K2 Pure - Chlorine Rail Transportation Curtailment

Public Draft
Initial Study

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Prepared for:

City of Pittsburg

Prepared by:

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PROJECT DESCRIPTION

K2 Pure Solutions Chlorine Rail Transportation Curtailment

Introduction

The applicant of the proposed project, K2 Pure Solutions (K2), owns and operates an existing Chlor-Alkali production facility that is located within the Corteva Agriscience (Corteva) facility boundaries in Pittsburg, California. The K2 facility produces chlorine for use by Corteva. The current production capacity was previously analyzed in the City of Pittsburg's *2009 Mitigated Negative Declaration for the Proposed K2 Pure Solutions ECU and Bleach Plant Project*.

A change in facility operations occurred during the K2 Full Utilization Project in which K2 requested Design Review approval from the City to add equipment that would allow the facility to operate at the previously approved capacity of 400 Electrochemical Units (ECU)[1] per day up from 300 ECU per day which was the plant's constructed capacity. In 2016, the City, under Resolution #10027, approved the Design Review.

The K2 proposed Chlorine Rail Transportation Curtailment Project includes:

- Addition of a new chlorine loading facility;
- Addition of approximately 700 feet of pipeline connecting the existing chlorine storage to the chlorine loading facility;
- A dry air supply line for offloading the tank car; and
- Addition of a vapor scrubber at proposed chlorine loading facility.

Proposed Objectives

The objectives of the proposed project are:

- Install liquid chlorine rail car loading facility at K2 Pittsburg to fully support Corteva's onsite agrichemical production;
- Enable Corteva to eliminate existing offsite liquid chlorine transport by rail to the Pittsburg Corteva facility; and
- Increase operational flexibility enabling scheduled production outages for equipment maintenance and reducing unplanned outages by allowing for more consistent routine preventative maintenance durations thus increasing safety and operational reliability.

[1] An ECU is a ratio of 1.1 tons of sodium hydroxide, 1 ton of chlorine, and 0.03 tons of hydrogen produced.

Existing Setting

The proposed project is within the existing footprint of the Corteva Facility at 901 Loveridge Road in the City of Pittsburg, Contra Costa County, California. K2 is a material manufacturer and supplier for the manufacturing activities that occur at Corteva. The Corteva manufacturing facility is comprised of several individual chemical-manufacturing plants. Each chemical manufacturing plant includes tanks, material handling equipment, chemical reactors, mixing and separation equipment, pipes, pumps, loading and unloading stations, computer control centers, and other equipment necessary for its chemical manufacturing operations. Interconnections between one or more of Corteva's manufacturing plants are accomplished by piping to efficiently transfer materials that are reclaimed, reused, or further developed in the manufacturing process. In some cases, raw and intermediate materials are transferred throughout the Corteva Facility by truck and railcar.

The Corteva Facility is located along the Suisun Bay adjacent to New York Slough, a deepwater channel that provides ship access to inland ports, including the ports of Sacramento and Stockton. The facility is bounded by Loveridge Road and USS-POSCO, a steel company, to the west and an undeveloped Corteva-owned parcel of land to the east. Further to the east of the Corteva Facility is the Dow Wetlands Preserve, a 251-acre Corteva-owned habitat for wildlife and fish. Figure 1 provides the location of the proposed project and the surrounding area.

Across the slough to the north is Browns Island, a 595-acre regional shoreline preserve and refuge for aquatic birds managed by the East Bay Regional Park District with restricted access. Adjacent to Browns Island across the slough from the facility is Winter Island home of the California Department of Water Resources' Winter Island Tidal Habitat Restoration Project.

Burlington Northern Santa Fe (BNSF) Railway tracks are located adjacent to the southern part of the Corteva Facility and connect to Corteva-owned railroad tracks that bisect the Corteva Facility. Directly south of the Corteva Facility is an area of undeveloped land interspersed with industrial and manufacturing facilities. Columbia Solar Energy, LLC is located southwest between the Pittsburg-Antioch Highway and the BNFS Railroad. Approximately 0.5 mile south of the tracks is the Pittsburg-Antioch Highway, which generally runs in an East-West direction. Union Pacific Railroad (UPRR) tracks are adjacent to the south side of the Pittsburg-Antioch Highway.

Project Area Land Use and Development

The Pittsburg General Plan (City of Pittsburg, 2001) designates approximately 1,585-acres as the "Northeast River Planning Subarea." This subarea is primarily characterized by established, large-scale heavy industrial operations. The Corteva Facility is situated in the northeastern portion of the Northeast River Planning Subarea.

The Pittsburg General Plan indicates the entire Corteva Facility has a land use designation of *Industrial* and is zoned IG (General Industrial) District. The IG designation is the City's heavy industry zoning district that allows for a range of manufacturing, industrial processing, and general services.

Proposed Project Setting

The proposed project site is located on land within the existing manufacturing site owned by Corteva. The K2 facility is located on 12.96 acres. All activities associated with the proposed project would be contained within APN 073-220-039. The applicant currently leases the proposed project site from Corteva.

Figure 1: Project Area and Regional Location

Existing Operations

K2 is authorized under its City of Pittsburg use permit (Planning Commission Resolution No. 9813) to produce onsite a maximum daily quantity of the following:

- 465 tons of hydrochloric acid,
- 200 tons of liquid chlorine,
- 385 tons of 100% caustic soda, and
- 11.5 tons of hydrogen gas.

K2 delivers gaseous chlorine to Corteva by pressurized pipeline, for Corteva to use on demand. When K2 is shut down for maintenance or repairs, Corteva uses liquid chlorine stored onsite in railcars received from a facility located in Texas. Today, roughly 99% of Corteva's chlorine demand on the site is supplied via a dedicated pipeline by K2. The other roughly 1% of chlorine that Corteva uses when K2 is unable to supply due to planned or unplanned downtime is shipped via railcars from Texas to the Pittsburg facility.

Chlorine monitoring equipment is present throughout the site. The facility operates 24-hours per day. The K2 facility employs 32 operators working in rotating shifts of four people per shift.

There is an existing fence along the Corteva Facility's border with Loveridge Road. Corteva security gates are located at the south end of the proposed project area, along Loveridge Road. K2 employees enter the plant through the existing Corteva employee vehicle access gate at 901 Loveridge Road.

Proposed Project Description

The proposed project consists of the construction and operation of a new onsite chlorine rail loading station with associated vapor scrubber and connecting pipeline located at K2's existing Chlor-Alkali production facility.

Construction of Proposed Project

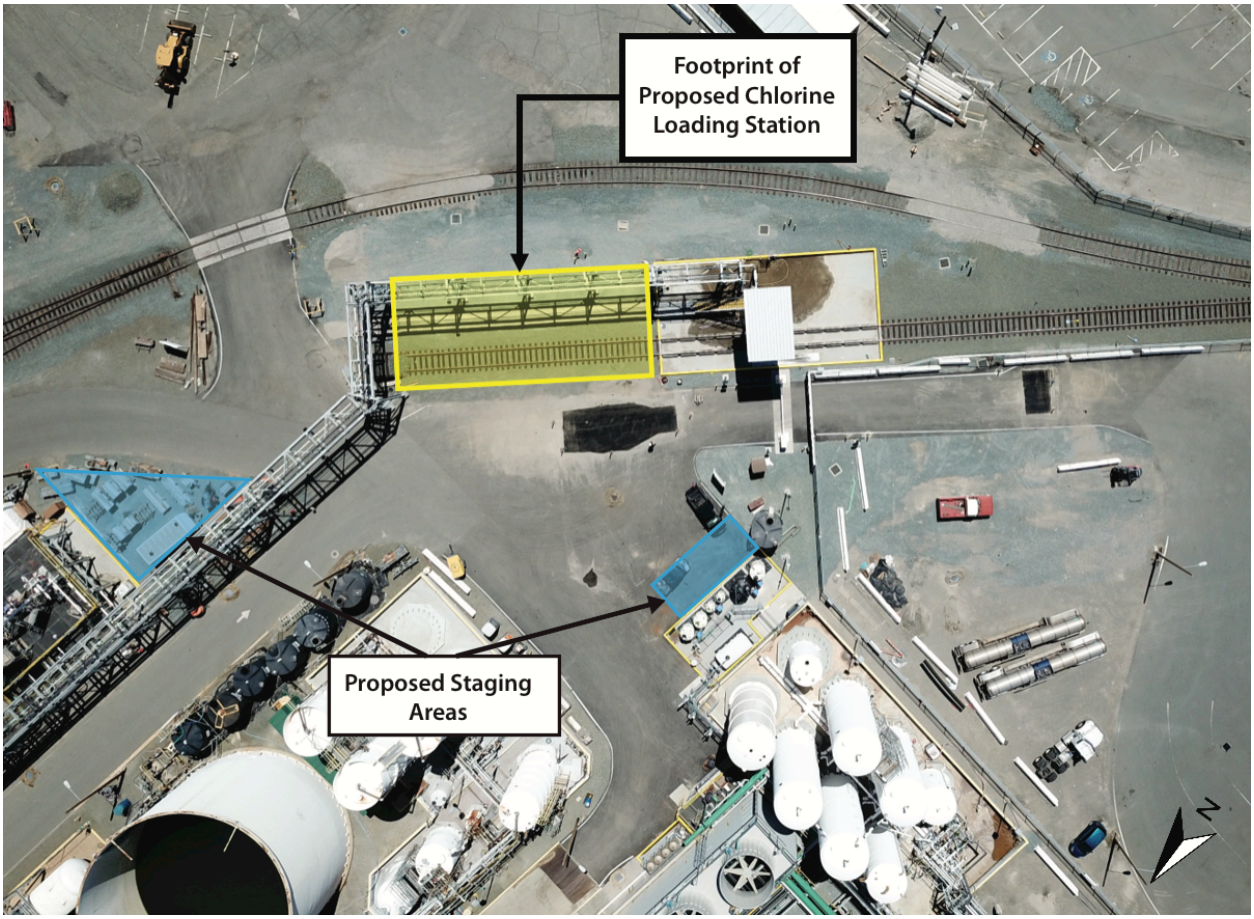
The construction footprint of the proposed project is within the K2 leased property and is shown on Figure 2. Construction would be completed within 8-10 weeks. It would require 3-6 construction workers on average for the duration of construction.

There would be some grading associated with the installation of a new cement slab constructed at the chlorine loading station. The grading and slab would be less than 1,000 sq. ft. During the grading operations, a qualified archaeological monitor would be present to ensure that no Native American artifacts are destroyed during ground-disturbing activities. Also, recommendations from the Hultgren Tillis 2016 Geotechnical Report Update (Appendix B), that includes monitoring and/or testing of geotechnical aspects of the work for earthwork site preparation and appropriate fill materials, would be implemented as a best management practice for the project area. Depending on the grading details identified in the final design, if the grading requires earth moving of more than 1 foot of depth, boring samples would be taken to determine underlying soil

content. A monitor would be present to observe soil conditions during grading if the depth of soil disturbance is less than 1 foot.

No surface / storm water drainages would be altered by the proposed project. Approximately 700 feet of pipeline from an existing fixed chlorine storage tank to the rail car loading facility would be constructed. Additionally, a dry air pipeline would be installed to facilitate offloading of the tank car by pressurized dry air for emergency response as well as to facilitate preventative maintenance activities for K2's existing chlorine storage system. The pipeline would be aboveground to facilitate regular inspection, testing, and preventative maintenance on the pipeline per industry standard mechanical integrity protocols. The rail car loading facility would be assembled on the cement slab with pre-fabricated components.

Figure 2: Project Footprint and Construction Staging



Construction Best Management Practices

In the approximately ten years that K2 has been operation in Pittsburg, California they have become familiar with several required best management practices (BMPs) to be incorporated into all their approved projects. Two of the BMPs are associated with ground disturbing activities during construction.

