial fill over Holocene Bay Mud deposits. The historic shoreline is approximately 0.4 miles (2,000 feet) east of the project site; pre-contact and historic-era archaeological sites in this environment would be located at or very near to the historic shoreline.

Therefore, this analysis concludes that the sensitivity for pre-contact and historic-era archaeological resources is low and the potential to uncover archaeological resources during project implementation is also low.

Evaluation

a) **Cause a substantial adverse change in the significance of a historical resource as pursuant to Section 15064.5?**

No Impact. CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as any building, structure, site, or object listed in or determined to be eligible for listing in the California Register of Historical Resources (California Register), or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. The following discussion focuses on architectural and structural resources. Archaeological resources, including those that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed below under question b).

As a result of the records search and background research, it was determined that there are no architectural or structural resources in or adjacent to the project site that potentially qualify as historical resources, as defined in CEQA Guidelines Section 15064.5. As such, there are no historical resources present within the project site and there would be no impact on historical resources.

b) **Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?**

***Less than Significant Impact, after Mitigation*.** This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in California Public Resources (PRC) (CEQA) Section 21083.2(g). A significant impact would occur if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Based on the results of the background research and environmental context, the potential for encountering archaeological resources during project implementation is low. However, in the unlikely event that a previously unrecorded archaeological resource is identified during project ground-disturbing activities and found to qualify as a historical resource or a unique archaeological resource, any impacts on the resource resulting from the project could be potentially significant.

Implementation of Mitigation Measure CUL-1a: Cultural Resources Awareness Training and Mitigation Measure CUL-1b: Inadvertent Discovery of Cultural Materials or Tribal Cultural Resources would reduce potentially significant impacts to less than significant. In the event of an inadvertent discovery of any cultural materials or tribal cultural resource,

these mitigation measures would ensure that all personnel complete a cultural resources awareness training prior to any ground-disturbing activity and that work halts in the vicinity until a qualified archaeologist can make an assessment and provide additional recommendations if necessary, including contacting Native American tribes.

Mitigation Measure CUL-1a: Cultural Resources Awareness Training.

Prior to authorization to proceed, the City shall engage a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior's Professional Qualification Standards for Archeology, to conduct a training program for all construction workers involved on site disturbance. On-site personnel shall attend a mandatory pre-project training that outlines the general archaeological sensitivity of the vicinity and the procedures to follow in the event an archaeological resource and/or human remains are inadvertently discovered.

Mitigation Measure CUL-1b: Inadvertent Discovery of Cultural Materials or Tribal Cultural Resources.

If pre-contact or historic-era cultural materials are encountered during project implementation, all construction activities within 100 feet of the find shall halt and the contractor shall notify the City. The City shall notify a qualified archaeologist who will inspect the find within 24 hours of discovery and provide the City of an initial assessment. Pre-contact cultural materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era cultural materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If the City determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is pre-contact), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided if feasible. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource, incorporating the resource within open space, capping and covering the resource, or deeding the site into a permanent conservation easement.

If avoidance is not feasible, the City shall consult with a qualified archaeologist and a Native American representative (if the resource is pre-contact) to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

c) **Disturb any human remains, including those interred outside of formal cemeteries?**

Less than Significant Impact, after Mitigation. The records search and background research conducted for the project determined that no human remains are known to exist within the project site. Therefore, the project is not anticipated to impact human remains, including those interred outside of formal cemeteries. While unlikely, if any previously unknown human remains were encountered during ground-disturbing activities, impacts on the human remains resulting from the project could be potentially significant.

Implementation of Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains, would reduce potentially significant impacts to less than significant. This measure shall comply with applicable state laws, including Section 7050.5 of the Health and Safety Code. This would require work halt in the vicinity of a find and the immediate notification of the County Coroner. If the Coroner determines that the human remains are Native American, they would notify the California Native American Heritage Commission, who shall appoint a Most Likely Descendant (PRC Section 5097.98).

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains.

If human remains are encountered during project implementation, the contractor shall halt all construction activities within 100 feet of the find and notify the City. The City shall contact the Contra Costa County Coroner who will determine that no investigation of the cause of death is required. If it is determined that the remains are Native American, the Coroner shall contact the Native American Heritage Commission within 24 hours. The Commission shall then identify the person or persons it believes to be the Most Likely Descendant from the deceased Native American, who in turn would make recommendations for the appropriate means of treating the human remains and any grave goods.

References

Northwest Information Center (NWIC), Records Search File No. File No. 21-1575. On file, ESA, March 23, 2022.

4.6 Energy

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Energy *Would the project:*				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			☒	
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?				☒

Setting

In 2020, more than 35 percent of the electricity PG&E delivered to its customers came from eligible renewable resources including solar, wind, bioenergy, geothermal and small hydropower and is on target to meet the 2045 goal (PG&E, 2021). As introduced in Section 2, *Project Description,* the Raven SR project would consume electricity to operate, the majority of the power would come from updated onsite power generation, and the fuel to be used is the existing LFG combined with tail gas from the project operation. An existing PG&E power drop is available to the project site.

Evaluation

a) **Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

Less than Significant Impact. Both construction and operation of the project would involve expenditure of energy. Below are discussions of the energy resources that would be consumed during construction and operation of the project.

Construction

During construction, energy use would be both direct and indirect. Direct energy use would include the consumption of fuel (typically gasoline and diesel fuel) for the operation of construction equipment and vehicles. Energy in the form of electricity may also be consumed by some pieces of construction equipment, such as welding machines, power tools, lighting, etc.; however, the amount of consumed electricity would be relatively minimal. Indirect energy use would include the energy required to make the materials and components used in construction. This includes energy used for extraction of raw materials, manufacturing, and transportation associated with manufacturing.

CEQA focuses on the efficient use of energy rather than comparisons of estimated energy amounts to be consumed to quantitative significance thresholds. Construction activities at the project site would occur over a period of approximately 8 months. Construction activities would include use of heavy-duty construction equipment and offsite vehicles to transport equipment, materials, and workers to the project component sites.

Energy use requirements in the form of diesel fuel that would be consumed by off-road construction equipment at the project site have been estimated based on the GHG emissions estimates obtained from the CalEEMod modeling conducted for the Air Quality and GHG analysis in Sections 4.3 and 4.8, respectively, of this checklist. GHG emissions from CalEEMod were used in conjunction with The Climate Registry's 2021 default factors for calculating carbon dioxide (CO_2) emissions from diesel fuel (TCR, 2021). The analysis assumes that all off-road construction equipment would be fueled by diesel.

The analysis assumes that light-duty automobiles and trucks used by commuting construction workers would be fueled by gasoline, and that vendor vehicles and trucks that would haul demolition debris, soil, and other materials would use diesel fuel. This analysis assumes that no electric on-road vehicles would be used during project construction. GHG emissions associated with commuting workers and vendor and haul trips were estimated using information provided by the City for estimated trip counts and CalEEMod default trip lengths.

In addition to fuels used by equipment and vehicles, construction activities would use water for dust suppression and management, which in turn would require electricity to supply, treat, and transport the water to the project area.

It is estimated that over the entire construction period of the project, off-road equipment and on-road vender and haul trucks would consume approximately 25,061 gallons of diesel fuel, and commuting worker vehicles would consume approximately 146 gallons of gasoline.

Due to the relatively small scope of the project, as well as the limited duration of construction activities, the consumption of fuel energy during construction would be temporary, localized, and would amount to a very small fraction of the 47 million gallons of diesel and 336 million gallons of gasoline sold in Contra Costa County (California Energy Commission [CEC], 2020). Vehicles used for project construction and operation would be required to comply with all federal and state efficiency standards. Additionally, there are no project characteristics or features that would be inefficient or that would result in the use of equipment and vehicles in a manner that would be less energy efficient than similar construction projects.

Therefore, project construction would not result in wasteful, inefficient, or unnecessary use of energy, and would result in a less-than-significant impact associated with energy consumption.

Operation

Once operational, the majority of the project's power requirements would come from electricity generated onsite. The electricity would be generated using equipment such as newly installed Jenbacher generator sets. The fuel that would be used for the generation is LFG from the Republic Services landfill, blended with the tail gas from a pressure swing adsorption (PSA) unit to purify the hydrogen product. Republic Services would offtake approximately 0.5 MW from the power generation for its onsite operational needs and the rest of the generated energy would be used to power the hydrogen plant. The plant would consume approximately 6.0+ MWe to operate and produce 200 kg of hydrogen per hour. Any additional electricity needed to operate the facility would be sourced from an existing PG&E power drop to the site and no new distribution power line would be required for the project. Operation and maintenance of the new facility would require 3 to 4 employees per shift, for a total of 9 to12 new employees per day to cover all shifts and provide necessary support of the facility; energy use from employee trips would therefore be minimal. Energy would be consumed by new truck trips to the site, with is also relatively minimal at up to approximate 100 truck trips per week. The facility would not involve customers onsite.

Since the majority of the required power would be generated onsite, and the power would be used to produce hydrogen fuel at the plant, the energy use associated with the project would be net positive (i.e. more power would be generated than consumed) and not be considered inefficient or wasteful and hence, this impact would be considered less than significant.

b) **Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?**

No Impact. As discussed above, project construction would require the use of off-road construction equipment and on-road trucks. Construction activities would comply with state and local requirements designed to minimize idling and associated emissions, which would also minimize the use of fuel. Specifically, pursuant to 13 CCR Sections 2485 and 2449, idling of commercial vehicles over 10,000 pounds and off-road equipment over 25 horsepower would be limited to a maximum of five minutes. Fuel use for project construction would be consistent with typical construction and manufacturing practices, and energy standards such as the Energy Policy Acts of 1975 and 2005, which promote strategic planning and building standards that reduce consumption of fossil fuels, increase use of renewable resources, and enhance energy efficiency.

Once operational, the project's primary energy use would be electricity generated onsite using a fuel that would consist of LFG combined with tail gas. Energy used for operational vehicle trips would be negligible. Any additional electricity would be provided by PG&E, which would be subject to SB 100 under California's Renewable Portfolio Standard (RPS) Program. Signed into law by Governor Brown, SB 100 increased California's RPS target to 60 percent of total electric retail sales by 2030, and requires 100 percent of electric retail sales to come from eligible renewable or carbon-

free resources by 2045. PG&E, as the utility provider, is subject to these requirements. There are no aspects of the proposed project that would conflict with or obstruct a state or local plan for renewable energy or energy efficiency, so there would be no impact.

References

California Energy Commission (CEC), 2020. 2020 California Annual Retail Fuel Outlet Report Results (CEC-A15), August 31, 2020. Available: https://www.energy.ca.gov/media/3874. Accessed April 26, 2022.

Pacific Gas & Electricity (PG&E), 2021. PG&E Currents, April 19, 2021. Available: https://www.pgecurrents.com/2021/04/19/a-renewable-revolution-how-pge-and-its-customers-helped-write-californias-clean-energy-success-story/. Accessed April 26, 2022.

The Climate Registry (TCR), 2021. 2021 Default Emission Factors, Table 2.1—U.S. Default Factors for Calculating CO2 Emissions from Combustion of Transport Fuels. May 2021. Available: https://www.theclimateregistry.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Document.pdf?mc_cid=4b45d12237&mc_eid=5f138d1baa. Accessed March 29, 2022.

4.7 Geology, Soils and Mineral Resources

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

Setting

There are several known active faults in the vicinity of the project site. The location lies within a geologic province of the San Francisco Bay named the “Richmond Basin," bounded by the San Pablo and Hayward faults. The active fault in the region that are capable of producing the most significant ground shaking at the project site is the Hayward Fault, located approximately 3.7 miles southwest of the project site. (Rockridge, 2022)

A Geotechnical Investigation report was prepared for the proposed project (Rockridge, 2022). The project site is blanketed by about 12 to 18 feet of heterogeneous fill, the upper five feet of which in the areas studied generally appears to be relatively well compacted. The fill is underlain by young bay sediments known locally as Bay Mud, which extends to depths of approximately 110 to 117 feet below ground surface (bgs). Bay Mud layer is generally soft to depths of approximately 50 to 60 feet bgs, but can be more stiff below, depending on the degree of over consolidation. The Bay Mud is underlain by alluvium consisting of dense to very dense sand/silty sand that extends to the maximum depth explored (120 feet bgs).

This analysis considers information from the geotechnical investigation as well as from numerous studies conducted for the WCCSL property.

Evaluation

Geological Resources and Soils

a) **Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving (i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. (ii) Strong seismic ground shaking? (iii) Seismic-related ground failure, including liquefaction? (iv) Landslides?**

Less than Significant Impact. Intense ground shaking during a large earthquake would be expected at the project site, particularly given its close proximity of the nearest active fault. The project would adhere to standard industry practices, code requirements, and any geotechnical recommendations or design parameters identified in the geotechnical study prepared for the project (Rockridge, 2022). (for the proposed earthwork, foundation slabs, and any surrounding related improvements, utilities, or paved areas associated with the project, would reduce the potential impacts associated with ground shaking during a major seismic event; seismically-related ground failure, including liquefaction for which the project area is susceptible (Richmond, 2012). The project would also adhere to all requirements in the applicable versions of the California Building Code, which would generally reduce known seismic hazards to minimize potential adverse effects. The project would introduce an industrial operation and modular structures on the project site, involving up to three to four employees onsite at any particular time, and no customers. The impact would be less than significant.

b) **Result in substantial soil erosion or the loss of topsoil?**

Less than Significant Impact. The project, which relatively flat and partially paved and partially compacted soil and ruderal groundcover, would develop and implement an Erosion Control Plan and applicable best management practices as part of the National Pollutant Discharge Elimination System (NPDES) Construction General Permit, would reduce potential impacts associated with erosion to a less than significant level.

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?**

Less than Significant Impact. As mentioned in criterion "a" above, the project would adhere to standard industry practices, code requirements, and any geotechnical recommendations or design parameters that would reduce the likelihood of landslide, lateral spreading, subsidence, liquefaction or collapse due to unstable geologic units or soil. Based on the results of previous analyses, most of the sand layers present at the site (primarily within the Bay Mud) are sufficiently dense, have sufficient clay content, and/or are overlain by a sufficient thickness of Bay Mud, such that the potential for liquefaction is low although the site is in a liquefaction hazard zone (see "a"). The greatest potential for liquefaction is approximately 0.3 miles northward, adjacent to San Pablo Creek. The project site is not located on areas of landfill, which also sits upon Bay Mud and is susceptible to risks of settlement over time. The impact would be less than significant.

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

No Impact. Expansive soil is not known to exist at the WCCSL site (County, 2004). No impact would occur.

e) **Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

No Impact. The project does not proposed installation or use of septic tanks or alternative wastewater disposal systems; the site is currently served by West County Wastewater District sanitary sewer service and facilities which would continue with the proposed project.

f) **Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

Less than Significant Impact, after Mitigation. Based on the evaluation in Section 4.5, *Cultural Resources,* in this checklist, the potential for encountering paleontological or unique geologic features on the project site during ground-disturbing activities for the

proposed project is unlikely. However, the implementation of **Mitigation Measure CUL-1a: Cultural Resources Awareness Training**, **Mitigation Measure CUL-1b: Inadvertent Discovery of Cultural Materials or Tribal Cultural Resources**, and **Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains,** all identified above in Section 4.5, *Cultural Resources*, also apply to reduce the potential and unlikely event paleontological resources are discovered.