Policies are in place with the City for protection of archaeological resources. BMPs related to inadvertent exposure of pre-historic or historic-era archaeological resources include having a qualified archeological monitor present during all grading, and to address inadvertent discoveries of cultural resources. Documentation from the qualified archeological monitor would be developed for these ground-disturbing activities.

In addition, monitoring and/or testing geotechnical aspects of the work for earthwork site preparation and use of appropriate fill materials is also an onsite BMP. Bay Mud covered with up to 20 feet of sand clays and silts with slab bricks and other debris are present in the project area (Hultgren-Tillis Engineers, 2008). Depending on the grading details identified in the project's final design, if grading requires earth moving of more than 1 foot of depth, boring samples would be taken in advance of the grading to determine underlying soil content. If the grading activities are a foot or less in depth, the construction contractor would follow the standard practice of having a geotechnical monitor onsite to document underlying surface conditions. These BMPs are documented at the time of occurrence.

Proposed Operations

The proposed project would modify the current operations by having K2 load liquid chlorine into railcars stored onsite for Corteva's use when the K2 facility is offline. The proposed project would not change the onsite operations but would move loading of the railcars with chlorine onsite rather than have it delivered via railcar from Texas. This would nearly eliminate the approximately 1,500 miles of transit of chlorine by rail with rail cars filled at the proposed chlorine loading station. The amount of rail cars onsite with chlorine would not be altered with the proposed project.

K2 is proposing to load the railcars at scheduled times during the year. The proposed project anticipates a maximum of 66 railcar loading or offloading operations annually thus enabling Corteva to eliminate importing chlorine shipped by railcar from Texas. It would take approximately six hours per rail car to fill with chlorine. This reduction of chlorine shipments for Corteva would increase railcar maintenance and movement onsite. However, no increase to chlorine production capacity would occur with operation of the proposed project. Raw materials and energy consumption would be minimally increased as a result of the proposed project because the chlorine production limits would remain the same. The minimal increase in energy consumption would be associated with lighting of the loading facility and instrumentation.

The K2 chlorine railcar loading system would be designed and operated employing safe, proven, and Chlorine Institute recommended equipment including automated valves and pressure transmitters, motion detectors, auto shut offs and Coriolis metering for accurate mass flow measurement. Specifically, at least two remote emergency stop buttons would be strategically located to shut down the system in the event of an emergency during the loading process. A dry air supply would also be installed to facilitate the unloading of a railcar in the event of an emergency need to deinventory a railcar. This unloading capability would also allow K2 to perform preventative maintenance activities that require 100% evacuation of K2's current chlorine storage

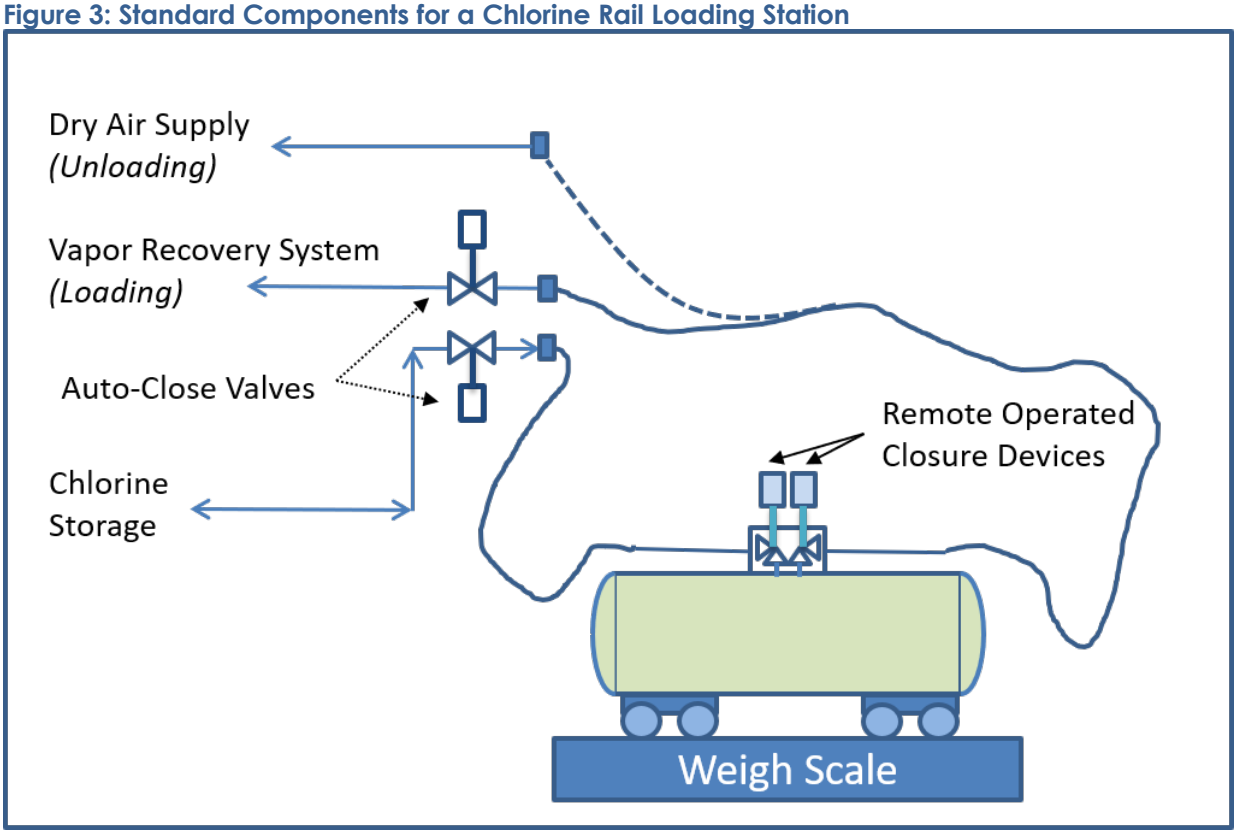
vessels without having to import a chlorine railcar from offsite to facilitate startup of the plant as would be required after such maintenance activities.

Figure 3 depicts the standard components for a Chlorine Rail Loading Station as described by the Chlorine Institute. During the rail car loading operation, prevention of the rail car from being hit or moved by another car or locomotive would be accomplished by using derails or stops 50 feet or more from both ends of the rail car. Derails would not be removed for any reason until all cars are disconnected from the loading rack. (Chlorine Institute 2015)

The Chlorine Institute recommends that an Emergency Kit C should be on-site in a location sufficiently away from the tank car, so it will be accessible during an emergency (Chlorine Institute 2015). This BMP would be implemented as part of the proposed project to control leaks that may occur in chlorine loaded tank cars that usually involve the angle valves or pressure relief devices.

The Chlorine Institute's publications would be the design basis for the proposed Chlorine Loading Station at K2. In addition, K2 would update their Risk Management Plan (RMP) per requirements of the California Accidental Release Prevention (CalARP) Program regulation (California Code of Regulations Title 19, Division 2, Chapter 4.5, Section 2750) and EPA Risk Management Program (RMP) (40 CFR Part 68). Contra Costa County is the designated Certified Unified Program Agency (CUPA) for the facility responsible for approving the RMP. K2 would reissue the RMP to the County for review and approval. The revised RMP will include an updated consequence analysis with the proposed project as an alternative release scenario.

Figure 3: Standard Components for a Chlorine Rail Loading Station



The proposed project would modify current K2 operations by loading chlorine in railcars for Corteva's use during K2 shutdowns. The rail station includes a roughly 700-foot pipeline from K2's existing chlorine storage tanks to the loading station. During loading operation, hoses would be connected from the pipeline to the railcar to be loaded. A vent line would be attached that returns to K2's existing redundant chlorine destruction system. In the event of offloading, the vent line would be attached to a dry air supply line to deliver the chlorine through the same 700-foot pipeline back to the existing chlorine storage tanks. A separate vapor scrubber would be installed at the loading station to eliminate chlorine from the loading hoses after each loading or offloading operation. The loading station would be equipped with automated safety devices including auto-close valves, remotely operated isolation valves, area chlorine monitors, motion detectors and other equipment per recommendations in the Chlorine Institute guidance.

The rail cars would remain at the loading facility only during filling operations. The duration of the liquid chlorine filling process would be approximately 6 hours per rail car. After filling, the rail cars would be delivered to Corteva for production or storage per Corteva's current practices. Corteva would maintain the same amount of rail cars onsite following implementation of the proposed project. The proposed project operations would not require additional operators at the facility.

Since the facility is functioning 24 hours per day; chlorine loading could take place any time of the day. Additional lighting would be added for night time loading of the rail

cars. All proposed structures are within the height limit defined by the City of Pittsburg Municipal Code (PMC) § 18.54.115.

The proposed chlorine rail transportation curtailment would increase operational flexibility for K2 by enabling scheduled production outages for equipment maintenance and reducing unplanned outages by allowing for more consistent routine preventative maintenance. These routine shutdowns would result in more predictability and reliability for overall plant operations and safety.

The proposed project would result in a net decrease in rail transport of liquid chlorine to Corteva Pittsburg. However, there is the potential to increase the rail car movement onsite. No additional chlorine is being produced at the facility so there would not be an increase in traffic associated with workers or supplies using public roads in the area of the proposed project.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project. The following pages present a more detailed checklist and discussion of each environmental factor.

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

DETERMINATION:

On the basis of this initial evaluation:

☒	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☐	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier 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, nothing further is required

Signature: 	**Date:** 10/17/2019
Printed Name: Hector Rojas	**For:**

1.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 buildings within a state scenic highway	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are 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?	☐	☐	☒	☐

Discussion:

Would the project:

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

No Impact. A scenic vista is generally considered a view of an area that has notable scenery or a resource that is indigenous to the area. A scenic resource may also represent a landmark or area that has been noted for its outstanding scenic qualities and is thereby protected by State or local plans because of those qualities. Views from Browns Island Regional Shoreline, a portion of the East Bay Regional Park system (with restricted access by arrangement only), Sherman Island Waterfowl Management Area, and the Dow Wetlands Preserve are considered to have scenic vistas. In views from these areas, the existing Corteva property appears as a highly industrialized portion of the City. Views in the vicinity of the project area are largely constrained by adjacent structures and the area's relatively flat topography. The new rail facility

project area shown in Figure 1 would likely not be visible from offsite viewers. Offsite viewers from the scenic shoreline areas would notice no change to views across the site to the distant hills. Thus, once built, the new chlorine rail facility would have no impact on scenic vistas.

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

No Impact. Scenic resources refer to historic buildings, urban skylines, or natural resources, such as mountain ridgelines, trees, or rock outcroppings. There are no scenic resources within the project site. As a result, the proposed project would have no impact on scenic resources.

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?

No Impact. The existing industrial character of the Corteva facility would not be altered by the proposed project during construction or operations because the structures would blend into the industrial facility. The proposed project would not substantially degrade the existing character or quality of the site and its surroundings. The project is in an industrial zoned area, would not conflict with applicable zoning and other regulations governing scenic quality and therefore there would be no impacts to aesthetic resources**.**

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*.** The facility is currently operating 24 hours per day; chlorine loading could take place any time of the day. Additional lighting would be added for night time loading of the rail cars. The lighting would be directed downward toward the rail loading facility. There are no light- or glare-sensitive land uses within proximity of the project site. The closest public roadway is Loveridge Road, which is approximately one-half of a mile east of the project site (and is occupied by industrial uses). The closest highway to the project site, Pittsburg-Antioch Highway, is approximately 1 mile from the project site. State Route 4 is directly south to the Pittsburg-Antioch Highway. There are no sensitive receptors to light along SR 4. Although additional lighting would be introduced to the project site, the proposed project would comply with Title 18 of the Pittsburg Municipal Code (PMC). Title 18.82.030(B) sets forth performance standards for outdoor lighting to be indirectly or diffused or be shielded or directed away from residential areas and requires City review of the building plans. As a result, the proposed project would have a less-than-significant impact on day or nighttime views of the area because the City would review per the requirements of PMC Title 18 to ensure that the performance standards are met.