Mineral Resources

a, b) **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? 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 proposed project would not require the use of vast amounts of natural resources or mineral resources for construction or operation. Input to the operation is existing organic feedstock from the project site. No impact would occur.

References

City of Richmond, 2012. *Richmond General Plan Update Environmental Impact Report.* SCH. 2008022018. 2012.

City of Richmond, 2012. *Richmond General Plan 2030: Public Safety and Noise Element.* Table 3.7-4, *Liquefaction*. 2012.

Contra Costa County 2004. *Environmental Impact Report on the West Contra County Sanitary Landfill Bulk Materials Processing Center and Related Actions,* SCH. 2002102057. June 2004.

Contra Costa County 2009. *Addendum to the Final EIR for the WCCSL BMPC and Related Actions*, SCH. 2002102057. 2009.

4.8 Greenhouse Gas Emissions

Environmental Issues	Potentially Significant Impact	Less than Significant Impact 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 any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			☒	

Setting

State and Regional

The California Global Warming Solutions Act (Assembly Bill [AB] 32, 2006), as amended, sets statewide greenhouse gas (GHG) emissions caps. The California Air Resources Board (CARB) established the Climate Change Scoping Plan, which outlined a framework for achieving the emission reduction goals set in the California Global Warming Solutions Act. In 2016, SB 32 and its companion bill AB 197 established a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and included provisions to ensure the benefits of State climate policies reach into disadvantaged communities.

Senate Bill (SB) 375 requires CARB to develop regional GHG reduction goals for the automobile and light truck sectors. The *Plan Bay Area 2040* is a plan to achieve regional GHG reduction goals by improving transportation access, maintaining the region's infrastructure, and enhancing resilience to climate change through strategies such as fostering open space. There are a number of other laws in California intended to reduce GHG emissions through the regulation of construction standards, growth, and municipal operations.

Governor Brown signed Executive Order B-55-18 in September 2018 to establish a statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and to achieve and maintain net negative emissions thereafter. In response to this Executive Order, CARB's Draft 2022 Scoping Plan Update (May 10, 2022) presents several scenarios for achieving carbon neutrality statewide no later than 2045.

Significance Threshold

Greenhouse gas impacts are, by their nature, cumulative impacts because one project by itself cannot cause global climate change. As such, GHG emissions are evaluated under CEQA as a cumulative impact. To evaluate cumulative impacts, a lead agency must assess (1) whether the overall cumulative impact would be significant and, (2) if the overall impact is significant,

whether the incremental contribution that the individual project under review would add to the overall cumulative problem would be cumulatively considerable.

A conservative threshold of significance for determining the cumulative impact of a project's GHG emissions is "net zero" emissions. This concept is supported by the BAAQMD in its Justification Report: *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans* (BAAQMD, 2022), which states: "If a land use project incorporates all of the design elements necessary for it to be carbon neutral by 2045, then it will contribute its portion of what is needed to achieve the State's climate goals and will help to solve the cumulative problem. It can therefore be found to make a less-than-cumulatively-considerable climate impact" (BAAQMD 2022).

Further, the State's Office of Planning and Research's (OPR) *Final Statement of Reasons* for Senate Bill 97 revisions to the CEQA Guidelinesstate that, "AB32, and regulations implementing that statute, will require reductions in emissionsfrom certain sectors in the economy, but do not preclude new emissions. Moreover, as explainedin the Initial Statement of Reasons, the proposed amendments do not establish a zero emissions threshold of significance because there is no 'one molecule rule' in CEQA" (CNRA, 2009).

For GHG thresholds, the BAAQMD published the 2022 Justification Report that presents GHG thresholds, which are based on AB 32 and California Climate Change Scoping Plan reduction targets and strategies developed to reduce GHG emissions statewide (BAAQMD 2022). These thresholds are presented in **Table 4.8-1**. This analysis focuses on presenting Project GHG emissions for informational purposes and evaluating the project against the BAAQMD 2022 GHG significance thresholds.

The new BAAQMD thresholds are focused on land development projects, and the legacy stationary source threshold for operational GHG emissions is 10,000 $MTCO_2e$. This threshold is not being currently updated in the BAAQMD, as staff are focusing on creating land use project and plan thresholds (BAAQMD 2022). This analysis focuses on net zero emissions and the new draft thresholds, while also taking into account the existing BAAQMD threshold.

TABLE 4.8-1
BAAQMD GHG THRESHOLDS OF SIGNIFICANCE
(MUST INCLUDE A OR B FOR OPTION SCHEME)

	Existing and Draft Air District Thresholds
Legacy Stationary Source Threshold	10,000 $MTCO_2e$
Option A	Projects must include, at a minimum, the following project design elements: 1) Buildings a. No natural gas (residential and non-residential) 2) Transportation a. Achieve compliance with EV requirements in the most recently adopted version of CALGreen[1] Tier 2 b. Achieve SB 743 target of 15% reduction in VMT per capita below regional average
Option B	Be consistent with a local GHG Reduction Strategy that meets the criteria under the CEQA Guidelines Section 15183.5(b)

[1] Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code

SOURCES: BAAQMD 2022. *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*, April.

Evaluation

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

Less than Significant Impact. GHG emissions would be generated during both construction and operational phases of the project.

Construction

The combustion of diesel fuel to provide power for the operation of various construction equipment results in the generation of GHGs. Construction emissions associated with the project were estimated using project-specific information provided by the Project Applicant, such as construction schedule and phasing; types, number, and horsepower rating of constructionequipment to be used, their daily usage in terms of hours per day, and the number of dayseach piece of equipment is used over the construction period; and information on construction vehicle trips for worker commute, equipment and material transport and hauling trips. Appendix A to this checklist contains the data and assumptions used to estimate the construction-phase GHG emissions that would be associated with the project.

Carbon Dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) emissions from off-road construction equipment and construction vehicle trips were derived from the CalEEMod run to estimate criteria air pollutant emissions. N_2O and CH_4 emissions were multiplied

by their respective Global Warming Potentials GWPs (25 and 298) and added to the CO_2 emissions to obtain CO_2e emissions.

Construction of the proposed project is anticipated to occur over a period of approximately eight months. It is estimated that project construction would generate a total of approximately 258.9 $MTCO_2e$ over an 8-month construction period, as shown in **Table 4.8-2**. BAAQMD does not have adopted significance thresholds for construction-related GHG emissions in its 2017 CEQA Guidelines (BAAQMD, 2017). However, it recommends that the Lead Agency (i.e., the City of Richmond) quantify and disclose construction GHG emissions and incorporate best management practices to reduce GHG emissions during construction, as applicable.

TABLE 4.8-2
ANNUAL CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS

Year	GHG ($MTCO_2e$)
2022	178.3
2023	80.6
Total	**258.9**
Amortized	**8.63**

NOTES:

$MTCO_2e$ = metric tons of carbon dioxide equivalent

Construction-related GHG emissions were amortized over 30 years, which is a commonly accepted method for including construction emissions as part of the proposed project's average annual emissions.

SOURCE: Data compiled by Environmental Science Associates in 2022 (Appendix A to this checklist)

In addition, the GHG thresholds proposed by the BAAQMD in response to SB 32's GHG reduction goals also do not contain significance thresholds for construction (BAAQMD, 2022). GHG emissions from the construction phase of a project represent a very small portion of emissions over the project's lifetime, which for the projects such as the proposed project would be at least 30 years.

The BAAQMD's proposed thresholds are instead designed to address operational GHG emissions from land use development projects which represent the majority of a project GHG emissions. The primary source of GHG emissions from construction is diesel-powered construction equipment. Large reductions in construction emissions are difficult to realize because there are currently no economical alternatives to diesel fuel for powering most construction equipment. Improvements in statewide regulations governing construction equipment and fuel standards driven by SB 32 and other initiatives will also contribute to reduced emissions from construction activities. Therefore, GHG emissions associated with project construction would be considered less than significant.

Though not required as mitigation to reduce a significant impact, implementation of **Mitigation Measure AQ-1: Best Management Practices**, identified above in Section 4.3, *Air Quality,* will help reduce GHG emissions in addition to providing air quality

benefits. Therefore, GHG emissions associated with project construction would be considered less than significant.

Appendix A contains details on the calculations and assumptions used to estimate construction GHG emissions as well as model outputs.

Operational

The current BAAQMD thresholds have been set using the "fair share" analysis, which looks at how new land use development projects need to be designed and built to ensure that they will be consistent with the goal of carbon neutrality by 2045 (BAAQMD 2022). The existing legacy stationary source threshold is 10,000 $MTCO_2e$ annually.

The proposed system takes up to 99.9 wet-tons per day (WTPD) of blended green waste (GW), food waste (FW), using landfill gas (LFG) to provide power to the process and converts the feed into renewable, transportation grade hydrogen. This waste would otherwise be put into the landfill where it would produce GHG emissions in the form of methane gas. The landfill gas would also otherwise be creating GHG emissions if not for the bioenergy facility taking it and converting it into hydrogen. By redirecting this waste into the Raven SR, it reduces the amount of GHG emissions produced at the project site. Biogenic CO_2 emissions from green waste are not accounted for in operational GHG impacts as they are a result from materials that are derived from living cells, not fossil fuels (BAAQMD 2017b).

The system does not have any free oxygen in its process, and instead uses steam promoted processes to thermally decompose the feed into its chemical elements. This process does not involve any type of combustion, and therefore does not have an GHG emissions associated with the system operational emissions. Once project operations fully begin, GHG emissions are expected to be net negative.

Table 4.8-3 shows operational emissions calculated using CalEEMod (version 2020.4.0) added to the amortized construction emissions to get the total annual project GHG emissions. BAAQMD does not currently have a quantitative threshold for GHG emissions. The current qualitative significant thresholds are found in **Table 4.8-1.** The project would satisfy the BAAQMD Best Available Control Technology (BACT) requirements, and thus the proposed project is consistent with the 2017 Climate Change Scoping Plan as well as the draft 2022 Scoping Plan Update in terms of following the GHG reduction strategy to reach the statewide goal of climate neutrality by 2045.

TABLE 4.8-3
UNMITIGATED ANNUAL OPERATIONAL GREENHOUSE GAS EMISSIONS

Source	GHG ($MTCO_2e$)
Area	<1
Energy	80.5
Mobile	262.6
Off-road	303.2
Waste	96.7
Water	17.0
Amortized Construction Emissions	8.63
Total Project GHG Emissions	**697.17**

NOTES:

A 30-year lifetime was assumed for the project, which was used to amortize construction emissions.

$MTCO_2e$ = metric tons of carbon dioxide equivalent

SOURCE: Data compiled by Environmental Science Associates. See Appendix A to this checklist.

Based on the state carbon neutrality goal for 2045, the proposed project would contribute its portion of what is needed to achieve the State's climate goals and would help to solve the cumulative climate problem. It can therefore be found to make a less-than-cumulatively-considerable climate impact. The project emission calculations, along with the supporting data from the life cycle analysis, shows that the project would be below both the new draft significant thresholds and the legacy stationary source threshold, with the possibility of reaching net negative GHG emissions, contributing to the determination of the project having a less than significant impact and a less-than-cumulatively-considerable climate impact. Therefore, operation of the proposed project would have a less than significant impact.

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

Less than Significant Impact. In response to AB 32 GHG reduction goals, CARB adopted the Climate Change Scoping Plan, which outlined a framework for achieving the emission reduction goals set in the California Global Warming Solutions Act. The Scoping Plan was most recently updated in 2017 (2017 Scoping Plan; CARB, 2017) to address California's 2030 GHG target and identifies how the State can reach the 2030 climate target established by SB 32 while making substantial advancements toward the 2050 climate goal established by Executive Order (EO) S-3-05 (2005).

The City of Richmond developed and adopted a climate action plan (CAP) in 2016 to meet a city-wide 2020 GHG emissions target consistent with AB 32 and achieve reductions in line with the longer-term statewide goal to reduce emissions 80 percent below 1990 levels by 2050, as established by Executive Order B-3-15.

The project would generate GHG emissions primarily from operational activities and would most likely result in net negative emissions on an annual basis. As such, the project would help the City achieve its long-term GHG emissions goal. Neither the 2017 Scoping Plan Update or the City's existing CAP contain any actions or measures that address GHG emissions from construction. The majority of electricity supplied to the project would come from an onsite power generator, fueled by LFG from the Republic Services WCCSL. Any additional power required would be supplied from an on-site PG&E power drop; PG&E is required to comply with SB 100 and the RPS. SB 100 requires that the proportion of electricity from renewable sources be 60 percent by 2030 and 100 percent renewable power by 2045. Therefore, the project would be consistent with all applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions. This impact would be less than significant.

References

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California Natural Resources Agency (CNRA), 2009. 2009 California Climate Adaptation Strategy. Available online: https://resources.ca.gov/CNRALegacyFiles/docs/climate/Statewide_Adaptation_Strategy.pdf. Accessed May 17, 2022.

Raven SR Republic Service Summary, 2021. *Carbon Life Cycle Analysis, Life Cycle Associates, LLC.*

4.9 Hazards and Hazardous Materials

Environmental Issues	Potentially Significant Impact	Less than Significant Impact 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 which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				☒
e) For a project located within an airport land use plan or, where such 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 or excessive noise for people residing or working in the project area?				☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			☒	
g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?			☒	

Setting

The project site sits within the existing WCCSL which does not accept hazardous wastes; under State and federal laws, the landfill is permitted to accept non-hazardous wastes only. Although the municipal solid waste stream does contain small quantities of hazardous wastes that result from disposal of household waste and waste from small quantity generators, such as auto repair, auto dealers, and gas stations, the proposed project only involves a variety of organic waste feedstock. As discussed below and in Section 2.5 (*Non-Combustion*), the Raven SR process incorporates internal safety functions and would adhere to numerous applicable state and federal regulations, plans and procedures that apply specifically to its production of hydrogen gas from

organic solids. The project facility and operation located within the WCCSL would also benefit from the numerous existing safety regulations, plans and procedures.

A Phase I Environmental Site Assessment has been prepared for the project (CEC, 2022). The Phase I reports relevant site conditions observed include the storage of various commonly used hazardous materials, such as used oil, lubricants, anti-freeze, HDPE pipe sealant, pipe glue solvent, spray paint, and household cleaning supplies. All observed materials were properly stored and maintained. The Phase I also reports numerous above-ground storage tanks (ASTs) containing petroleum products located within and near the existing landfill power plant and maintenance buildings near the project site.

As previously described, the project is contiguous to a closed hazardous waste landfill portion of the WCCSL operation. Also, the project site was formerly occupied by three leachate evaporation ponds. Groundwater contamination on the WCCSL site was confirmed in a January 2021 Corrective Action Groundwater Monitoring Program Report.[12] Groundwater at the WCCSL also has reported PFAS chemicals detected in groundwater. This is considered a recognized environmental condition (REC), but regularly monitored and the results are submitted to the State regulatory agency. Additionally, the groundwater impact is not expected to pose a risk of unacceptable exposure to workers at the project site. (CEC, 2022)

Evaluation

a, b) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? 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 Impact. The proposed operation of transforming blended green waste and food waste into transportation-grade hydrogen-rich synthesis gas (syngas) and charcoal (biochar) could result in an adverse effect through the exposure to or spill of chemicals. The green waste and food waste feedstock would not be considered a hazardous material. Also, in 1993, DTSC determined that the Raven SR process for the production of syngas from organic solids was not categorized as either incineration or combustion and was therefore a suitable technology for use in California.[13]

The conversion method uses a non-combustion (i.e., anoxic, indirect external heating), low pressure process. The only chemicals added would be carbon dioxide (CO2), calcium

[12] CEC, 2022. Operation of a groundwater monitoring system and a groundwater extraction system is required under the West County Landfill (WCL) corrective action groundwater monitoring program (CAGMP), in accordance with Corrective Action Enforcement Order, Docket Number 20061079 dated September 26, 2007.

[13] According to the definitions listed in Section 260.10, Title 40, Code of Federal Regulations (40 CFR) and Section 66260.10, Title 22, California Code of Regulations (22 CCR). Also, since 2017, a Raven pilot engineering unit, sized at 100 wet pounds per day of feedstock, has been operating at the UC Berkeley's Richmond Field Station and is permitted for operation by the Bay Area Air Quality Management District (BAAQMD) under permit Nos. 23993 and 23320.

carbonate (limestone), and steam (i.e., water heated into a vapor state). No hazardous materials would be used in the process. The conversion occurs in sealed rotating drums that drop out solid matter from the green and food waste feedstock, which would consist largely of biocarbon, along with dirt, glass, grit, rocks, and inorganic salts. The biocarbon materials are inert to the process (i.e., not gasified) and drop out in the first stage. The process also drops out excess water. Neither the biocarbon nor the water would be considered a hazardous material.

There would be no long-term hydrogen storage onsite; the material would be fed directly into the tube trucks and transported offsite. For transportation, the United States Department of Transportation (USDOT) classifies hydrogen gas as a Division 2.1 Flammable Gas. Vehicles transporting flammable gas are mandated to display USDOT flammable gas placards. The proposed project would pump the hydrogen gas into standard pressurized hydrogen gas trucks, called tube trailers. The gaseous hydrogen is compressed to pressures of 380 gas (about 5,500 pounds per square inch [psig]) or higher into long cylinders that are stacked on a trailer that the truck hauls. This gives the appearance of long tubes, hence the name tube trailer.

To support development of the hydrogen economy, development of tube trailers capable of storing hydrogen at pressure of about 500 bar are approved for use on public throughways use by USDOT regulations (Federal Motor Carrier Safety Administration, 49 CFR Part 393). Such tube trailers are routinely used to transport hydrogen gas, as well as other gases such as natural gas and propane. Regulations regarding the design of tube trailers that transport hydrogen gas is in OSHA 1910.103, Subpart H, Hydrogen, which includes requirements for the containers, pressure relief valves, piping, tubing, fittings, and labeling. On-road transport of hydrogen gas must comply with applicable USDOT regulations, which include equipment requirements and driver safety training. In California, a specific driver's license is required, a commercial driver's license with a Hazard Materials endorsement.

A new 250,000-gallon integrated fire water tank and diesel engine is proposed in the northeast corner of the site for emergency use, as required by fire department regulations (see Figures 2-1 through 2-4). Diesel fuel is classified as a hazardous material, and therefore the above ground tanks would require compliance with containment requirements in a Spill Prevention, Control, and Countermeasure (SPCC) Plan pursuant to federal requirements. Propane for the continuous flare pilot would be supplied from a standard 1000-gallon propane tank installed on-site. A local propane supplier would service and fill the tank as needed.

Overall, the project operations would be equipped with continuous monitoring systems and can automatically shut down plant operations without human intervention. Specifically, the facility's controls would be distributed through the various process islands, taking their direction from a central Human-Machine Interface in the control room with centralized data collection. Process setpoints would be bounded by high/low alarm limitations to draw the operator's attention to the specific problem. The control

system would represent state-of-the-art digital technology with redundant instrumentation where necessary to ensure safe operation.

Because the process itself is oxygen-free, there would be no opportunity within the process for explosion. As previously described (*Section 2.5*), piping and vessels would be periodically scanned with infrared equipment to identify hot spots or gas leaks that may threaten safety. If hot spots or leaks were identified, immediate steps would be taken to correct or mediate the condition. Also, remote monitoring of the facility by Raven SR corporate provides oversight of the operation and early identification of problems as they development.

The project would comply with applicable Environmental Protection Agency (EPA) risk management plan (RMP) and Occupational Safety and Health Administration (OSHA) process safety management (PSM) guidelines, as may be applied to the facility to ensure the safety of its operations staff and the surroundings A maintenance program of regular and preventative maintenance would be developed to maintain equipment in a reliable manner.

The project's adherence to all regulatory requirements mentioned in this section, combined with the Raven RS process, materials and operations, the impact would be less than significant.

c) **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. As discussed above, the proposed project would not emit hazardous emissions or handle hazardous materials or waste. Moreover, the project site is located approximately 1.1 miles from Verde Elementary School at 2000 Giaramita Street. Therefore, no impact would occur.

d) **Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

No impact. An inactive waste disposal area that is a Class I Hazardous Waste Management Facility (HWMF) is located within the WCCSL and directly north of the BMPC and project site (see Figure 1-3 in Chapter 1, and Figure 2-0 in Chapter 2). The facility was closed pursuant to State and federal regulations, and final cap construction was completed prior to 2003. It is a totally enclosed facility with required environmental control systems. The proposed project site is not within the previous HWMF area; 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 or excessive noise for people residing or working in the project area?**

No impact. The proposed project is not located within an airport land use plan, and the closest airport to the project site is the San Rafael Airport located approximately 8.3 miles southeast. Therefore, the proposed project would not be located within two miles of an airport, and no impact would occur.

f) **Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

Less than Significant Impact. In the event of a large-scale disaster, emergency response to the site would be coordinated by WCCSL facility, City and County fire responders, and in adherence to the WCCSL Emergency Response and Evaluation Plan and local agency protocols. Emergency fire control procedures are also included in the composting and wood waste recycling operations plans. The WCCSL facility and project site are accessed from and exit to Parr Boulevard, and a serious of roadways and paths throughout the 340-acre WCCSL provide sufficient width for emergency access. The proposed project would be developed within part of the existing BMPC property and would not create new or interfere with existing access or egress roads. Therefore, there is no potential for the project to impair implementation of emergency evacuation or an adopted emergency response plan.

g) **Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?**

Less than Significant Impact. The project site is flat and surrounded by the WCCSL facility, which is composed of grass-covered disposal areas of the landfill mounds, runoff control ponds and lagoons, and composting areas, and tidal marshlands of San Pablo and Wildcat Creek. Open water of San Pablo Bay is approximately 0.25 miles westward from the project site. Wildfire hazard maps show the site as not being within a high wildfire hazard zone (CPUC, 2018). Further, as discussed in criteria "a and b", the project would include a new 250,000-gallon integrated fire water tank and diesel engine is proposed for emergency use, as required by fire department regulations.

References

California Public Utilities Commission. Fire-Threat Map – State of California. January 19, 2018.

CEC, 2022. *Phase I Environmental Site Assessment, West Contra Cost Sanitary Landfill, 1.5-Acre Clean Energy Development Project, 1 Parr Boulevard, Richmond California 94801*. June 30, 2022.

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Contra Costa County 2009. *Addendum to the Final EIR for the WCCSL BMPC and Related Actions*, SCH. 2002102057. 2009.

4.10 Hydrology and Water Quality

Environmental Issues	Potentially Significant Impact	Less than Significant Impact 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 or otherwise substantially degrade surface or groundwater quality?			☒	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			☒	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on- or off-site;			☒	
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;			☒	
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			☒	
(iv) impede or redirect flood flows?			☒	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			☒	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			☒	

Setting

No surface water bodies exist on the project site. As previously described throughout other sections of this analysis, the following surface water bodies exist within the WCCSL property and directly south/southwest of the project site: runoff ponds or lagoons delineated as "Area B" and tidal waters delineated as "Area C" (shown in Figure 3-1, *Vicinity Map*, of the 2004 EIR).

San Pablo Creek is approximately 0.3 miles north of the project site, and Wildcat Creek is approximately 280 feet south/southeast of the project site, bordering the WCCSL south boundary which is an elevated levee (see Figure 2-0 and Figure 2-1 in Chapter 2 of this

document). Many small tributaries that drain and feed the brackish marshlands of these creeks, and the 100-year flood flows in San Pablo Creek would be totally contained in the channel. Open water of San Pablo Bay is approximately 0.25 miles west of the project site. The levees around the WCCSL have been designed and maintained to exceed flood levels and the upland portions are located outside wetlands under U.S. Army Corps of Engineers (Corps) jurisdiction.

Depth to groundwater at specific areas of the project site can range from 5 to 7 feet or up to 10-1/2 feet below the ground surface. The depth to groundwater varies seasonally. Groundwater contamination on the WCCSL site was confirmed in a Phase I Environmental Site Assessment prepared for the project (CEC, 2022). This recognized environmental condition (REC) is regularly monitored and the results are submitted to the State regulatory agency. There are no anticipated plans for use of existing groundwater by the Project.

Evaluation

a, b) **Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

Less than Significant Impact. WCCSL implements a Storm Water Pollution Prevention Plan (SWPPP) under the NPDES permit, as amended. The drainage plan for the WCCSL, which currently encompasses the project site, accommodates the 100-year storm event. The WCCSL is managed to prevent the infiltration of surface water into the waste materials and to maximize and control the amount of surface water that runs off via overland flow with berms, bench drains, down drains, which would manage runoff from the project. Area 1 runoff is diverted to the siltation control basin located behind (east of) the Golden Bear Waste Recycling Center.

As introduced in Section 2.8, *Construction, Site Coverage and Drainage*, the project would adhere to all applicable regulatory stormwater runoff controls and will pursue its own NPDES permit. The project's SWPPP would be developed prior to construction and operation of the facility and flows would be integrated into the existing WCCSL system and ensure drainage from the proposed project site would drain towards existing stormwater runoff control ponds (or bioretention facility) to which the rest of the WCCSL property currently drains. The drainage control systems would be designed such that the two systems are segregated and independent of one another. This would minimize the creation of contact water (water that has come into contact with organic feedstock) as well as protecting the site from various health and safety hazards.

The receiving and handling area would be in a modular structure and industrial canopy to minimize rainfall from coming in contact with the feedstock material. The receiving area would also incorporate a berm at the opening of the receiving area to keep any potential contact water inside. The aprons around the facility would direct any rainfall away from the canopy and into the stormwater drainage and management system described above.

Any excess contact water that may be generated inside the canopy receiving area will either be reabsorbed into incoming feedstock or collected via floor drains and diverted to the facility's sanitary sewer.

The SWPPP also requires site inspections and a preventive storm water control maintenance program, with triggers for evaluation monitoring and corrective action as needed under RWQCB review and oversight pursuant to State regulations. Also, neither construction nor operation of the project would involve use of groundwater. Taken together, the proposed stormwater program and project development would not impair water quality or decrease groundwater. The impact is less than significant.

c) **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:**

(i) **result in substantial erosion or siltation on- or off-site;**

(ii) **substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;**

(iii) **create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or**

(iv) **impede or redirect flood flows?**

Less than Significant Impact. The proposed project would involve minimal grading as needed to prepare the site for new paving and foundations for the proposed modular buildings. The site is current flat and would remain so, except for slight grading around the proposed modular structure to prevent contact water. As described in Section 2.8, *Construction, Site Coverage and Drainage*, in Chapter 2, the proposed project would add approximately 1.21 acres of new impervious surface area (including modular structures) to the existing 0.76 acres of impervious area that would be repaved. This would result in approximately 78 percent of the project site (2.5 acres) being impervious. Approximately 0.53 acres, or 22 percent, of unpaved area along the north boundary of the site would remain undisturbed.

Although the amount of impervious area on the project site would nearly double compared to the existing conditions, the proposed drainage management would effectively manage increased flows to the existing system and not exceed the capacity of the system. A draft Stormwater Control Plan has been prepared for the project (Power, 2022). It delineates two nearly equally-sized drainage management areas (DMA 1 and DMA 2) across the project site. DMA 1 is the northern part of the site where the modular building and facilities are proposed and its flows would drain to an existing pump that is part of the existing stormwater system. DMA 2 is generally the south and southwest part of the project site where existing development and paved areas exist for truck traffic and

circulation; its flows would integrate directly into the existing stormwater system. The DMA's are delineated to effectively capture and direct runoff to not exceed the existing system. Based on the 24-hour, 100-year storm, pre-development flow is estimated at 11.89 cubic feet per second (cfs). Post-development is estimated at 12.47 cfs, which is less than 5 percent potential change.

Also, permanent source controls would be implemented to address potential runoff flows, including. Examples include use of equipment closures and regular inspection of potential pollutant sources for debris or blockages that may interfere with intended stormwater flows. Adherence to the SWPPP under the NPDES permit (see criterion "a and b") would also minimize erosion as well as polluted runoff.

Overall, the proposed site alterations would not result in changes in stormwater flows that could exceed the capacity of the existing stormwater control system to which the project site would flow. The impact is less than significant.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less than Significant Impact. The California Geological Survey has mapped tsunami inundation areas along the Richmond shoreline, and the project site is located within the hazard zone (CGS, 2021). Seiche risk at areas along Richmond's shoreline are minimal because there are no large confined bodies of water with depths that would cause this hazard (City of Richmond, 2011). As discussed in the above *Setting,* the 100-year flood flows in San Pablo Creek adjacent to the project site and would be totally contained in the channel, also the levees around the WCCSL have been designed and maintained to exceed flood levels. Therefore, risk of inundation at the site is low, particularly due to risk of a seiche or flooding on the project site. The impacts would be less than significant.

e) **Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

Less than Significant Impact. As discussed in criterion "a", the proposed project would not conflict with implementation of the existing water quality plan nor release pollutants from its construction or operation.

References

State of California, 2021, Tsunami Hazard Area Map, Contra Costa County; produced by the California Geological Survey, the California Governor's Office of Emergency Services, and AECOM; dated 2021. Accessed and printed September 13, 2022.

Contra Costa County 2004. *Environmental Impact Report on the West Contra County Sanitary Landfill Bulk Materials Processing Center and Related Actions,* SCH. 2002102057. June 2004.

Contra Costa County 2009. *Addendum to the Final EIR for the WCCSL BMPC and Related Actions*, SCH. 2002102057. 2009.

City of Richmond, 2012. *Richmond General Plan Update Environmental Impact Report.* SCH. 2008022018. 2012.

Power, 2022. *Draft Stormwater Control Plan for Raven One*, July 22, 2022.

4.11 Land Use and Planning

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Land Use and Planning *Would the project:*				
a) Physically divide an established community?				☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			☒	

Setting

The proposed project area is the existing approximately 340-acre WCCSL, a self-contained area and operation within the broader area of industrial and open space land uses, including the Bay Trail / Wildcat Creek Marsh Trail. Other nearby uses include the West County Wastewater District Treatment Plant, EBMUD's North Richmond Water Reclamation Plan, the Richmond Sanitary District, and other refuse services, automobile repair and towing businesses, and lawn services, etc. The Richmond Parkway is a major roadway through the area and spurs the Parr Boulevard approach to the WCCSL and adjacent uses. The next nearest established community is the residential development at generally West Gertrude Avenue/Malcolm Drive, approximately 0.75 miles southeast.