1.2 AGRICULTURAL AND FOREST RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion:

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?

No Impact. The proposed project would be constructed within Dow's property, which is developed industrial land and contains no farmlands. As a result, the project would have no impact related to the conversion of agricultural land uses to non-agricultural land uses.

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

No Impact. The proposed project would not conflict with existing zoning for agricultural uses or a Williamson Act contract. The project would be constructed on existing industrial land. As a result, the project would have no impact related to agricultural zoning.

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?

c. – e. ***No Impact.*** The proposed project would not conflict with existing zoning for, or cause rezoning of, forest loss or conversion of forest land to non-forest use or involve other changes that could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Forest land is not present in the vicinity of the proposed project. Therefore, the proposed project would have no impacts on forest land.

1.3 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:

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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) adversely affecting a substantial number of people?	☐	☐	☒	☐

Discussion:

The Bay Area Air Quality Management District (BAAQMD) is the public agency responsible for assuring that the National and California Ambient Air Quality Standards (NAAQS and CAAQS, respectively) are attained and maintained in the nine counties that surround San Francisco Bay, including Contra Costa County. The BAAQMD's responsibilities in improving air quality in its nine-county region include: preparing plans for attaining and maintaining air quality standards; adopting and enforcing rules and regulations; issuing permits for stationary sources of air pollutants; inspecting stationary sources and responding to citizen complaints; monitoring air quality and meteorological conditions; awarding grants to reduce mobile emissions; implementing public outreach campaigns; and assisting local governments in addressing climate change.

The BAAQMD was requested to review the administrative draft of the CEQA project description, and the Air Resources and Greenhouse Gas sections of the CEQA checklist. BAAQMD did not find any significant impacts to air resources or greenhouse gas emissions based on their review of the draft documents.

The BAAQMD California Environmental Quality Act (CEQA)- Air Quality Guidelines (updated May 2017) reflect BAAQMD risk and hazard screening thresholds and

procedures and include updated CEQA thresholds of significance adopted by the BAAQMD's Board of Directors on June 2, 2010.

The BAAQMD Guidelines include screening criteria based upon existing and proposed land use. The screening criteria identified in the BAAQMD Guidelines are not thresholds of significance but were developed to provide CEQA lead agencies with a conservative indication of whether a proposed project could result in potentially significant air quality impacts. These screening levels are generally representative of new development on greenfield (undeveloped) sites without any form of mitigation measures taken into consideration. The screening criteria were developed based upon the CEQA thresholds of significance adopted by the BAAQMD's Board of Directors on June 2, 2010.

Would the project:

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

Less Than Significant Impact.

Construction-Related Criteria Pollutants

The California Air Pollution Control Officers Association (CAPCOA) California Emissions Estimator Model (CalEEMod), version 2016.3.2 was used to estimate construction-related emissions for the proposed project. The BAAQMD currently recommends the use of CalEEMod for estimating emissions for projects pursuant to CEQA. The estimated emissions for construction and operation of the proposed project were conservatively estimated based upon CalEEMod default values, except where noted, as detailed in Appendix A of the CalEEMod Emissions Data Assumptions and Outputs.

Construction-related criteria pollutants were modeled, assuming no mitigation measures were implemented. A detailed summary of the assumptions made for the proposed project construction-related pollutant emission modeling and the CalEEMod reports for Annual and Peak Summer emissions are included as Appendix A to this Initial Study. Table 1 summarizes the results of the Peak Winter/Summer unmitigated overall construction emissions.

Table 1: Construction-Related Criteria Pollutants (BAAQMD 2017)

Pollutant	Construction-Related Average Daily Emissions (lb/day)	Significance Threshold for Average Daily Emissions (lb/day)
ROG	2.35	54.0
NOx	15.2	54.0
PM-10 (exhaust)	0.7	82.0
PM-2.5 (exhaust)	0.7	54.0

Construction-related emissions from the proposed project are estimated to be below BAAQMD Significance Thresholds for Construction Related Criteria Pollutants. Therefore, construction-related emissions would produce a less than significant impact.

Operational-Related Emissions of Criteria Pollutants

Operational-related criteria pollutant emissions were modeled using CalEEMod Version 2016.3.2, conservatively assuming no mitigation measures would be implemented. A detailed summary of the assumptions made for the proposed project operational-related pollutant emission modeling and the CalEEMod reports for Annual emissions are included as Appendix A to this Initial Study. Table 2 summarizes the results of the annual unmitigated overall operational-related emissions from the proposed project.

Table 2: Operational-Related Criteria Pollutants (BAAQMD 2017)

Pollutant	Operational-Related		Significance Threshold	
	Average Daily Emissions (lb/day)	Max Annual Emissions (tpy)	Average Daily Emissions (lb/day)	Max Annual Emissions (tpy)
ROG	0.097	0.007	54	10
NOx	0.70	0.02	80	10
PM-10 (exhaust)	0.04	0.001	80	15
PM-2.5 (exhaust)	0.03	0.001	54	10

The proposed project's operational-emissions are estimated to be below BAAQMD Significance Thresholds for Operational-Related Criteria Pollutants and therefore results in a less than significant impact.

Carbon Monoxide Impacts

The BAAQMD preliminary screening methodology for Carbon Monoxide (CO) provides a conservative indication of whether the implementation of the proposed project would result in emissions that exceed the CEQA Carbon Monoxide Threshold of Significance (BAAQMD 2017). The proposed project would result in a less-than-significant impact to localized CO concentrations because the following screening criteria are met:

1. The proposed project is consistent with an applicable congestion management program established by the county congestion management agency, Contra Costa Transportation Authority, for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. Traffic from the proposed project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
3. Traffic from the proposed project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The K2 proposed project would require from three to six construction workers on average for the duration of construction and proposed project operations would not require additional operators at the facility. The increased traffic volumes at affected intersections resulting from the proposed project would be insignificant, and as such, a traffic assessment is not required. The proposed project is consistent with Contra Costa Transportation Authority (CCTA) Congestion Management Program (CMP) for internal and adjacent roadways, the Regional Transportation Program (RTP), and the Countywide Comprehensive Transportation Plan. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan during construction or operations resulting in a less than significant impact.

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?

Less Than Significant Impact. As outlined in the section 1.3(a), Operational-Related Criteria Pollutants emissions for the proposed project are below Thresholds of Significance screening levels. Short-term Construction-Related Criteria Pollutants (modeled conservatively, assuming no mitigation measures would be implemented) are below Thresholds of Significance. Therefore, impacts to air quality standards would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. As discussed in the Section 1.3(a), for the purpose of making Significance Determinations, this Initial Study relies on the Thresholds included in the BAAQMD's June 2, 2010 Thresholds of Significance and, draws upon the 2017 Guidelines for conservative methodologies for calculating air pollution emissions and impacts. The Thresholds of Significance for Toxic Air Contaminants (TAC) in the 2017 guidance is whether the "ground-level concentrations of carcinogenic TACs from any source result in an increased cancer risk greater than 10.0 in one million, assuming a 70-year lifetime exposure", or "ground-level concentrations of non-carcinogenic TACs result in an increased chronic or acute Hazard Index (HI) from any source greater than 1.0."

Chlorine emissions from loading operations is expected to be negligible. Currently the facility uses a scrubbing unit to produce bleach out of the chorine. The venting of chlorine that would occur while loading a pressurized railcar would be directed to K2's existing bleach production unit, an existing source on K2's BAAQMD air quality permit to operate. The only new source of emissions would result from residual chlorine gas in the loading hoses after the hoses are disconnected and isolated. The design of the proposed project includes a purging system for the loading hoses, that includes a small scrubber, at the loading station. The small scrubber would be used to purge the approximately 50-ft of 1-inch diameter loading hose, to safety shutdown after a loading event.

Following the Chlorine Vent Scrubber vendor emission estimation methodology, resulting additional chlorine emissions are estimated to be 0.0033 lbs per loading event, or 0.22 lbs/yr, assuming 66 loading hose purge events per year. The BAAQMD Reg 2, Rule 5: New Source Review of Toxic Air Contaminants Table 2-5-1 Toxic Air Contaminant Trigger Levels for Chlorine are 0.26 lbs/hr and 7.7 lbs/yr. A detailed discussion of the Chlorine Vent Scrubber vendor emissions estimates is provided in Appendix B - Health Risk Screening Analysis.

Another potential proposed project source of Toxic Air Contaminant (TAC) and PM-2.5 (fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less) emissions is diesel powered switcher equipment used for moving the rail cars onsite. The switcher engine currently planned for use moving chlorine rail cars between the liquid chlorine rail car loading facility and the Corteva facility is a 130-hp Trackmobile Viking mobile railcar mover. A detailed discussion of the Rail-yard Switcher engine emissions estimates is provided in Appendix B - Health Risk Screening Analysis. Emissions from the proposed increase in rail car movement onsite are estimated to result in additional diesel particulate matter emissions of 0.23 lb/yr, conservatively assuming switching operations of 1.0 hour per car loading, a Load Factor of 0.8, and 66 cars per year expected maximum. The BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants Table 2-5-1 chronic Trigger Level for diesel particulate matter emissions is 0.26 lbs/yr. There is no acute Toxic Air Contaminant Trigger Level for diesel particulate matter.

The proposed project would not site any new receptors, defined by the BAAQMD 2017 CEQA Guidelines as residences, schools and school yards, parks and play grounds,

daycare centers, nursing homes, and medical facilities, nor is it within a 1,000-foot radius of any existing receptors. Operational-Related TAC emissions from the proposed project are estimated to be below Thresholds of Significance screening levels. The proposed project therefore results in a less than significant impact to exposing sensitive receptors to substantial pollution concentrations.

d) Create objectionable odors affecting a substantial number of people?

Less than Significant Impact. Odorous substances may be released from the proposed project during rail car loading operations. Chlorine gas is primarily a respiratory irritant. Low concentrations in air (0.1-0.3 ppm) are readily detectable by the normal person (White and Martin 2010). At low concentrations, chlorine gas has an odor similar to household bleach.

During loading operation, hoses would be connected from the pipeline to the railcar to be loaded. A vent line would be attached that returns to K2's existing redundant chlorine destruction system. A separate vapor scrubber would be installed at the loading station to eliminate chlorine from the loading hoses after each loading operation. The loading station would be equipped with automated safety devices including auto-close valves, remotely operated isolation valves, area chlorine monitors, motion detectors and other equipment per recommendations in the Chlorine Institute guidance[1]. Any minor fugitive emissions from loading that are not captured would dissipate quickly and should not be noticeable except directly near the source of the rail car loading. Existing chlorine monitoring equipment plus the addition of more monitors during implementation of the proposed project would ensure elevated concentrations of chlorine would not occur.

The nearest offsite worker receptors are located approximately 0.3 miles from the potential sources of odors from the proposed project, and the nearest residential receptor is located at a distance of approximately 0.5 mile from the railcar parking location. Neither K2 or Corteva have received complaints of nuisance odors from residents or workers that live or work near the Pittsburg facility, which currently includes operations approximately as close or closer to sensitive receptors as the proposed project.

The proposed project would not result in a substantial increase in odors outside of the facility that would affect a substantial number of people. Odor complaints due to the construction or operation of the proposed project are not expected with minor grading and building of the loading facility. Therefore, potential impacts related to objectionable odors would be less than significant.

[1] The Chlorine Institute exists to support the chlor-alkali industry and serve the public by fostering continuous improvements to safety and the protection of human health and the environment connected with the production, distribution and use of chlorine and related chemicals. This support extends to giving continued attention to the security of chlorine handling operations. For more information on the Institute's stewardship program, visit CI's website at www.chlorineinstitute.org

1.4 BIOLOGICAL RESOURCES

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

Discussion:

The area surrounding the proposed project site and the City of Pittsburg is a diverse environment that ranges from river to land, to marshes and wetlands, to fully

developed industrial, residential, and commercial areas, and hill and mountain habitats south of the City.