Evaluation

a) **Physically divide an established community?**

No Impact. The proposed operation is consistent with current BMPC activities on the site. Therefore, the project could not divide any established community. The project would have no impact.

b) **Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?**

Less than Significant Impact. The proposed facility and operation to convert blended green waste and food waste obtained from the existing BMPC operation adjacent to the project site into renewable, transportation grade hydrogen would not conflict with any existing land use plan, policy or regulation intended to mitigate environmental effects. As proposed, the project does not require approval of an amendment to any aspect of the General Plan or the City's Zoning Ordinance or Map. CEQA does not require the project to be consistent with all policies in the General Plan, nor does it require an assessment of

compliance with every applicable General Plan policy. Overall, the project advances *Policy EC2.2* Climate-Friendly Fuel Support production and distribution of climate-friendlier fuels (when and if any are identified) and identify appropriate locations for fuel storage and distribution (*Energy and Climate Change Element*). This impact would be less than significant.

References

City of Richmond, 2012. *Richmond General Plan Update Environmental Impact Report.* SCH. 2008022018. 2012.

City of Richmond, 2012. *Richmond General Plan 2030: Public Safety and Noise Element.* Table 3.7-4, *Liquefaction*. 2012.

City of Richmond, 2012. *Richmond General Plan 2030: Conservation, Natural Resources and Open Space Element*. 2012.

City of Richmond, 2012. *Richmond General Plan 2030 Historic Resources Element*. 2012.

City of Richmond, 2012. *Richmond General Plan 2030: Energy and Climate Change Element*. 2012.

Contra Costa County 2004. *Environmental Impact Report on the West Contra County Sanitary Landfill Bulk Materials Processing Center and Related Actions,* SCH. 2002102057. June 2004.

Contra Costa County 2009. *Addendum to the Final EIR for the WCCSL BMPC and Related Actions*, SCH. 2002102057. 2009.

4.12 Noise and Vibration

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Noise *Would the project result in:*				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			☒	
b) Generation of excessive groundborne vibration or groundborne noise levels?			☒	
c) For a project located within the vicinity of a private airstrip or 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?				☒

Setting

The proposed project is located entirely within the City of Richmond. The West County Wastewater District Treatment Plant and other industrial uses exist east of the property. The nearest residential receptors are 0.75 miles (approximately 3,949 feet) southeast from the project site. Approximately 7- to 8-foot-high sound walls were installed at these residences when Richmond Parkway was constructed to lower noise levels (WCCSL BMPC, 2003).

The primary noise sources in the vicinity of the project site include vehicles on adjacent and nearby roadways: Richmond Parkway and Parr Boulevard. The existing ambient noise environment in the project vicinity may be characterized by traffic noise modeling conducted for a previous EIR (City of Richmond, 2011) for primary roadways. Results of this traffic modeling are presented in **Table 4.12-1** and are representative of transportation noise levels generated by roadways.

TABLE 4.12-1
LOCALIZED ROADWAY TRAFFIC NOISE [1]

Roadway	Segment Description	Predicted, Ldn[2], dB at 50 feet
		Background
Richmond Parkway	Gertrude Street and Parr Boulevard	75.9
Richmond Parkway	Parr Boulevard and San Pablo Avenue	74.7

NOTES:

1 Analytical Environmental Services. 2011. *Point Molate Mixed-Use Tribal Destination Resort and Casino Project*. Available online: https://www.ci.richmond.ca.us/DocumentCenter/View/7685/Section_4p11?bidId=

2 L_{dn} is the energy average of the A-weighted sound levels occurring during a 24-hour period, and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises).

SOURCE: Brown and Buntin Associates, 2008.

Evaluation

a) **Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**

Less than Significant Impact. Noise would be generated during both construction and operational phases of the project.

Construction

Construction of the proposed project would occur over a period of approximately eight months, starting Fourth Quarter of 2022, and start-up of the plant is projected to begin in the Second to Third Quarter of 2023..

Project construction would result in temporary increases in ambient noise levels. Onsite construction activities would require the use of heavy construction equipment (e.g., excavator, loader, crane) that would generate varying noise levels. Offsite construction noise sources would consist of passing trucks and other construction-related vehicles. City of Richmond Noise Ordinance, Section 15.04.605.060, regulates construction noise by allowing construction work that generates noise to occur weekdays between the hours 7:00 a.m. and 6:00 p.m., except outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the Building Official or his or her authorized representative (City of Richmond, 2018).

The proposed project would adhere to the City's construction work hours. The City's construction noise level limitation of 75 dBA is used to assess whether daytime L_{eq} construction-related noise levels would cause a substantial temporary or periodic increase in ambient noise levels at sensitive receptor locations. City of Richmond Noise Ordinance, 9.52.110 Temporary construction activity, limits noise levels measured at SFR-1, SFR-2, SFR-3 Zoning Districts (Single-Family Residential) to 75 dBA between the hours of 7:00 a.m. to 7:00 p.m. on weekdays.

The operation of each piece of equipment would not be constant throughout the day, as equipment would be turned off when not in use. Over a typical workday, the equipment would be operated at different locations and all the equipment would not operate concurrently at the same location within the project site or roadways to and from the site. Construction noise levels have been estimated using typical equipment source noise levels suggested in the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) and based on the type of construction equipment that are proposed to be used. To quantify construction-related noise exposure that would occur at the nearest sensitive receptors, it was assumed that the two loudest pieces of construction equipment would operate concurrently at the location within the project site and construction vehicle paths to the nearest sensitive receptor locations.

The estimated L_{max} and L_{eq} for each of the two loudest pieces of equipment that would be used to construct the project components, and the combined L_{eq} noise level associated with the two loudest pieces of construction equipment at the closest sensitive receptor locations for each project component are identified in **Table 4.12-2**. The combined L_{eq} construction noise levels would not exceed the City's construction noise level limitation of 75 dBA described in Table 4.12-2. This modest noise contribution would not increase the existing ambient noise level at the nearest receptor.

TABLE 4.12-2
CONSTRUCTION EQUIPMENT NOISE LEVELS

Type of Equipment	Distance to Closest Sensitive Receptor (feet)	Equipment L_{max}, dBA	Equipment Hourly L_{eq}, dBA/Usage%	Combined Leq at Sensitive Receptor, dBA
Demolition				
Crushing/Proc. Equipment	3,949 (Residences)	52.3	45.3/20%	46.2
Excavators		42.8	38.8/40%	
Site Preparation				
Tractors	3,949 (Residences)	46.0	42.1/40%	45.6
Rough Terrain Forklifts		47.0	43.1/40%	
Grading				
Excavators	3,949 (Residences)	42.8	38.8/40%	43.7
Tractors		46.0	42.1/40%	
Building Construction				
Rough Terrain Forklifts	3,949 (Residences)	45.4	41.5/40%	46.0
Other Construction Equipment		47.0	44.0/50%	

NOTES: L_{max} = maximum instantaneous noise level; L_{eq} = the equivalent sound level used to describe noise over a specified period of time, in terms of a single numerical value; L_{max} = the instantaneous maximum noise level measured during the measurement period of interest.

SOURCE: Federal Highway Administration, 2008. *FHWA Roadway Construction Noise Model, Version 1.1*, December 2008.

In addition to on-site construction equipment, the project would also result in short-term increases in local daytime traffic volumes. The project components would each add up to approximately 84 one-way daily construction-related vehicle trips to area roadways, including 72 one-way daily hauling trips, 4 one-way daily vendor trips, and 8 one-way daily worker trips. The project truck trips would access the nearest freeway (Interstate 580) via Parr Boulevard and Richmond Parkway and would not utilize roadways with noise-sensitive land uses. Therefore, the associated increase in short-term construction vehicular noise levels would not be expected to increase noise levels in the vicinity of existing sensitive receptors beyond the levels described in Table 4.12-2.

Operation

The Raven SR system would run up to 24 hours per day, 7 days per week, although an average of 1.5 days per month are planned down times. The primary source of noise during project operation would be mechanical equipment associated with the Steam/CO_2 Reformation system, including heating systems, HVAC equipment. Also, feedstock would be physically deposited in the receiving area via self-unloading transfer trucks or other suitable vehicles. The hydrogen compressors are industrial pieces that could generate noise up to as much as 85 dBa at 1.0 meter. Additionally, trucks used to distribute fuels generated on the site would be maneuvering within the parking lot of the proposed facility.

City of Richmond Noise Ordinance, Section 9.52.100, regulates operational noise levels from public property at residential areas. Per Section 9.52.100, noise levels caused by mechanic equipment on public property in residential areas should not result in noise levels in excess of 65 dBA measured at any boundary of a residential zone (City of Richmond, 2022). Guidelines identified in the Richmond General Plan 2030, Action SN4.A, proposed commercial and industrial uses that locate in an area with day-night average sound level (L_{dn}) of 55 or greater to provide noise study reports the City's goal for maximum outdoor noise levels in residential areas is 60 L_{dn} (City of Richmond, 2012). The 65 dBA L_{eq} measured at any boundary of a residential zone is used here to assess whether operational noise levels would cause a substantial permanent increase in ambient noise levels.

It is not possible to provide specific noise levels at individual receptor locations that would result from operation of stationary sources. However, the nearest noise-sensitive receptor would be approximately 0.75 miles from the project site property line. **Table 4.12-3** presents reference noise levels for many of the stationary sources for informational purposes. Given the data in Table 4.12-3 and the known distance to the nearest noise receptors, the operational noise levels would be substantially below the 65 dBA standard of the City of Richmond Noise Ordinance and the operational noise impact would be less than significant.

TABLE 4.12-3
REFERENCE NOISE LEVELS FOR STATIONARY NOISE SOURCES ASSOCIATED WITH THE PROPOSED PROJECT

Stationary Noise Source	Documented Sound Levels (dBA)	Noise Level at Nearest Receptor	Source
HVAC Equipment	72–78 dBA at 30 feet without acoustical treatments	19-25 dBA	Trane, *Sound Data and Application Guide*, 2002
Standby Diesel Generator	75–90 dBA at 23 feet (size dependent) without acoustical enclosure	19-34 dBA	Cummins Power Generation, *Sound Attenuated and Weather Protective Enclosures*, 2008
Loading Dock	77 dBA at 20 feet	20 dBA	Urban Crossroads, *Moreno Valley Walmart Noise Impact Analysis*, 2015

NOTES:
dBA = A-weighted decibels; ESA = Environmental Science Associates; HVAC = heating, ventilation and air conditioning
SOURCE: Data compiled by Environmental Science Associates in 2022. (Additional sources noted above.)

b) **Generation of excessive groundborne vibration or groundborne noise levels?**

Less than Significant Impact. Operations and maintenance of the project facility would not include any sources of vibration that would be considered excessive. Groundborne vibration and noise associated with some construction activities, including the use of pile drivers, blasting, and vibratory rollers, can cause excessive vibration. The project would not include any such activities. Groundborne vibration and noise levels generated by the types of equipment required to prepare the site and construct the proposed facility would be minimal and would not cause human annoyance or structure damage at a distance of 25 feet or beyond from the source (FTA, 2018). No existing historic structures that would be potentially vulnerable to vibration are located in the immediate vicinity of the project site such that any damage related to groundborne vibration from construction activities would occur. This impact would be less than significant and mitigation measures are not warranted.

c) **For a project located within the vicinity of a private airstrip or 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 is located approximately 8.3 miles southeast of the San Rafael Airport and is not located within the 55 dBA L_{dn} noise contours for the San Rafael Airport (City of San Rafael, 2021). The proposed project would not involve the development of noise-sensitive land uses that would be exposed to excessive aircraft noise. Therefore, there would be no impact.

References

California Department of Transportation (Caltrans), 2013. *Technical Noise Supplement (TeNS)*. September 2013.

City of Richmond, 2012. Richmond General Plan 2030, Chapter 12, Public Safety and Noise. April 25, 2012.

City of Richmond, 2022. Richmond Municipal Code, Article 15.04.605 - Noise. March 16, 2022.

City of San Rafael, 2012. San Rafael General Plan 2040 & Downtown Precise Plan, Chapter 4.13, Noise. January, 2021.

Federal Highway Administration (FHWA), 2008. FHWA Roadway Construction Noise Model, Version 1.1, December 2008.

Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed March 31, 2022.

4.13 Population and Housing

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Population and Housing *Would the project:*				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				☒

Setting

As previously discussed in Section 4.11, *Land Use and Planning,* in this section, the project area entails open space and a range of industrial and commercial uses. No housing exists within 0.75 miles of the area, and the proposed project would be developed within existing BMPC facilities and operations.

Evaluation

a) **Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

No Impact. The proposed project does not entail new housing, roads or other infrastructure that would induce substantial growth; the new business would involve 3 to 4 new employees per shift, for a total of 9 to12 new employees per day, which would not constitute substantial population growth. There would be no impact.

b) **Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

No Impact. No housing or people exist on the project site. The project would have no impact.

References

None.

4.14 Public Services and Recreation

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Public Services *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:*				
a) Fire protection?			☒	
b) Police protection?				☒
c) Schools?				☒
d) Parks?				☒
e) Other public facilities?				☒
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?				☒
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?				☒

Setting

The project area is currently serviced by the Richmond Fire Department (RFD), which also manages the West County Fire District, which also serves San Pablo, El Sobrante, and unincorporated areas of Western Contra Costa County, including North Richmond. The nearest fire station is RFD Station 62 at 1065 7th Street, Richmond.

Evaluation

Public Services

a) **Fire Protection and Emergency Medical**

Less than Significant Impact. The project site would be served by the same fire and emergency services that currently serve the WCCSL. The project would also install a new 250,000-gallon fire water tank and diesel engine in the northeast corner of the site for emergency use, as required by fire department regulations The fire water tank would be up to 25.5 feet tall and include two pumps, a small jockey pump for normal circulation, and the diesel-powered fire pump (shown in Figures 2-1 through 2-4.) All

construction-related mitigation measures identified in this analysis would apply to that development onsite.

The proposed operation would involve up to 3 to 4 new employees per shift and would not involve customers onsite. Also, the Raven SR system itself is not a combustion process and would incorporate several safety measures, including continuous monitoring systems, automatic plant operations shut down without human intervention, compliance with applicable EPA RMP and OSHA PSM guidelines, including applicable USDOT regulations for the on-road transport of hydrogen gas. Overall, the project would not result in noticeable increased demand for service that would require new fire or emergency medical facilities. The impact would be less than significant.

b,c) **Police Protection, Schools, Parks, Other**

No Impact. The project would not involve changes that would increase the demand for policy protection on the project site. There would be no impact. Also, the project would not involve changes that would increase the demand for schools, parks or other public services. There would be 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?**

No Impact. The project would not introduce new people onsite that would increase the use of recreational facilities or parks. New population would consist of up to 3 to 4 new employees per shift; no customers would be onsite. 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 include new or expanded recreational facilities or parks. There would be no impact.

References

City of Richmond, 2011. *General Plan 2030 – Map 12.6 Police and Fire Services*. August 2011.

City of Richmond, 2012. *Richmond General Plan Update Environmental Impact Report.* SCH. 2008022018. 2012.

Google Earth Pro, Richmond Fire Stations, June 2022.

4.15 Transportation

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Transportation *Would the project:*				
a) Conflict with a program plan, ordinance or policy of the circulation system, including transit, roadway, bicycle and pedestrian facilities?			☒	
b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?			☒	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			☒	
d) Result in inadequate emergency access?			☒	

Setting

The Richmond Parkway is a major roadway in the area that extends from Interstate 580 near the east approach to the Richmond-San Rafael Bridge northeasterly to Interstate 80 near Hilltop Drive. Parr Boulevard from Richmond Parkway is the main approach to the project site within the WCCSL and other nearby uses.

Evaluation

a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less than Significant Impact. **Table 4.15-1** summarizes the daily vehicle trip generation for the project based on the expected number of employees and truck activity at the site. Since trucks are larger and operate slower than passenger vehicles, a passenger car equivalent (PCE) ratio of 2.0 is used to convert the truck trips to passenger vehicle trips (each truck is counted as two passenger vehicles). Accounting for PCE trips, the project is estimated to generate about 130 net new PCE trips on a typical weekday.

TABLE 4.15-1
PROJECT DAILY TRIP GENERATION SUMMARY

Use	Amount	Daily Trip Rate	Passenger Car Equivalent (PCE) [a]	Daily Trips
Employees	12[b]	2.5[c]	1.0	30
Trucks	25 [d]	2.0[e]	2.0	100
Total trips (PCE)				130

NOTES:
a A PCE of 2.0 is used for trucks because they are lager and operate slower than passenger vehicles
b Per the Project Applicant and described in Chapter 2, *Project Description*
c One inbound and one outbound trip per employee per day plus 0.5 trips per employee per day for other trips such as deliveries, running errands, etc.
d Per the Project Applicant and as described in Chapter 2, *Project Description*, 125 trucks would serve the site during a typical week. This estimate assumes they would be evenly distributed on five weekdays
e One inbound and one outbound trip per truck

SOURCE: Fehr & Peers, 2022

The addition of 130 new trips on a typical weekday would not substantially increase the motor vehicle volumes on the nearby streets, including Parr Boulevard and Richmond Parkway. In addition, considering that both streets currently have high truck volumes because they serve primarily industrial areas, the additional trips generated by the project would not conflict with existing and proposed transit, roadway, bicycle, and pedestrian facilities in the project vicinity. The project would also not modify any transit, roadway, bicycle, or pedestrian facilities and would not conflict with existing or proposed facilities in the project vicinity.

The project would be consistent with programs, plans, ordinances, and policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. The impact is less than significant.

b) Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less than Significant Impact. CEQA Guidelines Section 15064.3, added in December 2018 and consistent with the requirements of SB 743, states that vehicle miles traveled (VMT) is the most appropriate metric to assess the environmental impacts of a project on transportation.

The City of Richmond adopted VMT analysis guidelines, methodology, and thresholds of significance on April 6, 2021, consistent with the Contra Costa Transportation Authority (CCTA)'s adopted VMT guidelines, which are also consistent with the State's Office of Planning and Research's (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018). The City of Richmond guidelines includes screening criteria for development projects that meet certain criteria that can readily lead to the conclusion that they would not cause a significant impact on VMT. The screening criterion applicable to the project is the Small Projects criterion, which states that projects

generating less than 836 VMT per day can be presumed to cause a less than significant impact on VMT.

Error! Not a valid bookmark self-reference. summarizes the estimated VMT generated by the project on a typical weekday. Since the City of Richmond's adopted guidelines, which are based on the CCTA Guidelines and consistent with CEQA Guidelines section 15064.3, subdivision (a) state that the VMT analysis for transportation impact purposes can focus solely on VMT generated by passenger vehicles and light-duty trucks and not include the VMT generated by heavy trucks, the project VMT summarized in **Error! Not a valid bookmark self-reference.** does not include the VMT generated by trucks for the project. As shown in **Error! Not a valid bookmark self-reference.**, the project is estimated to generate 174 VMT per day, which is below the screening criterion of 836 VMT per day. Therefore, the project can be presumed to have a less than significant impact on VMT and is consistent with CEQA Guidelines section 15064.3, subdivision (b) and the impact is less than significant.

TABLE 4.15-2
PROJECT VMT SUMMARY

Use	Amount	Daily VMT Rate	Total VMT
Employees	12[a]	14.5[b]	174
Total			174
Threshold			836
Below Threshold?			Yes

NOTES:
a Per the Project Applicant and described in Chapter 2, *Project Description*
b Daily commute VMT per worker in 2020 based on the CCTA Travel Demand Model for TAZ 10347, where the project is located
c Per the Project Applicant and as described in Chapter 2, *Project Description*, 125 trucks would serve the site during a typical week. This estimate assumes they would be evenly distributed on five weekdays
d Per the Project Applicant and described in Chapter 2, *Project Description*, average truck trip would be 40 miles; assuming two trips (one inbound and one outbound) per truck.

SOURCE: Fehr & Peers, 2022

c) Substantially increase hazards due to a geometric design feature, (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less than Significant Impact. The project would not modify the access point to the existing WCCSL facility, the internal circulation within WCCSL, or the public right-of-way. Passenger vehicles and trucks would continue to access the project site through Parr Boulevard and Richmond Parkway. The project is located in an industrial area with high volume of large trucks already present on surrounding roadways, including Parr Boulevard and Richmond Parkway. The additional trucks added by the project would not result in incompatible uses or increase hazards. Thus, the impact on hazards due to a geometric design feature or incompatible uses is less than significant.

d) Result in inadequate emergency access?

Less than Significant Impact. As discussed above, the project would not modify the access point to the existing WCCSL facility, the internal circulation within WCCSL, or the public right-of-way. Emergency vehicles would continue to access the project site on Parr Boulevard.

The project would be designed and constructed according to the applicable fire and safety standards at the time of construction. Therefore, the WCCSL site would continue to be accessible by fire and emergency vehicles through public streets and the internal roadways within the WCCSL. Thus, the impact on emergency access is less than significant.

References

California State's Office of Planning and Research's (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018).

4.16 Tribal Cultural Resources

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Tribal Cultural Resources *Would the project:*				
a) 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), or		☒		
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.		☒		

Setting

ESA contacted the California State Native American Heritage Commission (NAHC) on October 20, 2021, to request a search of the NAHC's Sacred Lands File and a list of Native American representatives who may have knowledge of tribal cultural resources in the project vicinity or interest in the proposed project. The NAHC replied to ESA by email on November 19, 2021, noting that the Sacred Lands File has no record of any sacred sites within the project site. The NAHC response included a list of 15 Native American representatives from 13 tribal groups who may have knowledge of tribal cultural resources in the vicinity of the project site.

On May 4, 2022, the City received a response for consultation from Chairwoman Corrina Gould of the Confederated Villages of Lisjan. On May 18, 2022, the City held a virtual meeting with tribal members, Chairwoman Gould, Deja, and Cheyenne, to discuss the project and any potential impacts to cultural resources. Based on the discussion, the tribe has no concerns with the project as it relates to impacts to tribal cultural resources and cultural resources, and is comfortable with the proposed mitigation measures. See Section 4.5, *Cultural Resources*, of this checklist for a summary of ESA's NWIC records search and cultural resources sensitivity assessment.

Evaluation

a.i, a.ii)

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 significance of the resource to a California Native American tribe.

Less than Significant Impact, after Mitigation. CEQA requires the lead agency to consider the effects of a project on tribal cultural resources. As defined in PRC Section 21074, tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are listed, or determined to be eligible for listing, on the national, state, or local register of historical resources.

Based on the NWIC records search and the NAHC SLF negative search results, there are no known tribal cultural resources listed or determined eligible for listing in the California Register of Historical Resources or included in a local register of historical resources as defined in PRC Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be affected by the project. No tribal cultural resources have been identified by Native American representatives, and background research did not identify any tribal cultural resources. In addition, the City did not determine any resource that could potentially be affected by the project to be a significant tribal cultural resource pursuant to criteria set forth in PRC Section 5024.1(c).

In the event that cultural materials are identified during project construction activities that are determined to be tribal cultural resources, implementation of **Mitigation Measure CUL-1a: Cultural Resources Awareness Training**, **Mitigation Measure CUL-1b: Inadvertent Discovery of Cultural Materials or Tribal Cultural Resources**, and **Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains**, all identified above in Section 4.5, *Cultural Resources*, would reduce potentially significant impacts to less than significant. These mitigation measures would ensure that all personnel complete a cultural resources awareness training prior to any ground-disturbing activity and that work halt in the vicinity of a find until a qualified archaeologist and a Native American representative can make an assessment and provide additional recommendations.

References

Northwest Information Center (NWIC), Records Search File No. File No. 21-1575. On file, ESA, March 23, 2022.

4.17 Utilities and Service Systems

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

Setting

The project site, within the WCCSL BMPC, is currently served by all public utilities, including water and wastewater treatment by EBMUD and West County Wastewater District, respectively, as well as the reuse of runoff water, and PG&E provides electric power, natural gas.

Evaluation

a) **Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**

Less than Significant Impact. The existing WCCSL would use offtake approximately 0.5 MW from the power generation for Republic's onsite operation needs and the rest would be used to power the proposed project. Any additional electrical power required beyond that generated onsite would come from an existing PG&E power drop to the site. The project would also involve a new 250,000-gallon integrated fire water tank and diesel engine for emergency use, per fire regulations, but would continue to be served by RFD

and the West County Fire District. As previously discussed in 4.14, *Public Services and Recreation,* all construction-related mitigation measures identified in this analysis would apply to that development onsite, which would ensure any environmental effects from the project would be less than significant.

b) **Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

Less than Significant Impact. Steam is injected into the process to promote the thermal decomposition of the feedstock. Estimated water flow required for boiler feedwater and for cooling tower make-up is about 70 percent of the total required and is on the order of 60 gallons per minute (gpm) (81,500 gallons per day [gpd]). Adding in required water flow for overall processes and wash water for cleaning, the total water flow required for the project is estimated to be 81 gpm (116,200 gpd) (Raven, 2022b).

Potable water is available for both domestic and fire protection to the subject property from existing major facilities (e.g., reservoirs, pumping plants), which are serviced and maintained by EBMUD. Service would be granted subject to compliance with the District's regulations governing water service and Schedule of Rates and Charges, which may include water main extensions and/or off-site pipeline improvements (Raven SR, 2022c). For this analysis, it is not anticipated that the proposed project would require new water supplies for its operation to the extent that it would make future water supplies insufficient. The impact would be less than significant.

c) **Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Less than Significant Impact. Wastewater generated by the process is mainly cooling tower blowdown, RO system blowdown, and boiler system blowdown, along with a small flow from the syngas wash columns. Intermittent flow is from potable sources (restrooms, sinks, etc.) and area wash down water. Wastewater would be generated from the syngas wash columns, which can potentially contain low concentrations of organic compounds. Wastewater would be treated before it is discharged to the sewer systems through sump and grease/oil where the organic content would be removed for capture/reclaim/disposal, and the water portion sent to the wastewater sewer.

Total wastewater discharge from all project processes (or waste streams) is estimated to be 50,200 gallons per day, and the West County Wastewater District would permit this additional use upon its determination that the discharge may be covered by the Districts' Pretreatment and/or Pollution Prevention programs (Raven, 2022b).

Discussions are occurring between the project applicant and the West County Wastewater District and are in the permitting process. At this time, there are no anticipated capacity issues expected. Given the small scale of the proposed project, the lack of notable new population onsite, it is reasonable that the West County Wastewater District, as

wastewater treatment provider, would maintain adequate capacity to meet its demands with the addition of the proposed project. The impact would be less than significant.

d,e) **Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?**

Less than Significant Impact. The project would not generate substantial solid waste but would convert existing organic waste into a reusable fuel product. Therefore, the project would not conflict with existing local or other laws or policies regarding the reduction, reuse and management of solid waste. The impact would be less than significant.

References

City of Richmond, 2012. *Richmond General Plan Update Environmental Impact Report.* SCH. 2008022018. 2012.

Contra Costa County 2004. *Environmental Impact Report on the West Contra County Sanitary Landfill Bulk Materials Processing Center and Related Actions,* SCH. 2002102057. June 2004.

Contra Costa County 2009. *Addendum to the Final EIR for the WCCSL BMPC and Related Actions*, SCH. 2002102057. 2009.

RAVEN SR, 2022b. West County Wastewater District Wastewater Discharge Permit Application. October 2022.

RAVEN SR, 2022c. Correspondence from Tracy Barrow, East Bay Municipal Utilities District, to Mike Fatigati, Raven SR. September 2022.

4.18 Wildfire

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

Setting

The project site borders expansive non-native grassland and ruderal species in open and that can get very dry during summer months. Factors that contribute to the risk of fire include dense and fire-prone vegetation, poor access to fire-fighting equipment because of slopes or inadequate roads, lack of adequate water pressure and service in fire-prone locations, and seasonal atmospheric conditions that result in warm, dry fire seasons with strong afternoon winds. Wildfire hazard maps show the site as not being within a high wildfire hazard zone (CPUC, 2018).

Evaluation

a) **Substantially impair an adopted emergency response plan or emergency evacuation plan?**

Less than Significant Impact. As discussed under Section 4.15, *Transportation*, the project would not modify the access point to the existing WCCSL facility, the internal circulation within WCCSL, or the public right-of-way. Therefore, the project would not impair any existing plans for emergency response or evaluation. The impact would be less than significant.

b) **Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

Less than Significant Impact. Certain project characteristics could have the potential to exacerbate wildfire risks, such as diesel fuel storage for the fire water take. However, no hazardous materials would be used in the conversion process. The biocarbon materials produced are inert to the process (i.e., not gasified). Also, the conversion process also derives electricityfrom fuel cells or turbines and/or internal combustion engine generator sets.

The project site is relatively flat, within the context of marshlands and Bay shoreline, and would also include a new fire water tank and diesel engine per fire regulations onsite. The tank would be used for emergency use, although the project site would still being served by the RFD and the West County Fire District. The impact would be less than significant.

c) **Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

No Impact. The project site is fully served by existing infrastructure that currently service the WCCSL. It would not require the installation or maintenance of additional infrastructure that may exacerbate fire risk. There would be no impact.

d) **Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes**

Less than Significant Impact. The project would not introduce new people on the site, other than up to three to four employees per shift. As previously mentioned, the site is relatively flat, not located within downstream flood or landslide areas. The proposed project is not located in a high wildfire hazard zone (CPUC, 2018). The impact would be less than significant.

References

California Public Utilities Commission. Fire-Threat Map – State of California. January 19, 2018.

City of Richmond, 2011. *General Plan 2030 – Map 12.6 Police and Fire Services*. August 2011.

City of Richmond, 2012. *Richmond General Plan Update Environmental Impact Report.* SCH. 2008022018. 2012.