The East Contra Costa County Habitat Conservancy is a joint exercise of powers authority formed by the Cities of Brentwood, Clayton, Oakley and Pittsburg and Contra Costa County to implement the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCCHCP/NCCP). The ECCCHCP/NCCP provides a framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species. The ECCCHCP/NCCP would allow Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, the East Bay Regional Park District, the Cities of Brentwood, Clayton, Oakley, and Pittsburg, (the joint exercise powers authority formed East Contra Costa County Habitat Conservancy) to control endangered species permitting for activities and projects in the region that they perform or approve (ECCCHC 2009). Impacts related to species and habitats in the area are measured in terms of compliance with the ECCCHCP/NCCP.

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No Impacts. The California Natural Diversity Database (CNDDB) search locates species and habitats that are protected, sensitive, or potentially sensitive according to federal, state, regional, and local regulatory agencies. Per the CNDDB searches completed for the 2017 Dow Modernization PEIR and the 2009 MND for the K2 Solutions ECU and Bleach Plant project (2009 MND), the following species have been reported as being within a 1-mile radius of the proposed project site:

Antioch dunes evening-primrose, California black rail, California linderiella, Delta mudwort, Delta tule pea, Mason's lilaeopsis, Suisun Marsh aster, Bolander's water-hemlock, Contra Costa wallflower Suisun song sparrow, big tarplant, Lange's metalmark butterfly, White-tailed kite, Salt-marsh harvest mouse, saltmarsh common yellowthroat, vernal pool fairy shrimp, and western pond turtle.

According to regulatory measures from the City's Resource Conservation Element of the General Plan, projects taking place within the Urban Development Area of the General Plan Area would have a significant impact if they involved the incidental take of sensitive species or habitat, directly or through ground-disturbing activities that removed existing ground cover, or affected marshes, wetlands, and other water bodies through a change of drainage patterns that could negatively impact protected species and lands. The proposed project would be located entirely on the Corteva facility and would not result in the direct or indirect take of additional lands that are protected under the General Plan. Construction activities would occur on previously disturbed lands under use for industrial activity. Existing vegetative ground cover is absent. The

pervious surface on the site is covered with gravel. There would be some grading associated with the installation of a new cement slab constructed at the chlorine loading station adjacent to the railroad tracks and currently covered with gravel. The grading and slab would be less than 1,000 sq. ft. in area. Therefore, construction activities are not expected to result in the removal of any existing vegetation or have temporary or permanent impacts on sensitive habitats and species throughout the General Plan Area. The proposed project is an industrial facility located on an existing industrial site. Therefore, there are no impacts with regard to removal or modification of habitat for any species identified or designated as a candidate, sensitive, or special status species in local or regional plans, policies, or regulation, or by the State or federal regulatory agencies.

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

No Impacts. As discussed above in "a", construction or operation activities would not result in the removal of existing vegetative cover nor have a temporary or permanent impact on sensitive habitats and species throughout the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCCHCP/NCCP) area, including those state, and federally listed species located on the CNDDB search. Existing stormwater runoff at the proposed project site is currently collected and conveyed via catch basins and drain pipes to Dow's storm water detention basin. The proposed project would continue to use this storm water collection and conveyance system. Thus, the Rail Curtailment project would not affect riparian habitats or any other natural communities. Additional information regarding stormwater and existing drainage patterns are addressed in Section 1.19 Utilities and Service Systems. The proposed project is a rail loading facility on an existing industrial site and, thus, would not result in a significant impact to surrounding riparian habitat or other sensitive natural community. Therefore, the proposed project would have no impacts on sensitive species, riparian habitats, or other sensitive communities.

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

No Impacts. The proposed project would not involve the direct removal, filling, or hydrological interruption in State or federally-protected wetlands or other waters of the U.S or the State. The proposed project would be construction of an industrial facility component located on an existing portion of an adjacent industrial facility and, thus, would not impact surrounding wetlands. Therefore, no impacts to federally protected wetlands would occur**.**

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No Impacts. The proposed project would not interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors or impede the use of native wildlife nursery sites. The proposed project would be an industrial facility component located on an existing industrial site. Therefore, no impacts would occur with regards to interference or removal of access to a migratory wildlife corridor or native wildlife nursery.

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

No Impacts. All elements of the proposed project construction and operation would be in conformance with all existing local, regional, State, and federal plans, policies, and guidelines regarding the protection and conservation of sensitive species and habitats, including but not limited to plans, policies and guidelines of the Pittsburg Municipal Code (PMC), Pittsburg General Plan, the East Contra Costa Habitat Conservation Plan (ECCHCP), the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. The project's construction and operation would not result in impacts to areas outside the existing industrial facility. No impact would occur related to violation of local biological regulations.

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 Impacts. As noted in the 2009 MND, the area where the proposed project is located is under the regulatory jurisdiction of the ECCCHCP/NCCP, which determines adherence to State, regional, and national regulatory policies. The proposed project is identified as "urban land cover" by the HCP and further development of the site would not result in the take of sensitive species or sensitive habitat lands. Therefore, no impact would occur regarding inconsistency of the proposed project with policies in a drafted or adopted conservation plan.

1.5 CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Discussion:

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant in §15064.5?

No Impacts. An architectural history survey was prepared on February 26, 2009 in support of their cultural resource assessment (Pittsburg, 2009). The survey consisted of walking the project area. The portion of the railroad tracks that runs through the property, which are part of a large railroad track segment, do not appear significant in history or for its engineering. Furthermore, the railroad segment has undergone alterations and has not retained integrity. Lacking historical significance and integrity, the railroad segment does not meet the criteria for listing in the CRHR and, therefore, are not historical resources for the purposes of CEQA.

Since there are no historical resources within the project study area, for the purposes of CEQA, that would cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5, implementation of the proposed project would result in no impact on historic resources.

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

Less than Significant Impact. No known archaeological resources were identified through the investigation conducted to support 2009 MND or the 2017 Dow Modernization EIR. Archaeological Resources have not been discovered during the implementation of the K2 Pure Solutions ECU and Bleach Plant Project. However, such resources could be discovered through subsurface construction activities for the required grading for the installation of a new cement slab for the chlorine loading

station. The proposed Rail Curtailment project area has been previously disturbed multiple times from the construction and demolition of the previous C/A manufacturing structures and the development of K2 Pure Solutions as they exist today on the Corteva property. Although unlikely, due to historic disturbance and minimal ground disturbance, if buried cultural resources are inadvertently encountered during construction, disturbance could result in the loss of integrity of cultural deposits, loss of information, and the alteration of an archaeological site setting. The Pittsburg General Plan addresses uncovered archaeological resources in 9-P-40 and 9-P-41.

The General plan states: *City involvement in the identification, mitigation, and monitoring of project impacts on these resources will ensure the protection of Pittsburg's cultural heritage.* Also, *if archeological resources are found during ground-breaking for new urban development, halt construction immediately and conduct an archeological investigation to collect all valuable remnants.*

Policies are in place with the City for archaeological protections. Also, the Corteva facility including K2 staff are well aware of the best management practices related to inadvertent exposure of pre-historic or historic-era archaeological resources through CEQA mitigations required for larger projects. As presented in the project description, implementation of best management practices of having a qualified archeological monitor present during grading, would render any potential impact of inadvertently encountering archaeological resources to a less-than-significant level.

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

Less than Significant Impact. No formal cemeteries are known to have occupied land that is now associated with the Corteva property, and any human remains that could be encountered would likely be associated with archeological or historical archeological contexts. No archeological materials, including human burials, have ever been discovered on the Corteva property, and development of the proposed project would occur primarily on sites that have previously been subjected to grading and other earth-disturbing activities.

Human burials, in addition to potentially being considered archeological resources, are also resources with specific provisions for treatment. These provisions are included in PRC Section 5097. Although a slight potential exists for such resources to be present and for construction activities involving excavation to disturb these resources, the likelihood of discovery is extremely low, and this impact is, therefore, considered to be less than significant. However, implementation of construction best management practices of having a qualified archeological monitor present during grading, would render any potential impact of disturbing human remains to a less-than-significant level.

1.6 ENERGY

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion:

On June 5, 2017, the Pittsburg City Council adopted Resolution 17-13321; electing to join MCE Clean Energy, a "Community Choice Aggregation" energy program administrator, which offers local governments and their residents and businesses a choice in their energy provider and what fuel type of energy they choose to receive.

Community Choice Aggregation is specific to customer energy generation options. California law gives ratepayers the option to opt-out of MCE and return to PG&E energy if desired. PG&E continues to provide energy delivery, metering and billing services as usual. K2 receives both PG&E and Calpine Energy power.

The Delta Energy Center is an efficient combined-cycle facility with advanced air emissions control technologies owned and operated by Calpine Energy located in Pittsburg. It is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators and one steam turbine (Calpine 2019). The proposed project would be fed by Calpine 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

The new rail car loading facility would be composed of best in class equipment for safety and energy efficiency. The facility would be constructed using prefabricated equipment that would be installed using manufacturers specifications. Raw materials and energy consumption would be minimally increased as a result of the proposed project operations because the chlorine production limits would remain at current levels. The largest energy consumer would be the steam driven heat exchanger. The steam is generated onsite via a boiler. The proposed project would increase natural gas usage approximately 119 MMBTU/year. Small instrumentation and lighting would result in a minimal increase in electrical usage. Therefore, the proposed project would

have a less than significant impact related to wasteful inefficient or unnecessary consumption of energy resources.

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

Energy efficiency plans that demonstrate the project is in line with state and local renewable energy plans include some lines would be thermally insulated to ensure minimum energy usage. Also, the steam being generated would utilize a mixture of natural gas, and hydrogen produced onsite.

As a result of the project using:

a) the Delta energy center that is a combined-cycle facility with advanced air emissions control technologies;

b) minimal electricity (discussed in "a" above) and

c) some energy efficient planning via insulated lines and steam generation,

there would be a less than significant impact related to conflicts or obstruction of state and local renewable energy or energy efficiency.

1.7 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Discussion:

Table 3 provides a summary of existing faults within the area of the proposed project.

Table 3: Faults in the Vicinity of Pittsburg

Fault	Location and Direction from Project Area	Recency of Movement	Fault Classification	Historical Seismicity	Maximum Credible Earthquake[2]
Hayward	20 miles west	Historic (1868 rupture)	Active	6.8, 1868; Many <4.5	7.5
Concord-Green Valley	6 miles west	Historic (1955 rupture)	Active	Historic active creep	6.5
Clayton-Greenville	3 miles south	Holocene	Active	None known	6.3
Marsh Creek-Greenville	10 miles south east	Historic (1980 rupture) Holocene	Active	5.6, 1980	6.9
Franklin Fault	10 miles west	Late Pleistocene	Potentially Active	None documented	6.8
Antioch	4 miles east	Quaternary	Potentially active	Reported creep	6.5
San Andreas	40 miles west	Historic (1906; 1989 ruptures)	Active	7.1, 1989. 8.25, 1906. 7.0, 1838. Many <6	8.0
Calaveras (Northern)	15 miles south	Historic (1861 rupture) Holocene	Active	5.6–6.4, 1861. 4–4.5 swarms 1970, 1990	7.5

Source: City of Pittsburg 2001. Pittsburg General Plan Health and Safety Element. Page 10-6.

The Preliminary Geotechnical Investigation developed for the 2006 IS/MND covered the proposed project area and was followed by a 2016 Geotechnical Update Report that

[2] The Maximum Credible Earthquake (MCE) is the strongest earthquake that is likely to be generated along a fault zone, based on the geologic character of the fault and earthquake history.

also address the proposed project area. Both technical reports were completed by Hultgren-Tillis Engineers and are referenced in this section.

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?