4.19 Mandatory Findings of Significance

Environmental Issues	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Mandatory Findings of Significance				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		☒		
b) Does the project have impacts that are individually limited, but 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?			☒	

Findings

a) **Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?**

Less than Significant Impact, after Mitigation. The proposed project may result in potential construction-related impacts to nesting special-status birds and to California Black Rail and California Ridgway's Rail. The potential impacts are reduced to less than significant by requiring surveys and avoidance of construction-related work during specific times of year:

- **Mitigation Measure BIO-1: Avoid and Minimize Impacts to Nesting Birds, Except Rails**
- **Mitigation Measure BIO-2: Avoid and Minimize Impacts to California Black Rail and California Ridgway's Rail**

The proposed project may result in potential impacts to Cultural Resources, Paleontological Resources (Geology and Soils), and Tribal Cultural Resources, unless the following mitigation measures are implemented, which would reduce the potential impacts to less than significant:

- **Mitigation Measure CUL-1a: Cultural Resources Awareness Training**
- **Mitigation Measure CUL-1b: Inadvertent Discovery of Cultural Materials or Tribal Cultural Resources**
- **Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains.**

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)?**

Less than Significant Impact, after Mitigation. The project does not result in a cumulative consideration impact for any environmental factors. One common exception, this evaluation does identify the BAAQMD Basic Construction Mitigation Measures Recommended for All Projects (Best Management Practices) to address fugitive dust during construction, which applies even though the project's construction air emissions are all below the BAAQMD CEQA thresholds of significance. The BMPs also apply to all individual projects and ensure that a significant impact with respect to fugitive dust is less than significant.

- **Mitigation Measure AQ-1: Best Management Practices.**

Given the relatively small scope of the proposed project, its limited potential impacts, as well as the mitigation measures identified in this Draft IS/MND and listed below, the incremental effects of the project are not cumulatively considerable when considered with the potential effects of past, current, and probable future projects. The project does not have any significant cumulative impacts. Impacts would be less than significant.

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

Less than Significant Impact, after Mitigation. All impacts identified in this Draft IS/MND are either less than significant after implementation of identified mitigation measures (all listed above), or less than significant without the need for mitigation. Of those impacts, only the potential impact of PM_{10} and $PM_{2.5}$ (fugitive dust) being added to the local atmosphere during construction has the potential to adversely affect human beings, directly or indirectly. As discussed under finding "b" above, the project's implementation of **Mitigation Measure AQ-1: Best Management Practices**, would reduce the impact to less than significant.

5. Document Preparers

5.1 CEQA Consultant

ESA
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Phone 510.839.5066

Project Director	Crescentia Brown
Project Manager	Tim Sturtz
Air Quality/GHG	Chris Easter, Director
Air Quality/GHG	Tim Sturtz, Principal
	Madison Castelazo, Analyst
Energy	Bailey Setzler, Planner
Noise/Vibration	Chris Sanchez, Senior Technical Associate
Hazardous Materials	Michael Burns, Environmental Scientist
Biological Resources	Sharon, Dulava, Biologist
Cultural Resources	Heidi Koenig, RPA
Tribal Consultation	Heidi Koenig, RPA
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5.2 Technical Subconsultant

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Transportation	Sam Tabibnia, Senior Associate

APPENDIX A

Emissions Data, Assumptions and Modeling Files

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

RAVEN

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	40.00	1000sqft	1.30	40,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project specific info

Construction Phase - Project specific information

Off-road Equipment - Project specific information

Off-road Equipment - Project specific information

Off-road Equipment - Project specific information

Off-road Equipment - Project specific information

Trips and VMT - Client provided information

Grading - Project specific information

Vehicle Trips - Project specific information

Area Coating - Project specific information

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

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - Project specific information

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	138.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	4.00	30.00
tblConstructionPhase	NumDays	2.00	30.00
tblGrading	AcresOfGrading	15.00	4.00
tblLandUse	LotAcreage	0.92	1.30
tblOffRoadEquipment	HorsePower	97.00	247.00
tblOffRoadEquipment	HorsePower	78.00	81.00
tblOffRoadEquipment	HorsePower	78.00	97.00
tblOffRoadEquipment	HorsePower	212.00	187.00
tblOffRoadEquipment	HorsePower	85.00	247.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	158.00	187.00
tblOffRoadEquipment	HorsePower	80.00	247.00
tblOffRoadEquipment	HorsePower	100.00	97.00
tblOffRoadEquipment	HorsePower	100.00	89.00
tblOffRoadEquipment	LoadFactor	0.37	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.73
tblOffRoadEquipment	LoadFactor	0.48	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.41
tblOffRoadEquipment	LoadFactor	0.78	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.40

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

tblOffRoadEquipment	LoadFactor	0.40	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.20
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	24.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	7.00	4.00
tblTripsAndVMT	WorkerTripNumber	10.00	2.00
tblTripsAndVMT	WorkerTripNumber	20.00	2.00
tblTripsAndVMT	WorkerTripNumber	10.00	2.00
tblTripsAndVMT	WorkerTripNumber	17.00	2.00
tblVehicleTrips	ST_TR	1.99	0.67
tblVehicleTrips	SU_TR	5.00	0.67
tblVehicleTrips	WD_TR	4.96	0.67

2.0 Emissions Summary

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1109	1.0010	0.9211	2.0500e-003	4.8300e-003	0.0433	0.0481	9.8000e-004	0.0411	0.0420	0.0000	176.5135	176.5135	0.0420	8.4000e-004	177.8124
2023	0.0572	0.4813	0.5134	9.4000e-004	1.3300e-003	0.0217	0.0230	3.7000e-004	0.0208	0.0212	0.0000	80.1650	80.1650	0.0148	3.8000e-004	80.6476
Maximum	**0.1109**	**1.0010**	**0.9211**	**2.0500e-003**	**4.8300e-003**	**0.0433**	**0.0481**	**9.8000e-004**	**0.0411**	**0.0420**	**0.0000**	**176.5135**	**176.5135**	**0.0420**	**8.4000e-004**	**177.8124**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1109	1.0010	0.9211	2.0500e-003	3.6600e-003	0.0433	0.0469	8.5000e-004	0.0411	0.0419	0.0000	176.5133	176.5133	0.0420	8.4000e-004	177.8122
2023	0.0572	0.4813	0.5134	9.4000e-004	1.3300e-003	0.0217	0.0230	3.7000e-004	0.0208	0.0212	0.0000	80.1649	80.1649	0.0148	3.8000e-004	80.6476
Maximum	**0.1109**	**1.0010**	**0.9211**	**2.0500e-003**	**3.6600e-003**	**0.0433**	**0.0469**	**8.5000e-004**	**0.0411**	**0.0419**	**0.0000**	**176.5133**	**176.5133**	**0.0420**	**8.4000e-004**	**177.8122**

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.99**	**0.00**	**1.64**	**9.63**	**0.00**	**0.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2022**	**9-30-2022**	0.4036	0.4036
2	**10-1-2022**	**12-31-2022**	0.6761	0.6761
3	**1-1-2023**	**3-31-2023**	0.5375	0.5375
		Highest	0.6761	0.6761

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1771	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Energy	5.3000e-003	0.0482	0.0405	2.9000e-004		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003	0.0000	79.9440	79.9440	5.4500e-003	1.5000e-003	80.5276
Mobile	0.0133	0.0161	0.1306	2.8000e-004	0.0289	2.1000e-004	0.0292	7.7300e-003	1.9000e-004	7.9200e-003	0.0000	25.5208	25.5208	1.5700e-003	1.1800e-003	25.9122
Offroad	0.1481	1.4534	0.8266	3.4300e-003		0.0487	0.0487		0.0448	0.0448	0.0000	300.7720	300.7720	0.0973	0.0000	303.2039
Waste						0.0000	0.0000		0.0000	0.0000	10.0684	0.0000	10.0684	0.5950	0.0000	24.9439
Water						0.0000	0.0000		0.0000	0.0000	2.9346	4.6310	7.5656	0.3022	7.2100e-003	17.2675
Total	**0.3438**	**1.5177**	**0.9981**	**4.0000e-003**	**0.0289**	**0.0525**	**0.0815**	**7.7300e-003**	**0.0486**	**0.0564**	**13.0030**	**410.8685**	**423.8714**	**1.0015**	**9.8900e-003**	**451.8558**

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1771	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Energy	5.3000e-003	0.0482	0.0405	2.9000e-004		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003	0.0000	79.9440	79.9440	5.4500e-003	1.5000e-003	80.5276
Mobile	0.0133	0.0161	0.1306	2.8000e-004	0.0289	2.1000e-004	0.0292	7.7300e-003	1.9000e-004	7.9200e-003	0.0000	25.5208	25.5208	1.5700e-003	1.1800e-003	25.9122
Offroad	0.1481	1.4534	0.8266	3.4300e-003		0.0487	0.0487		0.0448	0.0448	0.0000	300.7720	300.7720	0.0973	0.0000	303.2039
Waste						0.0000	0.0000		0.0000	0.0000	10.0684	0.0000	10.0684	0.5950	0.0000	24.9439
Water						0.0000	0.0000		0.0000	0.0000	2.9346	4.6310	7.5656	0.3022	7.2100e-003	17.2675
Total	**0.3438**	**1.5177**	**0.9981**	**4.0000e-003**	**0.0289**	**0.0525**	**0.0815**	**7.7300e-003**	**0.0486**	**0.0564**	**13.0030**	**410.8685**	**423.8714**	**1.0015**	**9.8900e-003**	**451.8558**

	ROG	NOx	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	7/18/2022	7/22/2022	5	5	
2	Site Preparation	Site Preparation	7/25/2022	9/2/2022	5	30	

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

3	Grading	Grading	9/5/2022	10/14/2022	5	30	
4	Building Construction	Building Construction	9/19/2022	3/29/2023	5	138	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

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	81	0.73
Demolition	Crushing/Proc. Equipment	1	8.00	247	0.40
Demolition	Dumpers/Tenders	1	8.00	16	0.38
Demolition	Excavators	1	8.00	97	0.37
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38
Site Preparation	Excavators	3	8.00	187	0.41
Site Preparation	Plate Compactors	2	8.00	8	0.43
Site Preparation	Rough Terrain Forklifts	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	247	0.40
Grading	Crawler Tractors	1	8.00	187	0.41
Grading	Excavators	1	8.00	158	0.38
Grading	Rollers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Air Compressors	1	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Building Construction	Rough Terrain Forklifts	1	8.00	89	0.20

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

Building Construction	Welders	2	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	2.00	0.00	20.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	8	2.00	0.00	32.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	2.00	0.00	20.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	2.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.7900e-003	0.0193	0.0205	5.0000e-005		9.1000e-004	9.1000e-004		8.9000e-004	8.9000e-004	0.0000	4.3996	4.3996	4.1000e-004	0.0000	4.4099
Total	**2.7900e-003**	**0.0193**	**0.0205**	**5.0000e-005**		**9.1000e-004**	**9.1000e-004**		**8.9000e-004**	**8.9000e-004**	**0.0000**	**4.3996**	**4.3996**	**4.1000e-004**	**0.0000**	**4.4099**

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

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	1.7100e-003	3.6000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.6262	0.6262	2.0000e-005	1.0000e-004	0.6563
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0319	0.0319	0.0000	0.0000	0.0322
Total	**6.0000e-005**	**1.7200e-003**	**4.8000e-004**	**1.0000e-005**	**2.1000e-004**	**2.0000e-005**	**2.3000e-004**	**6.0000e-005**	**1.0000e-005**	**7.0000e-005**	**0.0000**	**0.6581**	**0.6581**	**2.0000e-005**	**1.0000e-004**	**0.6884**

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	2.7900e-003	0.0193	0.0205	5.0000e-005		9.1000e-004	9.1000e-004		8.9000e-004	8.9000e-004	0.0000	4.3996	4.3996	4.1000e-004	0.0000	4.4099
Total	**2.7900e-003**	**0.0193**	**0.0205**	**5.0000e-005**		**9.1000e-004**	**9.1000e-004**		**8.9000e-004**	**8.9000e-004**	**0.0000**	**4.3996**	**4.3996**	**4.1000e-004**	**0.0000**	**4.4099**

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

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	1.7100e-003	3.6000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.6262	0.6262	2.0000e-005	1.0000e-004	0.6563
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0319	0.0319	0.0000	0.0000	0.0322
Total	**6.0000e-005**	**1.7200e-003**	**4.8000e-004**	**1.0000e-005**	**2.1000e-004**	**2.0000e-005**	**2.3000e-004**	**6.0000e-005**	**1.0000e-005**	**7.0000e-005**	**0.0000**	**0.6581**	**0.6581**	**2.0000e-005**	**1.0000e-004**	**0.6884**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0177	0.1696	0.1377	5.0000e-004		5.6500e-003	5.6500e-003		5.2400e-003	5.2400e-003	0.0000	43.0480	43.0480	0.0135	0.0000	43.3865
Total	**0.0177**	**0.1696**	**0.1377**	**5.0000e-004**	**0.0000**	**5.6500e-003**	**5.6500e-003**	**0.0000**	**5.2400e-003**	**5.2400e-003**	**0.0000**	**43.0480**	**43.0480**	**0.0135**	**0.0000**	**43.3865**

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

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.7400e-003	5.8000e-004	1.0000e-005	2.7000e-004	2.0000e-005	3.0000e-004	7.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.0019	1.0019	3.0000e-005	1.6000e-004	1.0501
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	7.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1911	0.1911	1.0000e-005	1.0000e-005	0.1929
Total	**1.5000e-004**	**2.8000e-003**	**1.3100e-003**	**1.0000e-005**	**5.1000e-004**	**2.0000e-005**	**5.4000e-004**	**1.3000e-004**	**2.0000e-005**	**1.6000e-004**	**0.0000**	**1.1930**	**1.1930**	**4.0000e-005**	**1.7000e-004**	**1.2430**

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	0.0177	0.1696	0.1377	5.0000e-004		5.6500e-003	5.6500e-003		5.2400e-003	5.2400e-003	0.0000	43.0480	43.0480	0.0135	0.0000	43.3864
Total	**0.0177**	**0.1696**	**0.1377**	**5.0000e-004**	**0.0000**	**5.6500e-003**	**5.6500e-003**	**0.0000**	**5.2400e-003**	**5.2400e-003**	**0.0000**	**43.0480**	**43.0480**	**0.0135**	**0.0000**	**43.3864**

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

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.7400e-003	5.8000e-004	1.0000e-005	2.7000e-004	2.0000e-005	3.0000e-004	7.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.0019	1.0019	3.0000e-005	1.6000e-004	1.0501
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	7.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1911	0.1911	1.0000e-005	1.0000e-005	0.1929
Total	**1.5000e-004**	**2.8000e-003**	**1.3100e-003**	**1.0000e-005**	**5.1000e-004**	**2.0000e-005**	**5.4000e-004**	**1.3000e-004**	**2.0000e-005**	**1.6000e-004**	**0.0000**	**1.1930**	**1.1930**	**4.0000e-005**	**1.7000e-004**	**1.2430**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1200e-003	0.0000	2.1200e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0166	0.1854	0.1437	3.5000e-004		7.5100e-003	7.5100e-003		6.9100e-003	6.9100e-003	0.0000	30.8182	30.8182	9.9700e-003	0.0000	31.0674
Total	**0.0166**	**0.1854**	**0.1437**	**3.5000e-004**	**2.1200e-003**	**7.5100e-003**	**9.6300e-003**	**2.3000e-004**	**6.9100e-003**	**7.1400e-003**	**0.0000**	**30.8182**	**30.8182**	**9.9700e-003**	**0.0000**	**31.0674**

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

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	1.7100e-003	3.6000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.6262	0.6262	2.0000e-005	1.0000e-004	0.6563
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	7.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1911	0.1911	1.0000e-005	1.0000e-005	0.1929
Total	**1.3000e-004**	**1.7700e-003**	**1.0900e-003**	**1.0000e-005**	**4.1000e-004**	**2.0000e-005**	**4.3000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.8173**	**0.8173**	**3.0000e-005**	**1.1000e-004**	**0.8492**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.5000e-004	0.0000	9.5000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0166	0.1854	0.1437	3.5000e-004		7.5100e-003	7.5100e-003		6.9100e-003	6.9100e-003	0.0000	30.8182	30.8182	9.9700e-003	0.0000	31.0674
Total	**0.0166**	**0.1854**	**0.1437**	**3.5000e-004**	**9.5000e-004**	**7.5100e-003**	**8.4600e-003**	**1.0000e-004**	**6.9100e-003**	**7.0100e-003**	**0.0000**	**30.8182**	**30.8182**	**9.9700e-003**	**0.0000**	**31.0674**

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

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	1.7100e-003	3.6000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.6262	0.6262	2.0000e-005	1.0000e-004	0.6563
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	7.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1911	0.1911	1.0000e-005	1.0000e-005	0.1929
Total	**1.3000e-004**	**1.7700e-003**	**1.0900e-003**	**1.0000e-005**	**4.1000e-004**	**2.0000e-005**	**4.3000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.8173**	**0.8173**	**3.0000e-005**	**1.1000e-004**	**0.8492**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0729	0.6117	0.6119	1.0900e-003		0.0291	0.0291		0.0279	0.0279	0.0000	91.9681	91.9681	0.0179	0.0000	92.4146
Total	**0.0729**	**0.6117**	**0.6119**	**1.0900e-003**		**0.0291**	**0.0291**		**0.0279**	**0.0279**	**0.0000**	**91.9681**	**91.9681**	**0.0179**	**0.0000**	**92.4146**

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

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.5000e-004	8.5500e-003	2.5900e-003	3.0000e-005	9.9000e-004	9.0000e-005	1.0800e-003	2.9000e-004	9.0000e-005	3.8000e-004	0.0000	3.1336	3.1336	7.0000e-005	4.6000e-004	3.2713
Worker	2.1000e-004	1.5000e-004	1.8200e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4777	0.4777	2.0000e-005	1.0000e-005	0.4823
Total	**5.6000e-004**	**8.7000e-003**	**4.4100e-003**	**4.0000e-005**	**1.5800e-003**	**9.0000e-005**	**1.6800e-003**	**4.5000e-004**	**9.0000e-005**	**5.4000e-004**	**0.0000**	**3.6113**	**3.6113**	**9.0000e-005**	**4.7000e-004**	**3.7535**

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	0.0729	0.6117	0.6119	1.0900e-003		0.0291	0.0291		0.0279	0.0279	0.0000	91.9680	91.9680	0.0179	0.0000	92.4145
Total	**0.0729**	**0.6117**	**0.6119**	**1.0900e-003**		**0.0291**	**0.0291**		**0.0279**	**0.0279**	**0.0000**	**91.9680**	**91.9680**	**0.0179**	**0.0000**	**92.4145**

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

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.5000e-004	8.5500e-003	2.5900e-003	3.0000e-005	9.9000e-004	9.0000e-005	1.0800e-003	2.9000e-004	9.0000e-005	3.8000e-004	0.0000	3.1336	3.1336	7.0000e-005	4.6000e-004	3.2713
Worker	2.1000e-004	1.5000e-004	1.8200e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4777	0.4777	2.0000e-005	1.0000e-005	0.4823
Total	**5.6000e-004**	**8.7000e-003**	**4.4100e-003**	**4.0000e-005**	**1.5800e-003**	**9.0000e-005**	**1.6800e-003**	**4.5000e-004**	**9.0000e-005**	**5.4000e-004**	**0.0000**	**3.6113**	**3.6113**	**9.0000e-005**	**4.7000e-004**	**3.7535**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0569	0.4756	0.5101	9.1000e-004		0.0217	0.0217		0.0208	0.0208	0.0000	77.2516	77.2516	0.0148	0.0000	77.6205
Total	**0.0569**	**0.4756**	**0.5101**	**9.1000e-004**		**0.0217**	**0.0217**		**0.0208**	**0.0208**	**0.0000**	**77.2516**	**77.2516**	**0.0148**	**0.0000**	**77.6205**

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

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	5.6200e-003	1.8400e-003	3.0000e-005	8.3000e-004	3.0000e-005	8.6000e-004	2.4000e-004	3.0000e-005	2.7000e-004	0.0000	2.5248	2.5248	5.0000e-005	3.7000e-004	2.6349
Worker	1.6000e-004	1.1000e-004	1.4100e-003	0.0000	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.3886	0.3886	1.0000e-005	1.0000e-005	0.3922
Total	**3.0000e-004**	**5.7300e-003**	**3.2500e-003**	**3.0000e-005**	**1.3300e-003**	**3.0000e-005**	**1.3600e-003**	**3.7000e-004**	**3.0000e-005**	**4.1000e-004**	**0.0000**	**2.9134**	**2.9134**	**6.0000e-005**	**3.8000e-004**	**3.0271**

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	0.0569	0.4756	0.5101	9.1000e-004		0.0217	0.0217		0.0208	0.0208	0.0000	77.2515	77.2515	0.0148	0.0000	77.6204
Total	**0.0569**	**0.4756**	**0.5101**	**9.1000e-004**		**0.0217**	**0.0217**		**0.0208**	**0.0208**	**0.0000**	**77.2515**	**77.2515**	**0.0148**	**0.0000**	**77.6204**

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

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	5.6200e-003	1.8400e-003	3.0000e-005	8.3000e-004	3.0000e-005	8.6000e-004	2.4000e-004	3.0000e-005	2.7000e-004	0.0000	2.5248	2.5248	5.0000e-005	3.7000e-004	2.6349
Worker	1.6000e-004	1.1000e-004	1.4100e-003	0.0000	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.3886	0.3886	1.0000e-005	1.0000e-005	0.3922
Total	**3.0000e-004**	**5.7300e-003**	**3.2500e-003**	**3.0000e-005**	**1.3300e-003**	**3.0000e-005**	**1.3600e-003**	**3.7000e-004**	**3.0000e-005**	**4.1000e-004**	**0.0000**	**2.9134**	**2.9134**	**6.0000e-005**	**3.8000e-004**	**3.0271**

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

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	0.0133	0.0161	0.1306	2.8000e-004	0.0289	2.1000e-004	0.0292	7.7300e-003	1.9000e-004	7.9200e-003	0.0000	25.5208	25.5208	1.5700e-003	1.1800e-003	25.9122
Unmitigated	0.0133	0.0161	0.1306	2.8000e-004	0.0289	2.1000e-004	0.0292	7.7300e-003	1.9000e-004	7.9200e-003	0.0000	25.5208	25.5208	1.5700e-003	1.1800e-003	25.9122

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	26.80	26.80	26.80	78,243	78,243
Total	26.80	26.80	26.80	78,243	78,243

4.3 Trip Type Information

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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.558086	0.056127	0.180570	0.129764	0.024304	0.005480	0.007016	0.007028	0.000551	0.000343	0.026017	0.001231	0.003481

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

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	27.4981	27.4981	4.4500e-003	5.4000e-004	27.7700
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	27.4981	27.4981	4.4500e-003	5.4000e-004	27.7700
NaturalGas Mitigated	5.3000e-003	0.0482	0.0405	2.9000e-004		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003	0.0000	52.4460	52.4460	1.0100e-003	9.6000e-004	52.7576
NaturalGas Unmitigated	5.3000e-003	0.0482	0.0405	2.9000e-004		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003	0.0000	52.4460	52.4460	1.0100e-003	9.6000e-004	52.7576

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	982800	5.3000e-003	0.0482	0.0405	2.9000e-004		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003	0.0000	52.4460	52.4460	1.0100e-003	9.6000e-004	52.7576
Total		**5.3000e-003**	**0.0482**	**0.0405**	**2.9000e-004**		**3.6600e-003**	**3.6600e-003**		**3.6600e-003**	**3.6600e-003**	**0.0000**	**52.4460**	**52.4460**	**1.0100e-003**	**9.6000e-004**	**52.7576**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	982800	5.3000e-003	0.0482	0.0405	2.9000e-004		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003	0.0000	52.4460	52.4460	1.0100e-003	9.6000e-004	52.7576
Total		**5.3000e-003**	**0.0482**	**0.0405**	**2.9000e-004**		**3.6600e-003**	**3.6600e-003**		**3.6600e-003**	**3.6600e-003**	**0.0000**	**52.4460**	**52.4460**	**1.0100e-003**	**9.6000e-004**	**52.7576**

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	297200	27.4981	4.4500e-003	5.4000e-004	27.7700
Total		**27.4981**	**4.4500e-003**	**5.4000e-004**	**27.7700**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	297200	27.4981	4.4500e-003	5.4000e-004	27.7700
Total		**27.4981**	**4.4500e-003**	**5.4000e-004**	**27.7700**

6.0 Area Detail

6.1 Mitigation Measures Area

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1771	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Unmitigated	0.1771	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1562					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Total	**0.1771**	**0.0000**	**3.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**0.0000**	**7.6000e-004**

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

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	0.0209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1562					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Total	**0.1771**	**0.0000**	**3.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**0.0000**	**7.6000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.5656	0.3022	7.2100e-003	17.2675
Unmitigated	7.5656	0.3022	7.2100e-003	17.2675

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	9.25 / 0	7.5656	0.3022	7.2100e-003	17.2675
Total		**7.5656**	**0.3022**	**7.2100e-003**	**17.2675**

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

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	9.25 / 0	7.5656	0.3022	7.2100e-003	17.2675
Total		**7.5656**	**0.3022**	**7.2100e-003**	**17.2675**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.0684	0.5950	0.0000	24.9439
Unmitigated	10.0684	0.5950	0.0000	24.9439

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	49.6	10.0684	0.5950	0.0000	24.9439
Total		**10.0684**	**0.5950**	**0.0000**	**24.9439**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	49.6	10.0684	0.5950	0.0000	24.9439
Total		**10.0684**	**0.5950**	**0.0000**	**24.9439**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Rubber Tired Loaders	1	24.00	365	203	0.36	Diesel

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

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Rubber Tired Loaders	0.1481	1.4534	0.8266	3.4300e-003		0.0487	0.0487		0.0448	0.0448	0.0000	300.7720	300.7720	0.0973	0.0000	303.2039
Total	**0.1481**	**1.4534**	**0.8266**	**3.4300e-003**		**0.0487**	**0.0487**		**0.0448**	**0.0448**	**0.0000**	**300.7720**	**300.7720**	**0.0973**	**0.0000**	**303.2039**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	50	0	0.73	

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

Special Status Species Lists

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2022-0054185
Project Name: Raven SR Bioenergy Project

June 14, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Project Code: 2022-0054185
Event Code: None
Project Name: Raven SR Bioenergy Project
Project Type: Commercial Development
Project Description: The proposed Raven SR Bioenergy Project (project) proposes to construct and operate a bioenergy system composed of the Raven SR multi-patented Steam/CO2 Reformation process at the project site. The non-combustible process would convert blended green waste and food waste obtained from the existing BMPC operation adjacent to the project site into renewable, transportation grade hydrogen that would be exported offsite for various renewable energy products. No hydrogen storage would occur onsite. The project would involve the erection of a modular structure and industrial canopy and would not add vehicle trips or other substantial traffic to the property.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.967288499999995,-122.38296104113344,14z

Counties: Contra Costa County, California

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Flowering Plants

NAME	STATUS
Marin Dwarf-flax *Hesperolinon congestum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5363	Threatened
Showy Indian Clover *Trifolium amoenum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered
Tiburon Jewelflower *Streptanthus niger* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4187	Endangered
Tiburon Mariposa Lily *Calochortus tiburonensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2858	Threatened
Tiburon Paintbrush *Castilleja affinis ssp. neglecta* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2687	Endangered
White-rayed Pentachaeta *Pentachaeta bellidiflora* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7782	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Agency:	Environmental Science Associates
Name:	Sharon Dulava
Address:	787 The Alameda
Address Line 2:	Suite 250
City:	San Jose
State:	CA
Zip:	95126
Email	sdulava@esassoc.com
Phone:	9252859473

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: BIOS selection

Raven SR Bioenergy Project Initial Study: 5 Mile Study Area

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S3	SSC
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T2T3	S2S3	
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Hydroprogne caspia Caspian tern	ABNNM08020	None	None	G5	S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S1	FP
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2T3	S2S3	SSC
Melospiza melodia samuelis San Pablo song sparrow	ABPBXA301W	None	None	G5T2	S2	SSC
Microtus californicus sanpabloensis San Pablo vole	AMAFF11034	None	None	G5T1T2	S1S2	SSC
Nannopterum auritum double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S1	FP
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
Sorex vagrans halicoetes salt-marsh wandering shrew	AMABA01071	None	None	G5T1	S1	SSC
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S2	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Tryonia imitator	IMGASJ7040	None	None	G2	S2	
mimic tryonia (=California brackishwater snail)						
Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Valley Needlegrass Grassland						
Xanthocephalus xanthocephalus	ABPBXB3010	None	None	G5	S3	SSC
yellow-headed blackbird						

Record Count: 44

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CNPS Rare Plant Inventory

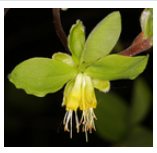
California Native Plant Society

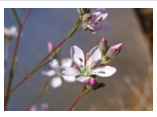
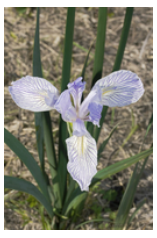
Search Results

45 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3712284:3712283:3812214:3812213**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Amorpha californica var. *napensis*	Napa false indigo	Fabaceae	perennial deciduous shrub	Apr-Jul	None	None	G4T2	S2	1B.2	 © 2016 John Doyen
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	None	None	G3	S3	1B.2	 © 2011 Neal Kramer
Arabis blepharophylla	coast rockcress	Brassicaceae	perennial herb	Feb-May	None	None	G4	S4	4.3	 © 2011 Neal Kramer
Arctostaphylos pallida	pallid manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	FT	CE	G1	S1	1B.1	No Photo Available
Aspidotis carlotta-halliae	Carlotta Hall's lace fern	Pteridaceae	perennial rhizomatous herb	Jan-Dec	None	None	G3	S3	4.2	No Photo Available
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	No Photo Available
Calamagrostis ophitidis	serpentine reed grass	Poaceae	perennial herb	Apr-Jul	None	None	G3	S3	4.3	No Photo Available
Calochortus tiburonensis	Tiburon mariposa-lily	Liliaceae	perennial bulbiferous herb	Mar-Jun	FT	CT	G1	S1	1B.1	No Photo Available
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G3?	S3?	4.2	No Photo Available
Calystegia purpurata ssp. *saxicola*	coastal bluff morning-glory	Convolvulaceae	perennial herb	(Mar)Apr-Sep	None	None	G4T2T3	S2S3	1B.2	No Photo Available
Castilleja affinis var. *neglecta*	Tiburon paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	Apr-Jun	FE	CT	G4G5T1T2	S1S2	1B.2	No Photo