Less than Significant Impact. The nearest, designated, Alquist-Priolo earthquake fault zone is located approximately 10 miles west of the Corteva facility. As shown in Table 3 the closest fault not designated by Alquist-Priolo, Clayton-Greenville, is approximately 3 miles south from the proposed project site. There are no known faults that traverse the proposed project site. As a result, the potential to expose people or structures to adverse impacts associated with surface fault rupture is less than significant.

ii. Strong seismic ground shaking?

Less than Significant Impact. Strong seismic ground shaking could result in damage to the rail loading facility, potentially resulting in personal injury and/or the accidental release of chemicals stored or transported on the project site. The proposed project would be required to comply with State and local building regulations including the 2016 California Building Code (CBC). The Applicant would implement the recommendations of the site-specific geotechnical investigation prepared by Hultgren-Tillis Engineers (see Appendix C Geotechnical Report Update). The recommendations include monitoring and/or test geotechnical aspects of the work for earthwork site preparation and appropriate fill materials. As discussed in the project Description, depending on the grading details identified in the final design, if the grading requires earth moving of more than 1 foot of depth, boring samples would be taken to determine underlying soil content. A geotechnical monitor would be present to observe soil conditions during grading if the depth of soil disturbance is less than one foot. This construction BMP of boring or geotechnical monitoring, subject to the 1 foot depth threshold, would be implemented during all ground disturbance onsite resulting in a reduction of potential impacts related to exposing people or structures to substantial adverse effects including the risk of loss, injury, or death from strong seismic groundshaking to less than significant.

iii. Seismic-related ground failure, including liquefaction?

Less than Significant Impact. According to the geotechnical investigation prepared by Hultgren-Tillis, the fill used to raise site grades on the lower areas of the Corteva property has the potential for liquefaction. Most of the proposed project site is underlain by alluvial deposits, which contain a thin layer of liquefiable sand at relatively shallow depths (Hultgren-Tillis 2016- Appendix C).

Liquefaction within the alluvial areas could result in the surface settlements of less than one inch. The settlements that may result from liquefaction would be in addition to the potential settlements that could result from the static loads. Potential impacts from liquefaction within the alluvial area resulting from settlement would be a potentially significant impact. However, design of the proposed project is required to comply with State and local building regulations including the 2016 CBC. As discussed in "ii" above, the Applicant would implement the recommendations of the site-specific geotechnical investigation prepared by Hultgren-Tillis Engineers (see Appendix C Geotechnical Report Update). The recommendations include monitoring and/or test geotechnical aspects of the work for earthwork site preparation and appropriate fill materials. As a result, the potential impacts of seismic groundshaking on proposed project structures and their occupants would be reduced to a less-than-significant level.

iv. Landslides?

No Impacts. The proposed project site is on relatively flat land and the City of Pittsburg General Plan does not include the proposed project site within a potential landslide hazard area. Therefore, the potential for landslides from a seismic event does not exist. As a result, there would be no impact associated with landslides.

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

Less than Significant Impact. Grading would be necessary for construction of the cement slab for rail loading facility. Erosion due to or rain could potentially occur, if the soil is left uncovered for long periods of time. Since the proposed project site is currently 30 percent impermeable and 70 percent permeable, there's little potential for the loss of top soil. However, compliance with the NPDES and PMC Titles 15 and 18 would minimize the potential of erosion. As a result, the potential for impacts associated with substantial soil erosion or loss of topsoil would be less than significant.

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?

Refer to Sections "a.iii" and "a.iv" above for discussions relating to liquefaction and landsliding.

Less than Significant Impact. Lateral spreading can result from the liquefaction of soil after a seismic event. The liquefaction of some of the hydraulic fill area could result less than an inch of settlement (Hultgren-Tillis 2016 Appendix C). As discussed above, there are no proposed structures within the hydraulic fill areas. Compliance with the CBC and City review of the engineering drawing and calculations would ensure that any potential for lateral spreading impacts 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?

Less than Significant Impact. The soils underlain the proposed project site have moderate expansive potential (Hultgren-Tillis 2016). Compliance with CBC regulations (i.e., standards that specify the minimum acceptable level of safety for constructed

objects such as buildings or other structures, including specifications on components, installation methodologies, exit sizes and locations, and maximum occupancy for building size/square footage) and City review would reduce the potential impacts of expansive soils on the proposed structures, consistent with the prevailing engineering standard of care. Furthermore, the proposed project site does not include construction of residential housing or commercial development that would house or serve large populations. The closest sensitive receptor (being a single family neighborhood) is approximately three quarters of a mile away (approximately 4,000 feet) and the closest school is over a mile away. Approximately 32 employees have been and would continue to be working in the proposed project area. The risks of exposure of human life to hazards related to expansive soils would be minor because the site is located in a heavily industrial area, the number employees at the site would be few, and buildings and structures that employees work in and around are required to comply with CBC regulations. Therefore, the potential impact of expansive soils on life and property would be less than significant.

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 Impacts. The proposed project would not substantially increase the generation of wastewater. The proposed project would not require the use of a septic tank or alternative wastewater disposal systems. As a result, the proposed project would have no impact related to septic system sighting.

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

Less than Significant Impact. Pleistocene deposits are considered highly sensitive for paleontological resources. Any ground disturbance affecting Pleistocene materials, whether exposed at the surface, or covered by fill and/or Holocene strata but involved in deeper grading requires implementation of Society of Vertebrate Paleontology-consistent measures for highly sensitive units.

As discussed in the 2009 MND, U.S. Geological Survey (USGS) geologic mapping (Helley and Graymer 1997) shows the proposed project site as partially situated on alluvial fan deposits of Pleistocene age (south portion) and on alluvial fan and Bay mud deposits of Holocene age (northernmost portion; north of approximately 1st Street (Hultgren-Tillis, 2008). The Preliminary Geotechnical Report prepared for the 2009 MND Project (Hultgren-Tillis 2008) indicates that native substrate materials are blanketed by existing artificial fill on portions of the site; fill is up to 10 feet thick overlying Pleistocene strata on the south portion of the site which would include the proposed Rail Curtailment Project. Previous grading on the southern portion of the project site has resulted in some areas with little or no fill and others with fill up to 10 feet. No excavation would occur during construction however, a less than 1,000 square foot area would be graded. The grading process may include some excavation to remove fill that is unstable. It is unknown what portions of the southern area are filled up to 10 feet and which areas have little or no fill as noted in the 2009 MND.

Disturbance of Pleistocene strata has the potential to significantly impact paleontological resources. Significant impacts to Pleistocene strata at the project site would be significant in the following situations: (1) areas where Pleistocene strata are exposed at the surface, and would be involved in excavation, regardless of excavation depth; and (2) areas where a thin veneer of fill materials overlies Pleistocene strata, and excavation would be deeper than the thickness of the fill units, and thus would involve the underlying native Pleistocene materials. Thus, there would be the possibility of Pleistocene deposits being encountered.

Based on the probability that Pleistocene deposits could be encountered during construction, implementation of K2's Pittsburg site construction best management practices of having a qualified archeological monitor present during grading, would render any potential impact of inadvertently encountering paleontological resources to a less-than-significant level.

1.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion:

The BAAQMD was requested to review the administrative draft of the CEQA project description, and the Air Resources and Greenhouse Gas sections of the CEQA checklist. BAAQMD did not find any significant impacts to air resources or greenhouse gas emissions based on their review of the draft documents.

The BAAQMD California Environmental Quality Act - Air Quality Guidelines (updated May 2017) include updated CEQA thresholds of significance adopted by the BAAQMD's Board of Directors on June 2, 2010, as well as screening criteria based upon proposed land use. For the purpose of making a conservative Significance Determinations with respect to GHG emissions, this Initial Study relies on the Thresholds and methodologies included in the BAAQMD's 2017 Guidelines.

For stationary-source projects, the threshold is 10,000 metric tons per year (MT/yr) of CO2e (BAAQMD 2017). Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require a BAAQMD permit to operate.

Would the proposed project:

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

Less Than Significant Impact. The California Air Pollution Control Officers Association (CAPCOA) California Emissions Estimator Model (CalEEMod), version 2016.3.2 was used to estimate Operational related GHG emissions for the proposed project. Operational-related GHG pollutants were modeled conservatively, assuming no mitigation measures were implemented, using CalEEMod Version 2016.3.2 defaults. A detailed summary of the assumptions made for the proposed project facility construction-related pollutant emission modeling are included as Appendix A, together with the CalEEMod report output for Annual emissions.

The analysis conservatively estimated the proposed project GHG emissions to be 39.8 metric tons Carbon Dioxide Equivalent per year (MT CO_2e/yr) during construction of

the proposed project and increased operational emissions of 5.6 MT CO_2e/yr. The BAAQMD recommended Threshold of Significance is 1,100 MT CO_2e/yr for projects other than Stationary Sources, and 10,000 MT CO_2e/yr for Stationary Sources (BAAQMD 2017). The proposed project would therefore result in 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. As discussed in section 1.7(a) Operational GHG emissions for the proposed project are below Thresholds of Significance screening levels, and therefore do not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases resulting in a less than significant impact.

1.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 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?	☐	☐	☐	☒

Discussion:

Would the project:

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

Less Than Significant Impact. The proposed project would reduce the amount of transportation of chlorine by approximately 1,500 miles. The chlorine railcar loading system onsite would be designed and operated employing safe, proven, and Chlorine Institute[3] recommended equipment including automated valves and pressure transmitters, motion detectors, auto shut offs, and a dry air pipeline to offload tanks cars with pressurized dry air in the event of an emergency. The proposed project would not increase the volume of hazardous materials onsite. The proposed Rail Curtailment project would not create a significant hazard due to routine transport, use or disposal of hazardous materials because there would be no increase in hazardous material onsite, there would be a reduction of transport of chlorine and proven state of the art equipment would be used to load the rail cars. The impact would be a less than significant.

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?

Less Than Significant Impact. The 2009 IS/MND contains an off-site consequence assessment (OCA) associated with an accidental release of chlorine at the K2 Pure Solutions ECU and Bleach Plant. The assessment followed the requirements of California Accidental Release Prevention (CalARP) Program regulation (California Code of Regulations Title 19, Division 2, Chapter 4.5, Section 2750) and EPA Risk Management Program (RMP) 40 CFR Part 68. The assessment included six scenarios. None of the existing scenarios included chlorine loaded into railcars, ton containers, or any other form of transport vessel**.** The High Grade Chlorine Storage tanks that hold 200 tons of chlorine were used in the worst case scenario that could result in a release of up to 40,000 pounds per minute. Based on the worst-case scenario, the entire 200 tons of compressed liquid chlorine stored in the largest tank would be released within 10 minutes, reaching a maximum distance of 20 miles from the point of release and potentially exposing a maximum residential population of 840,000 people to the chlorine gas at the Emergency Response Planning Guideline Level-2 concentration threshold of 3 ppm. Level 2 is defined as "*the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which impact an individuals ability to take protective action*." This value is used to assist local Fire and Police Departments with overall emergency management in the event of a release at the facility. The existing alternate release scenario is a 0.5 " leak in a pipeline that leaks

[3] The Chlorine Institute exists to support the chlor-alkali industry and serve the public by fostering continuous improvements to safety and the protection of human health and the environment connected with the production, distribution and use of chlorine and related chemicals. This support extends to giving continued attention to the security of chlorine handling operations. For more information on the Institute's stewardship program, visit CI's website at www.chlorineinstitute.org

161.7 lbs/minute during a ten-minute timeframe for a total of 1,617 pounds. The release reaches a distance of 0.23 miles and does not affect any population receptors. (Tracer Environmental Sciences & Technologies, 2009) A chlorine railcar has a capacity of 90 tons of liquid chlorine. As discussed in the project description, the next revision of the Offsite Consequence Analysis would include the proposed project as an alternative scenario in the analysis**.**

As summarized in the OCA report, the occurrence of such a release would be virtually impossible due to the thermodynamic properties of chlorine "Assuming the entire contents of the tank were released in 10 minutes, only 13% of that will flash to vapor or 52,000 lbs. The remaining chlorine will settle as a liquid in the containment berm at the boiling point of -34°C." (Tracer Environmental Sciences & Technologies, 2009)

Engineering controls that would be installed to minimize potential consequences if a release were to occur were not included in the worst case scenario resulting in an analysis that is not reasonably foreseeable. In addition, the assessment did not include equipment that would minimize the potential for leaks to occur at all.