										Available
Castilleja ambigua var. *ambigua*	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	None	None	G4T4	S3S4	4.2	 ©2011 Dylan Neubauer
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Oct	None	None	G4?T2	S2	1B.2	 ©2017 John Doyen
Chloropyron molle ssp. *molle*	soft salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	FE	CR	G2T1	S1	1B.2	No Photo Available
Collomia diversifolia	serpentine collomia	Polemoniaceae	annual herb	May-Jun	None	None	G4	S4	4.3	 ©2019 Zoya Akulova
Dirca occidentalis	western leatherwood	Thymelaeaceae	perennial deciduous shrub	Jan-Mar(Apr)	None	None	G2	S2	1B.2	 © 2017 Steve Matson
Eleocharis parvula	small spikerush	Cyperaceae	perennial herb	(Apr)Jun-Aug(Sep)	None	None	G5	S3	4.3	 ©2018 Ron Vanderhoff
Eriogonum luteolum var. *caninum*	Tiburon buckwheat	Polygonaceae	annual herb	May-Sep	None	None	G5T2	S2	1B.2	No Photo Available
Erythranthe laciniata	cut-leaved monkeyflower	Phrymaceae	annual herb	Apr-Jul	None	None	G4	S4	4.3	 © 2017 Steven Perry
Erythranthe nudata	bare monkeyflower	Phrymaceae	annual herb	May-Jun	None	None	G4	S4	4.3	 John Doyen 2015
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2	 © 2004 Carol W. Witham
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	

										© 2013 Christopher Bronny
Hesperolinon congestum	Marin western flax	Linaceae	annual herb	Apr-Jul	FT	CT	G1	S1	1B.1	 © 2009 Neal Kramer
Hoita strobilina	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	None	None	G2?	S2?	1B.1	 © 2004 Janell Hillman
Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	FT	CE	G1	S1	1B.1	 © 2011 Dylan Neubauer
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May(Jun)	None	None	G3	S3	4.2	 © 2014 Aaron Schusteff
Isocoma arguta	Carquinez goldenbush	Asteraceae	perennial shrub	Aug-Dec	None	None	G1	S1	1B.1	No Photo Available
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	None	None	G5T2	S2	1B.2	 © 2003 Mark Fogiel
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	None	None	G4?	S4?	4.2	 © 2007 Len Blumin
Leptosiphon grandiflorus	large-flowered leptosiphon	Polemoniaceae	annual herb	Apr-Aug	None	None	G3G4	S3S4	4.2	 © 2003 Doreen L. Smith
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	None	None	G2G3	S2S3	3	 © 2015 Aaron Schusteff
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous	Apr-Nov	None	CR	G2	S2	1B.1	No Photo

			herb							Available
Pentachaeta bellidiflora	white-rayed pentachaeta	Asteraceae	annual herb	Mar-May	FE	CE	G1	S1	1B.1	No Photo Available
Piperia michaelii	Michael's rein orchid	Orchidaceae	perennial herb	Apr-Aug	None	None	G3	S3	4.2	No Photo Available
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	None	None	GX	SX	1A	No Photo Available
Polygonum marinense	Marin knotweed	Polygonaceae	annual herb	(Apr)May-Aug(Oct)	None	None	G2Q	S2	3.1	No Photo Available
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	None	None	G4	S3	4.2	No Photo Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2	No Photo Available
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May	None	None	G5T2	S2	1B.2	No Photo Available
Streptanthus glandulosus ssp. *niger*	Tiburon jewelflower	Brassicaceae	annual herb	May-Jun	FE	CE	G4T1	S1	1B.1	No Photo Available
Suaeda californica	California seablite	Chenopodiaceae	perennial evergreen shrub	Jul-Oct	FE	None	G1	S1	1B.1	No Photo Available
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	No Photo Available
Trifolium amoenum	two-fork clover	Fabaceae	annual herb	Apr-Jun	FE	None	G1	S1	1B.1	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available
Triquetrella californica	coastal triquetrella	Pottiaceae	moss		None	None	G2	S2	1B.2	No Photo Available

Showing 1 to 45 of 45 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 14 June 2022].

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APPENDIX C

Draft Mitigation Monitoring and Reporting Program (MMRP)

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Project Mitigation Measures	Implemented By	Monitored By	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
4.1 Aesthetics – None Required					
4.2 Agriculture and Forestry Resources – None Required					
4.3 Air Quality					
Mitigation Measure AQ-1: Best Management Practices. All subsequent projects, regardless of size, shall implement the following best management practices to reduce construction impacts, particularly fugitive dust, to a less-than-significant level: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, except when not required for dust control. • All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. • Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective	Project Applicant / Construction Contractor	Richmond Building Division and Engineering Services Department	Richmond Engineering Services Department to verify inclusion of BAAQMD BMPs in applicable construction plans and specifications. City of Richmond Building Division to inspect site during construction to ensure compliance with Project construction plans.	Prior to issuance of building permit. Field inspections during construction.	*Verified by:* *Date:*

Project Mitigation Measures	Implemented By	Monitored By	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.					
4.4 Biological Resources					
Mitigation Measure BIO-1: Avoid and Minimize Impacts to Nesting Birds, Except Rails. To the extent practicable, project construction activities requiring heavy equipment, or any tree trimming, shall be performed outside of the bird nesting season (February 1st through August 31st) to avoid impacts to nesting birds.	Project Applicant / Construction Contractor Qualified Biologist	Richmond Building Division and Planning Division	City of Richmond Building Division to ensure construction activities are performed between February 1st and August 31st.	Prior to any site alterations or issuance of building permit. Field inspections during construction.	*Verified by:* *Date:*
If these activities must be performed during the nesting bird season, a qualified biologist shall be retained to conduct a pre-construction survey in the project construction and staging areas for nesting birds and verify the presence or absence of nesting birds no more than 14 calendar days prior to construction activities or after any construction breaks of 14 calendar days or more. Surveys shall be performed for the project construction and staging areas and suitable habitat within 250 feet of the project construction and staging areas in order to locate any active passerine (perching bird) nests and within 500 feet of the project construction and staging areas to locate any active raptor (birds of prey) nest, including potential burrowing owl burrows. If nesting birds and raptors do not occur within 250 and 500 feet of the Project area, respectively, then no further action is required if construction begins within 14 calendar days. If active nests are located during the pre-construction bird nesting surveys, no-disturbance buffer zones shall be established around nests, with a buffer size established by the qualified biologist. Typically, these buffer distances are between 50 feet and 250 feet for passerines and between 150 feet and 500 feet for raptors. These distances may be adjusted depending on the level of surrounding ambient activity and if an obstruction, such as a building or structure, is within line-of-sight between the nest and construction. Reduced buffers may be allowed if a full-time qualified biologist is present to monitor the nest and has authority to halt construction if bird behavior indicates continued activities could lead to nest failure. Buffered zones shall be avoided during construction-related activities until young have fledged or the nest is otherwise abandoned. If active burrowing owl dens are found within the survey area, the project applicant shall implement measures at least equal to the 2012 (or subsequent applicable) CDFW Staff Report (CDFG, 2012), as determined by the qualified biologist.	Project Applicant / Construction Contractor Qualified Biologist	Richmond Building Division	City of Richmond Building Division to confirm surveys are conducted pursuant to specified measures, and if warranted, that buffer zone distances are indicated in project plans and adhered to during construction activities. City of Richmond Planning Division to receive and confirm survey report.	Field inspections during construction. Upon completion of surveys.	*Verified by:* *Date:*

Project Mitigation Measures	Implemented By	Monitored By	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
Mitigation Measure BIO-2: Avoid and Minimize Impacts to California Black Rail and California Ridgway's Rail • To minimize or avoid the loss of individual California black rail and Ridgway's rail, construction activities requiring heavy equipment, adjacent to tidal marsh areas (within 500 feet [150 meters] or a distance determined in coordination with U.S. Fish and Wildlife (USFWS) or the California Department of Fish and Wildlife (CDFW)), shall be avoided during the breeding season from February 1 through August 31.	Project Applicant / Construction Contractor Qualified Biologist	Richmond Building Division and Planning Division	City of Richmond Building Division to ensure construction activities are performed between February 1st and August 31st.	Field inspections during construction.	*Verified by:* *Date:*
• If areas within 500 feet of rail habitat cannot be avoided during the breeding season (February 1 through August 31), protocol-level surveys shall be conducted to determine rail nesting locations. The surveys will focus on potential habitat that could be indirectly disturbed by construction activities during the breeding season to ensure that rails are not breeding within 500 feet of project activities. • Survey methods for rails will follow the *Site-Specific Protocol for Monitoring Marsh Birds*, which was developed for use by USFWS and partners (Wood et al. 2017). Surveys are concentrated during the approximate period of peak detectability, January 15 to March 25 and are structured to efficiently sample an area in three rounds of surveys by broadcasting calls of target species during specific periods of each survey round. Call broadcast increase the probability of detection compared to passive surveys when no call broadcasting is employed. This protocol has since been adopted by Invasive Spartina Project (ISP) and Point Blue Conservation Science to survey Ridgway's rails at sites throughout San Francisco Bay Estuary. The survey protocol for Ridgway's rail is summarized below. – Previously used survey locations (points) should be used when available to maintain consistency with past survey results. Adjacent points should be at least 200 meters apart along transects in or adjacent to areas representative of the marsh. Points should be located to minimize disturbances to marsh vegetation. Up to 8 points can be located on a transect. – At each transect, three surveys (rounds) are to be conducted, with the first round of surveys initiated between January 15 and February 6, the second round performed February 7 to February 28, and the third round March 1 to March 25. Surveys should be spaced at least one week apart and the period between March 25 to April	Project Applicant / Construction Contractor Qualified Biologist	Richmond Building Division	City of Richmond Building Division to confirm surveys are conducted pursuant to specified measures. City of Richmond Planning Division to receive and confirm survey report.	Field inspections during construction. Upon completion of surveys.	*Verified by:* *Date:*

Project Mitigation Measures	Implemented By	Monitored By	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
15 can be used to complete surveys delayed by logistical or weather issues. A Federal Endangered Species Act Section 10(a)(1)(A) permit is required to conduct active surveys. – Each point on a transect will be surveyed for 10 minutes each round. A recording of calls available from USFWS is broadcast at each point. The recording consists of 5 minutes of silence, followed by a 30-second recording of Ridgway's rail vocalizations, followed by 30 seconds of silence, followed by a 30-second recording of California black rail, followed by 3.5 minutes of silence. • If no breeding Ridgway's rails or black rails are detected during surveys, or if their breeding territories can be avoided by 500 feet (150 meters), then project activities may proceed at that location.					
• If protocol surveys determine that breeding Ridgway's rails or black rails are present in the project area, the following measures would apply to project activities conducted during their breeding season (February 1- August 31): – The applicant shall coordinate with the USFWS- and CDFW, as appropriate depending upon species, to determine if project activities can continue during the nesting season based on nest location, natural visual barriers (e.g., levees) between the project and marshlands, and the distance between proposed activities and identified activity centers. If impact cannot be avoided during the rail nesting season, activities would be delayed until after the nesting season.	Project Applicant / Construction Contractor Qualified Biologist	Richmond Building Division	City of Richmond Building Division to ensure construction activities are performed between February 1st and August 31st, based on agency coordination per this measure. City of Richmond Planning Division to verify agency coordination and outcome.	Field inspections during construction. Upon completion of surveys.	*Verified by:* *Date:*
4.5 Cultural Resources					
Mitigation Measure CUL-1a: Cultural Resources Awareness Training. Prior to authorization to proceed, the City shall engage a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior's Professional Qualification Standards for Archeology, to conduct a training program for all construction workers involved on site disturbance. On-site personnel shall attend a mandatory pre-project training that outlines the general archaeological sensitivity of the vicinity and the procedures to follow in the event an archaeological resource and/or human remains are inadvertently discovered.	Project Applicant / Construction Contractor Qualified Archaeologist	Richmond Building Division	City of Richmond Building Division to review and confirm documentation of training, required personnel attending, and scope of training.	Prior to commencement of any ground-disturbing activities.	*Verified by:* *Date:*

Project Mitigation Measures	Implemented By	Monitored By	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
Mitigation Measure CUL-1b: Inadvertent Discovery of Cultural Materials or Tribal Cultural Resources. If pre-contact or historic-era cultural materials are encountered during project implementation, all construction activities within 100 feet of the find shall halt and the contractor shall notify the City. The City shall notify a qualified archaeologist who will inspect the find within 24 hours of discovery and provide the City of an initial assessment. Pre-contact cultural materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era cultural materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse. If the City determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is pre-contact), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided if feasible. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource, incorporating the resource within open space, capping and covering the resource, or deeding the site into a permanent conservation easement. If avoidance is not feasible, the City shall consult with a qualified archaeologist and a Native American representative (if the resource is pre-contact) to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).	Project Applicant / Construction Contractor	Qualified Archaeologist If applicable, Native American representative	Richmond Building Division to review and approve of archaeologist, of cultural resources monitoring plan and of the construction plan that includes archaeological mitigation. If resources are encountered, Contractor to verify work is suspended as required, review and approve qualified archaeologist and recommendations. If resources encountered are found to be qualifying as described in the measure, the City to ensure preservation measures are implemented or that the ARDTP is completed and submitted to NWIC. City to inspect site during construction to ensure compliance with project construction plans.	Prior to issuance of building permit for, or commencement of, any ground-disturbing activities. Field inspections during construction.	*Verified by:* *Date:*

Project Mitigation Measures	Implemented By	Monitored By	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains. If human remains are encountered during project implementation, the contractor shall halt all construction activities within 100 feet of the find and notify the City. The City shall contact the Contra Costa County Coroner who will determine that no investigation of the cause of death is required. If it is determined that the remains are Native American, the Coroner shall contact the Native American Heritage Commission within 24 hours. The Commission shall then identify the person or persons it believes to be the Most Likely Descendant from the deceased Native American, who in turn would make recommendations for the appropriate means of treating the human remains and any grave goods.	Project Applicant / Construction Contractor	Qualified Archaeologist	Richmond Building Division verify mitigation measure on construction plans. Inspect site during construction to ensure compliance with project construction plans. If needed, engage County Coroner and ensure NAHC contact.	Prior to issuance of a building permit for, or commencement of, any ground-disturbing activities. Field inspections during construction.	*Verified by:* *Date:*
4.6 Energy – None Required					
4.7 Geology, Soils, and Mineral Resources - MM CUL-1a, CUL-1b, CUL-2 (see 4.5, Cultural Resources)					
4.8 Greenhouse Gas Emissions – None Required					
4.9 Hazards and Hazardous Materials – None Required					
4.10 Hydrology and Water Quality – None Required					
4.11 Land Use and Planning – None Required					
4.12 Noise / Vibration – None Required					
4.13 Population and Housing– None Required					
4.14 Public Services and Recreation – None Required					
4.15 Transportation – None Required					
4.16 Tribal Cultural Resources - MM CUL-1a, CUL-1b, CUL-2 (see 4.5, Cultural Resources)					
4.17 Utilities and Service Systems – None Required					
4.18 Wildfire – None Required					