As noted in "a" above, The chlorine railcar loading system onsite would be designed and operated employing safe, proven, and Chlorine Institute recommended equipment including: automated valves and pressure transmitters, motion detectors, automated shut offs, and a dry air pipeline to offload tanks cars with pressurized dry air in the event of an emergency.

Preventive measures recommended by the Chlorine Institute include an inspection checklist that would be used for all aspects of the loading operation. The checklist documents that the proper loading and securing procedures have been completed. Also, during the loading of a rail cars, prevention of the rail car from being hit or moved by another car or locomotive is accomplished by using derails or stops 50 feet or more from both ends of the rail car. Derails should not be removed for any reason until all cars are disconnected from the loading rack. (Chlorine Institute 2015)

According to the Chlorine Institute, leaks that may occur in chlorine loaded tank cars usually involve the angle valves or pressure relief devices and can be controlled with the Institute's Emergency Kit C. As described in the project description an Emergency Kit C will be on-site in a location sufficiently away from the tank car, so it will be accessible during an emergency. (Chlorine Institute 2015)

As included in the project description, at least two remote emergency stop buttons would be strategically located to shut down the system in the event of an emergency during the loading process. A dry air supply would also be installed to facilitate the unloading of a railcar in the event of an emergency need to deinventory a railcar.

The operation of the proposed project would be required to comply with the existing management protocols identified in the Contra Costa County Hazardous Materials Contingency Plan. Additionally, pursuant to the California Health and Safety Code, Division 20, Chapter 6.95, Section 25535.2, facilities that handle regulated substances above certain thresholds are required to prepare risk management plans. The goal of a risk management program is to prevent chemical accidents that could cause harm to

the public and the environment and to reduce the potential impact of accidental releases. The risk management plan contains an off-site consequence analysis that evaluated specific potential release scenarios including worst-case and alternative scenarios; a history of accidental releases; an integrated prevention program to manage risk; an emergency response program; and a management system that oversees the implementation of the risk management program. The applicant has developed and implemented a comprehensive risk management program for compliance with the CalARP Program.

As discussed in the project description, K2 will update their Risk Management Plan (RMP) per requirements of the California Accidental Release Prevention (CalARP) Program regulation (California Code of Regulations Title 19, Division 2, Chapter 4.5, Section 2750) and EPA Risk Management Program (RMP) 40 CFR Part 68. Contra Costa County is the designated Certified Unified Program Agency (CUPA) for the facility responsible for approving the RMP.

Submittal of the comprehensive risk management program would be required as a condition of project approval and final program approval by the CUPA would be required prior to operation. K2 would reissue the risk management plan to the County for review and approval and provide a copy to the City.

The construction of the rail loading facility involves the development of a cement slab, assembly of the rail loading equipment and installation of a chlorine pipeline. Therefore, construction and operation of the proposed project would not create a significant hazard to the public or the environment, and therefore, would be a less-than-significant impact.

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

No Impacts. No existing or proposed schools are located within one-quarter mile of the project site. Therefore, there would be no impact associated with hazardous materials within one-quarter mile of existing schools.

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?

Less Than Significant Impact. The Department of Toxic Substances Control prepares a portion of the information that comprises the Cortese List, in their Envirostor database and other State and local government agencies are required to provide additional hazardous material release information that is part of the complete List. Table 4 is the Cortese List for the Corteva facility.

During construction, there is potential to encounter contaminated soils that contain elevated levels of VOCs and lead compounds during grading for the cement slab. Some soils at locations within the Corteva facility are reported to be contaminated with VOCs, SVOCs, mercury, and methyl mercury. Board Order No. R2-2002-0014 Site

Cleanup Requirement issued by RWQCB to Dow in 2002, detailed the requirement for cleanup and remediation of VOCs, SVOCs, mercury, and methyl mercury. The proposed project would not impede Dow's ongoing remediation of groundwater. Groundwater beneath the project site is between 5 to 15 feet below ground surface (Hultgren-Tillis 2008).

As discussed in the proposed project description, no excavation would occur however proper site preparation may require a small amount of excavation depending on the condition of the underlying soil. However, there would be less than 1,000 sq. ft. of grading for preparation for the cement slab. All excavations, ground penetrations and other soil disturbance activities are subject to Corteva Chemical Safety & Loss Prevention Standard S-327, "Excavations". This standard provides requirements for identification of excavation locations, notification of responsible departments and competent personnel, identification of hazards associated with the excavation, definition of appropriate mitigation procedures and permitting of excavation activities consistent with the SWRCB's requirements for the Corteva facility. Therefore, compliance with the Standard S-327 would reduce any significant hazards to the public or the environment to a less-than-significant level.

Table 4 Cortese List

SITE ID	PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS
CAT080010580	AQUILEX HYDROCHEM LLC	Protective Filer	Non-Operating	901 Loveridge Rd
CAD076528678	THE DOW CHEMICAL CO	Operating Permit	Operating	901 Loveridge Rd
80001680	THE DOW CHEMICAL COMPANY	Refer: RWQCB	Corrective Action	901 Loveridge Rd
CAD009150194	USS-POSCO INDUSTRIES	Post Closure Permit	Post Closure	900 Loveridge Rd
T0601300344	US STEEL POSCO INDUSTRIES	Completed - Case Closed	LUST Cleanup Site	900 Loveridge Rd

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

No Impacts. The project site is not within the vicinity of an approach/departure flight path of a public airport. Therefore, there would be no impact related to airport activities.

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

Less Than Significant Impact. The City of Pittsburg has an Emergency Operations Plan (EOP) that contains emergency and recovery plans applicable to natural and human induced hazardous situations. The proposed project would be constructed on an existing industrial site that is covered by the Corteva Consolidated Contingency Plan (CCP). The CCP "consolidates" the multiple emergency response plans required by various agencies, including the City's EOP, into one standardized and functional plan. The CCP and site emergency procedures apply to all onsite personnel, including contractor, workers, and contractor supervisors. No potential conflicts have been identified between the operation of the rail loading facility and other local emergency response and evacuation plans, including the Contra Costa County Emergency Operations Plan and Contra Costa County Hazardous Materials Area Plan. Therefore, construction and operation of the proposed project would not impair implementation or operation of the City's EOP or other local emergency response or evacuation plans resulting in a less than significant impact.

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

No Impacts. The Corteva property and the project site are developed and industrial in nature and do not contain, nor are they adjacent to, any wildlands. No impact would occur.

1.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
(i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
(ii) substantially increase the rate or amount 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 water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Discussion:

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. The proposed project would be constructed entirely within those areas of the existing K2 facility that are already served by the Corteva facility's existing water and wastewater collection and treatment systems. The Corteva facility operates under a NPDES permit to assure water quality standards are met. The proposed project would not involve a change in the existing storm water or ground water quality conditions. No violations of water quality standards or waste discharge requirements would occur as a result of the construction or operations of the Rail Curtailment Project. Impacts would be less than significant.

b) 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. Groundwater would not be used and unlikely exposed during the construction of the proposed project. Construction activities associated with rail loading facility would include minimal ground disturbing activities involving the grading for development of the cement slab. The grading and slab would be less than 1,000 sq. ft. and less than 5 feet deep. Groundwater depths range from 1 to 8 feet (Hultgren Tillis 2016). If grading uncovered unsuitable fill in the area supporting the cement slab, the fill would be replaced with more suitable subsurface materials that excavation could create an interaction with groundwater. The amount of groundwater would be negligible for removing 1-2 feet of fill in a 1,000 sq. ft area, and would not deplete groundwater supplies, interfere with groundwater recharge, or impede sustainable groundwater management of the basin. Therefore, potential impacts during construction on groundwater supply would be 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 result in substantial erosion or siltation on- or offsite?

i. result in substantial erosion or siltation on- or off-site

Less Than Significant Impact. Impacts from erosion or siltation during construction would be less than significant due to SWPPP best management practices that would be designed during permitting and employed during construction. Operations of the project would not have any result in substantial erosion or siltation because the movement of the railcars would be on railroad tracks and surfaces around the loading facility cement slab would be graveled.

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

Less Than Significant Impact. The proposed project would not alter the course of any stream or river. Construction activities associated with the Rail Curtailment Project would include minimal ground disturbing activities related to grading for installation of the cement slab. The proposed project would result in an increase in impervious surfaces of less than 1,000 sq. ft. No surface / storm water drainages would be altered. Therefore, the proposed project would not substantially increase the rate or amount of surface run off resulting in flooding on or off-site resulting in a less than significant impact.

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

Less Than Significant Impact. Construction activities associated with the proposed project would include minimal ground disturbing activities (e.g., grading or excavation). During construction, any surface water runoff would be managed by Dow's existing drainage system. In addition, there would be minimal increases in storm water runoff from the rail loading facility, because the proposed project would result in an increase in impervious surfaces of less than 1,000 sq. ft. with the installation of the cement slab adjacent to the Corteva facility's railroad track.

During construction, any surface water runoff would be managed using BMPs as described in the Plan's construction SWPPP and grading plan. Construction of the proposed project would not increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite. The proposed project would not substantially change existing drainage patterns or alter existing rivers or streams on site or in the vicinity resulting in flooding onsite or offsite. Therefore, the impact associated with surface water runoff quality or quantity would be less than significant.

iv. impede or redirect flood flows?

Less Than Significant Impact. The proposed project area would be protected from flooding by existing levees along Corteva's property in the New York Slough. The majority of the facility, where most of Corteva's industrial activity occurs, is served by a storm drain system that discharges to a 1.7 MMgal concrete retention basin located at the north end of the facility. In addition, each manufacturing or processing area has perimeter diking. Concrete dike walls surround storage tanks outside of contained manufacturing or process areas. Although failure of the existing levee could result in flooding, the effect would be limited to the southernmost portion of the Corteva facility. Intervening structures between a levee failure site and existing drainage, would reduce the effects to the Corteva facility. The proposed project would not be impacted. Therefore, the potential of the proposed project to expose people or structures to significant risk of loss, injury, or death from the failure of a levee or dam is less than significant.

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

No Impacts. The proposed project site is located within Zone C of FEMA's flood map (FEMA 2015). Zone C is an area outside the 1% annual chance floodplain and is labeled on the FEMA Flood map as an "Area of minimal flood hazard" (FEMA 2015). The proposed project area would be protected from potential flooding by existing levees along Dow's property in the New York Slough. The remaining project site is not located within an area classified by FEMA to be subject to flooding. There would be no impacts related to location within flood zone.

The proposed project area is outside a tsunami hazard area as identified on the Contra Costa County Tsunami Inundation Map. The project site is not located near a hillside that would be susceptible to mudslides or mudflows. As a result, the project site has no potential for inundation by mudflow or mudslides. Therefore, there would not be an impact from the potential for a flood hazard, tsunami, or seiche to damage proposed structures, risk release of pollutants due to project inundation or risk the lives of people at the project site.

e) conflict with or obstruct implementation of water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact. Impacts to the water quality of storm water runoff during construction would be avoided through the implementation of a Best Management Practices (BMPs). If left unmanaged, storm water runoff from the proposed project could develop permanent impacts to water quality from the non-point source pollutants such as grease and heavy metals that may enter New York Slough and ultimately Suisun Bay and the Pacific Ocean. Storm water associated with the facility's operational activities is regulated by the State General Permit for Storm Water Discharges Associated with Industrial Activities Order No. 2014-0057-DWQ. The Facility is currently enrolled under WDID No. 2-071021408. The increased impervious surface would be less than 1,000 sq. ft. and would not result in a violation of waste discharge requirements, thereby avoiding adverse effects to water quality from storm water discharges.

As discussed in "b" above, groundwater would not be used and unlikely exposed during the construction of the proposed project. Construction activities associated with rail loading facility would include minimal ground disturbing activities involving the grading for development of the cement slab less than 1,000 sq ft. Groundwater would not be used during operations and unlikely exposed during the construction of the proposed project. Construction activities associated with rail loading facility would include minimal ground disturbing activities involving the grading for development of the cement slab. The grading and slab would be less than 1,000 sq. ft. and less than 5 feet deep. If grading uncovered unsuitable foundation materials for the cement slab, increased excavation could create an interaction with groundwater. The amount of groundwater would be negligible for removing 1-2 feet of fill in a 1,000 sq. ft area, and would not deplete groundwater supplies, interfere with groundwater recharge, or impede sustainable groundwater management of the basin. Therefore, potential impacts during construction and operations on water quality control plan or sustainable groundwater management plan would be less than significant.

1.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion:

Would the Project:

a) Physically divide an established community?

No Impacts. The project site is currently occupied by and is zoned for industrial uses. The site is surrounded by industrial uses to the east, industrial and vacant land uses to the south and west, and vacant land and the New York Slough of the Suisun Bay to the north. As a consequence, development of the site would not physically divide an established community. No impact would occur.

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

No Impacts. According to the City of Pittsburg General Plan, the project site has a land use designation of Industrial and according to the PMC, the site is zoned as General Industrial (IG) District, which allows for industrial uses. The proposed project is an industrial facility with storage/handling of hazardous materials and the project fits within the specified activities described in the IG zoning district of the PMC, subject to the approval of a use permit and design review. The City must grant the required use permit before the use can be established as proposed in the submitted application.

The project site is under the jurisdiction of the ECCCHCP. However, the project site contains industrial land uses and is designated by the ECCCHCP as having "urban" land cover. Furthermore, the proposed project would not acquire additional land, as all elements of the proposed project would reuse or build industrial facilities on a developed industrial site. The proposed project would be in compliance with all land use plans, policies, and regulations, and thus would have no impact with regard to these issues.

1.12 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion:

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?

No Impacts. According to the City of Pittsburg General Plan Resource Conservation Element, there are currently no significant mineral deposits or active mining operations in the City. Furthermore, the project site is located on a currently developed industrial site. As a result, the proposed project would have no impact related mineral resources.

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?

No Impacts. Same as "a" above.

1.13 NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion:

Section 9.44.010 (Prohibitions) of the City of Pittsburg's municipal code prohibits the operation of any pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist (or other appliance) between the hours of 10:00 p.m. to 7:00 a.m. Section 18.82.040 (Noise) identifies noise level performance standards and states that no construction event or activity occurring on any site adjoining a lot in a residential, planned development or government and quasi-public districts shall generate loud noises in excess of 65 decibels measured at the [receiving noise-sensitive] property line, except between the hours of 8:00 a.m. and 5:00 p.m.

The 2017 Dow Modernization Project EIR included a Noise Assessment completed by CH2M in August of 2015. The Assessment identified three sensitive receptors in the vicinity of the Corteva facility. The distances of the same receptors from the proposed rail loading facility are approximately three quarters of a mile away (approximately 4,000 feet).

The rail loading facility construction includes:

- Installation of the above ground pipe,
- Formation of the concrete slab, and
- Assembly of the rail car loading facility from pre-fabricated components.

Construction of the proposed project would result in a temporary increase in ambient noise levels within the project vicinity, which could affect nearby noise-sensitive uses. The duration of construction of the new facility is anticipated to be approximately 8-10 weeks.

The operations of the rail loading facility would not create an increase in noise from current conditions because currently there is railcar movement at the facility. Some of the railcar movement would be transferred to the loading facility while some movement, created by deliveries of chorine railcars from Texas would be eliminated all together.

Would the project:

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. The proposed project would be located in an area of existing industrial land use, and no noise sensitive land uses adjoin the proposed site. At a distance of approximately 4,000 feet to the nearest residence, noise from temporary construction could reach Lmax 43 dBA assuming a source level of 92 dBA at 50 feet and distance and ground attenuation per FTA 2006. This calculation does not include the effects of local shielding from buildings, topography, walls or other barriers, which may reduce sound levels further. Noise due to temporary construction activities is therefore not expected to exceed 65 decibels at the nearest noise-sensitive land use. Excessive construction noise would not be generated outside of the hours of 8:00 am to 5:00. The operations of the rail loading facility would not create an increase in noise from current conditions because currently there is railcar movement at the facility. Therefore, impacts associated with increased 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 would be less than significant.

b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Less Than Significant Impact. The operation of heavy equipment has the potential to generate groundborne vibration. The, vibration from construction activity would attenuate to less than 0.1 in/sec PPV within about 50 feet according to the 2006 IS/MND based on reference levels from Federal Transit Administration 2006. At the nearest residence of 4,000 feet, groundborne vibration would be well below the threshold for potential damage to structures and, furthermore, would not be expected to be perceptible at the nearest sensitive land use. This is impact would therefore be less than significant.

c) For a project located within the proximity 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 Impacts. The proposed project is not located within an area covered by an airport land use plan, within 2 miles of a public airport or public use airport or a private airstrip. Thus, adoption and implementation of the project would not result in airport noise impacts on people residing or working within the project area. There would be no impact.

1.14 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion:

The City of Pittsburg population in 2010 was approximately 84,641 with approximately 27,897 housing units (Census Bureau 2010a). In 2021, the US Census Bureau estimates the population would be 91,323 (US Census 2010b).

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)?

No Impacts. The proposed project does not propose the construction of new homes or require the expansion of existing infrastructure that may directly or indirectly result in population growth. It is anticipated that approximately 32 facility employees currently working at the facility would not change. The maximum of ten construction crew members at any one-time during construction would be drawn from the local or regional labor pool. As a result, the proposed project would have no impact on population growth.

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

No Impacts. Construction of the proposed rail loading facility would occur within an existing industrial site and would not result in the displacement of people. Therefore, the proposed project would have no impact on existing housing.

1.15 PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

Discussion:

Would the project:

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i. Fire protection?

Less Than Significant Impact. Construction and operation of the proposed project facility would not substantially increase the need for fire protection services. In the unlikely event of a fire or hazardous material release at the proposed project facility, the CCCFPD would initially respond. Stations 84 and 85 are nearest to the proposed project sites, are fully equipped and staffed in accordance with current CCCFPD policies. Station 85, located at 2331 Loveridge Road, is 1.7 miles from the proposed project area. Fire Station 84 at 1903 Railroad Ave. in Pittsburg, is located 2.6 miles from the proposed project. The Corteva facility also has a fire brigade with two on-shift

firefighters/emergency medical technicians (EMTs) and are certified in exterior process firefighting. Dow's on-site fire suppression infrastructure includes fire detection systems, water spray systems (sprinkler or deluge types), hydrants, two fire engines, and a response truck equipped with two articulating firewater monitors (Brezack & Associates Planning, 2017).

The Applicant would be required to construct and operate to current building and fire life safety codes complying with the rules and regulations set forth by the CCCFPD. As such, construction and operation of the proposed project would not create significant fire hazards that would substantially increase the need for fire protection services and would not require the construction of new or expanded facilities to meet any increased need. Therefore, impacts on fire protection services as a result of the proposed project would be less than significant.

ii. Police protection?

Less Than Significant Impact. Construction and operation of the proposed project facility would not substantially increase the need for police services. In the event of an emergency, the Pittsburg Police Department (PPD), operating from City Hall, at 65 Civic Avenue is approximately 2.25 miles west of the Corteva facility and would initially respond. The Corteva facility is located within Patrol Beat 2. Adjacent patrol beats 1, 7, and 8 provide backup. In the event all PPD personnel were dispatched on calls, the County Sheriff would be dispatched (CCC Sheriff 2019, personal communication).

Corteva maintains on site private security officers and an extensive security system including fencing, gates, cameras, a card access system, and worker security awareness training. A security fence surrounds the industrial portion of the Corteva facility. Gates are locked or equipped with secure identification (ID) badge access or staffed by security personnel. Video cameras are located at various points around the industrial portion of the Facility. Corteva security personnel regularly monitor the camera video displays to detect unusual activity and patrol the Corteva facility. All security meets current DHS requirements for chemical facilities as administered by the United States Coast Guard.

There are no residential or recreational land uses proposed as part of the proposed project, so there would not be an increase the amount of people near the facility which could increase the need for police presence. Impacts on police protection services as a result of the proposed project would be less than significant.

iii. Schools?

No Impacts. Public school services in the project area are provided by the PUSD. The proposed Rail Curtailment Project would not include new housing or new employment or directly increase the project area residential population. The additional 3-6 crewmembers for 8 to 10 weeks of construction would not increase the local population. Consequently, proposed project would not increase student enrollment levels at PUSD schools and therefore, no impacts would occur.

iv. Parks?

No Impact. The proposed project does not feature a housing element, nor would it directly increase population so as to increase demand on parks. The proposed project would not increase the number of operating personnel at the facility. The ten construction crew members would only be present for up to ten weeks and would likely be drawn from the local workforce. The proposed project would not provide, alter, or affect demand for parks and recreational facilities. Therefore, no impacts to parks would occur.

v. Other public facilities?

No Impact. No impact to other public facilities would occur as a result of implementation of the proposed Project.

1.16 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion:

Would the project:

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 Impacts. The proposed project does not include any new residential development. There would not be an increase in employees with the operation of the Rail Curtailment Project. The construction crewmembers associated with the proposed project would likely come from the surrounding local labor pool and there would only be 3-6 crewmembers for 8 to 10 weeks of construction. As a result, the proposed project would not result in an increase in population or housing in the City of Pittsburg. Thus, the proposed project would not increase demand for or use of local recreational facilities. As a result, the proposed project would have 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 Impacts. The proposed project does not include construction of recreational facilities, nor (as described above under "a") would it indirectly require the expansion of existing recreational facilities. As a result, potential physical effects on the environment from the construction of new or expansion of existing recreational facilities would not occur. Thus, no impact would occur.

1.17 TRANSPORATION

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

Discussion:

Loveridge Road is the major arterial within the proposed project vicinity. It has two lanes in each direction between Buchanan Road and Pittsburg-Antioch Highway. From the proposed project site, Loveridge Road extends southwest, across SR 4, to Buchanan Road. North of Pittsburg-Antioch Highway, the road has one lane in each direction.

Pittsburg-Antioch Highway is another major route that serves as an alternative route to SR 4 for regional commuters. It is an east-west aligned major arterial that roughly parallels the north side of SR 4, and has one to two travel lanes in each direction. The road ends at Harbor Street west of Loveridge Road and at Somersville Road to the east, in Antioch. The road is an alternative route for regional commuters when SR 4 is congested. (ESA 2007)

The Congestion Management Program (CMP) was enacted by the State legislature following the passage of Proposition 111 in 1990. The purpose of the CMP is to address the impact of local growth on the regional transportation system. The Metropolitan Transportation Commission, the local CMP agency, has designated a highway network that includes all State highways and principal arterials within the County. Local jurisdictions are required to monitor the Level of Service (LOS) standards at the designated locations within this network.

Would the project:

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

Less Than Significant Impact. The construction of the rail loading facility would take up to ten weeks. During the ten-week period, there would be approximately ten trips daily generated by the construction crew. There would be less than a dozen material delivery total trips during construction.

The number of peak hour trips generated as a result of the proposed project does not meet or exceed the City Traffic Engineering Divisions threshold for requiring a Traffic Impact Study (TIS). Therefore, a TIS was not required as part of this Initial Study. There would be a net decrease in train trips from Texas delivering chlorine to the Corteva facility. The project would not conflict with a with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities resulting in a less than significant impact to transportation.

b) Conflict or be inconsistent CEQA Guidelines section 15064.3 subdivision (b)?

Less Than Significant Impact. The operations of the proposed project would not generate any additional vehicle miles traveled. The current employees would manage the rail car loading and no additional supplies are needed for operations that could increase vehicle miles traveled to the facility. The proposed project would not generate a significant impact in either the AM or PM peak-hour timeframes at any of the intersections in the project vicinity, therefore the LOS would not change at any of the intersections in the project vicinity as required to be monitored by the City as part of the CMP resulting in a less-than-significant impact related to transportation.

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

No Impacts. The proposed project would not alter the roadway configuration of the surrounding roadways and would not be located next to incompatible land uses. The rail tracks used within the Corteva facility would not be realigned but would include the installation of a rail loading facility for filling rail cars used on private property. During the filling of a rail car, prevention of the rail car from being hit or moved by another car or locomotive is accomplished by using derails or stops 50 feet or more from both ends of the rail car. As described in the project description, derails will not be removed for any reason until all cars are disconnected from the loading rack as recommended by the Chlorine Institute 2015. Therefore, no impacts from an increase in hazards due to a geometric design feature or incompatible use would occur.

d) Result in inadequate emergency access?

Less Than Significant Impact The proposed project would not create any barriers to travel or hazardous design features. The project consists of installation of a Chorine rail loading facility on existing train tracks that would be used up to 66 times per year. Therefore, impacts to emergency access as a result of the proposed project would be less than significant.

1.18 Tribal Cultural Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 tribe and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historic resources as defined in Public Resources Code 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

Discussion:

A search of the Sacred Lands File maintained by the Native American Heritage Commission (NAHC) was completed on June 24, 2015 for the Dow Modernization Project EIR. This search failed to indicate the presence of Native American cultural resources in the immediate proposed Plan area (NAHC, 2015). An archeological reconnaissance survey of structures that would be demolished as a result of the proposed Dow Modernization Plan was conducted on December 18, 2013. This search failed to indicate the presence of Native American cultural resources in the immediate proposed Plan area.

On April 17, 2017, the City completed the California Native American tribal consultation process for the Dow Modernization Project by providing notification of the proposed Plan to the following tribal representatives.

- Andrew Galvan, Chairperson Muwekma Ohlone Indian Tribe of the SF Bay Area

- Ann Marie Sayers, Chairperson Indian Canyon Mutsun Band of Castanoan
- Rosemary Cambra, Chairperson Muwekma Ohlone Indian Tribe of the SF Bay Area
- Raymond Hitchcock, Chairperson Muwekma Ohlone Indian Tribe of the SF Bay Area
- Irenne Zwierlein, Chairperson Amah Mutsun Tribal Band of Mission San Juan Bautista

No response requiring further consultation was received from any of the representatives.

a) Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native tribe and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historic resources as defined in Public Resources Code 5020.1(k), or

No Impacts. Through the searches completed for the Dow Modernization Project PEIR in 2017 and the request for consultation letters, it is apparent that there are no tribal cultural resources anticipated to be present in the proposed project area. The area has been an industrial site since the early 1900s and is covered with fill. In addition, no excavation is planned for the project that would increase the risk of encountering any resources. Therefore, there would be no impacts to historic resources of value to Native American tribes.

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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

No Impacts. See "a" above.

1.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, 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?	☐	☐	☐	☒

Discussion:

Wastewater. The Delta Diablo Sanitation District ("Delta Diablo") provides water resource recovery services for the cities of Pittsburg and Antioch, and the unincorporated community of Bay Point, serving a total population of nearly 200,000. The water resource recovery services consist of secondary treatment of wastewater, recycled water production and distribution, pollution prevention, energy recovery, beneficial reuse of biosolids, street sweeping, and household hazardous waste collection. Delta Diablo owns and operates the regional interceptors and collection system that transports wastewater to the Delta Diablo Wastewater Treatment Plant (WWTP), located north of the Pittsburg-Antioch Highway along the Pittsburg city limits, about 0.6 miles east of the proposed project site. Delta Diablo's WWTP is a

secondary treatment plant with a rated average dry weather flow (ADWF) capacity of 19.5 mgd and peak wet weather flow (PWWF) treatment capacity of 26.0 mgd. Treated and disinfected secondary effluent is discharged to New York Slough in the San Joaquin Delta. A portion of the effluent is diverted to the Recycled Water Facility (RWF) prior to chlorination at a varying rate depending on recycled water demands (DDSD, 2006). NPDES Permit No. CA0038547, Board Order No. R2-2009-0018, cites Delta Diablo's intent to increase permitted flows from 16.5 mgd to 22.7 mgd (37.6 % increase). As discussed in the Dow Modernization Project PEIR, Corteva currently generates approximately 0.18 mgd of wastewater that is treated at Delta Diablo. This is about 1.0% of Delta Diablo's 2010 ADWF.

Stormwater. All existing stormwater infrastructure on Dow's property is owned and operated by Dow. Under existing conditions, approximately 111 acres of the 420-acre site are industrially developed (buildings, trailers, tanks, and roadways) with impervious surfaces. Pervious surfaces (e.g., soil, gravel) cover the remaining acres of the Corteva facility. Stormwater runoff on the Corteva facility is collected by several catch basins and storm drainpipes that convey water to Dow's existing stormwater detention basin located west of the Corteva facility's dock on New York Slough. The stormwater collection and conveyance system were originally designed to accommodate stormwater runoff associated with existing land uses within Dow's property. Stormwater is tested and treated as required by Dow's stormwater NPDES Industrial General Permit before it is released into New York Slough. The existing stormwater system includes the Corteva stormwater detention basin, which has a capacity of 1.7 MMgal.

Non-potable Water Supply. Non-potable water is provided to the proposed project by CCWD from the south via CCWD's pipeline supplied from the CCWD canal. Dow's private emergency firewater system is owned and operated by Corteva and supplied directly from the San Joaquin River at New York Slough. When needed, water supplied from New York Slough is pressurized and distributed via Dow's firewater systems throughout the Corteva facility. More than 95 percent of water used at Corteva is for non-potable purposes (Personal Communication with Dale Schell, 2015).

Potable Water Supply. The City obtains approximately 90 percent of its untreated water supply from the CCWD through the CVP. The CCWD's current contract for its entire service area is for 195,000 AFY or 174 million gallons per day (mgd). However, these allocations are subject to regulatory or other temporary restrictions that may be imposed arising from drought or other conditions. In addition to its CVP contract and Los Vaqueros Water Rights, CCWD has negotiated water rights with a number of local districts and private entities, including the East Contra Costa Irrigation District. These agreements bring CCWD's total annual supply to 242,700 AFY. The City supplements its CCWD water supply with two wells, located at City Park and at Dover Way/Frontage Road. Combined yield of both wells in Pittsburg is 1,500 AFY (City of Pittsburg, 2001)

Solid Waste. Corteva disposes of nonhazardous solid wastes at the Potrero Hills Landfill. The Class III landfill began operations in 1986 and serves portions of Solano

and Contra Costa counties. The Facility's estimated permitted capacity is 83.1 million cubic yards (yd^3), and the estimated capacity used is 13.8 million yd^3 (Calrecycle 2012). As discussed in the Dow Modernization PEIR, this facility has about 40% of its volume-based life remaining. Nonhazardous solid wastes from construction and operation of the proposed project would be disposed of at this facility.

Electricity and Gas Service. Power to the Corteva facility is provided by the Los Medanos Energy Center (LMEC), a Calpine Corporation 550-megawatt combined cycle natural gas fired generating facility located at 750 East 3rd Street, in the City of Pittsburg. Power from LMEC is transmitted to the Corteva facility through Corteva owned 115 kilovolt (kV) transmission lines. In addition to electricity, LMEC provides steam to the Corteva Facility through a Corteva owned pipeline and buys condensate from Corteva to make most of this steam. PG&E provides the Corteva facility with backup electric power and natural gas through PG&E's existing utility infrastructure. Natural gas is distributed throughout the Facility by Corteva owned pipelines. The proposed project would have a negligible increase in energy consumption associated with lighting of the loading facility and instrumentation.

Would the project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, 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 addition of the rail loading facility would not produce any change in the anticipated volume of wastewater to be discharged by the facility; and would therefore not exceed the wastewater treatment requirements of the RWQCB. Additional water use during construction would be temporary. The proposed project would not require water during operations. The proposed project would not produce any change in the anticipated volume of storm water drainage to be discharged by the addition of less than 1,000 sq. ft. of impervious surface to the industrial facility. As described above, the proposed project would have a negligible increase in energy consumption associated with lighting of the loading facility and instrumentation.

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. As provided in a) above, the proposed project would not produce any change in the anticipated volume of water demand. However, there may be a slight temporary increase in water use during construction. Therefore, impacts to the available water supply during normal, dry, and multiple dry years would 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. The construction of the rail loading facility would not have an environmental impact associated with an increase of storm drainage. The proposed project would not produce any change in the anticipated volume of storm water drainage to be discharged by the addition of less than 1,000 sq. ft. of impervious surface to the industrial facility. As discussed in the 2009 IS/MND, the Corteva facility storm water collection and conveyance system was originally designed to accommodate storm water runoff associated with the land uses within Dow's property, which would have included the chlor-alkali (C/A) manufacturing which existed in the proposed project area from 1939-1992. During this period, the site was occupied by buildings, containment structures, other associated C/A manufacturing structures, and roadways, similar in size and function to those of the existing K2 facility. Therefore, because the proposed project is located within the footprint (in overall contribution to impervious surfaces) of the historic C/A uses, the addition of the rail loading facility would not create a significant increase in stormwater run-off. Therefore, the impact would be less than significant.

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

Less Than Significant Impact. Construction spoils that would be removed during the construction process would separate anything that can be recycled. Solid waste would primarily consist of packaging from shipment of the prefabricated equipment being put together and would be disposed at the Potrero Hills Landfill that has sufficient permitted capacity to accommodate the project's needs. The operation of filling of rail cars with chlorine would not significantly increase the anticipated volume of solid waste; and would therefore not require additional landfill capacity. The impact of disposing of construction debris would be a less than significant impact on landfill capacity.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impacts. Wastes generated by construction of the proposed project would not conflict with federal state or local statutes and regulations related to solid waste. There would be no impact.

1.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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, powerlines 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?	☐	☐	☐	☒

Discussion:

Would the project:

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

Less Than Significant Impact. As discussed in Section 1.9 Hazards and Hazardous Materials, the City of Pittsburg has an Emergency Operations Plan (EOP) that contains emergency and recovery plans applicable to natural and human induced hazardous situations. The proposed project would be constructed on an existing industrial site that is covered by the Corteva Consolidated Contingency Plan (CCP). The CCP "consolidates" the multiple emergency response plans required by various agencies, including the City's EOP, into one standardized and functional plan. The CCP and site emergency procedures apply to all onsite personnel, including contractor, workers, and contractor supervisors. No potential conflicts have been identified between the

operation of the rail loading facility and other local emergency response and evacuation plans, including the Contra Costa County Emergency Operations Plan and Contra Costa County Hazardous Materials Plan. Therefore, construction and operation of the proposed project would not impair implementation or operation of the City's EOP or other local emergency response or evacuation plans resulting in a less than significant impact.

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?

No Impacts. The Corteva property and the project site are developed and industrial in nature and do not contain, nor are they adjacent to, any wildlands. The area is generally on level ground and bounded by New York Slough to the north and the Dow Wetlands preserve to the east of the Corteva facility. The developed area surrounding the facility is also industrial. The CCCFPD Stations 84 and 85 are nearest to the proposed project sites, are fully equipped and staffed in accordance with current CCCFPD policies and are 1.7 and 2.6 miles from the facility. The Corteva facility also has a fire brigade with two on-shift firefighters/emergency medical technicians (EMTs) and are certified in exterior process firefighting. Dow's on-site fire suppression infrastructure includes fire detection systems, water spray systems (sprinkler or deluge types), hydrants, two fire engines, and a response truck equipped with two articulating firewater monitors (Brezack & Associates Planning 2017). The elimination of the 700 railcars transporting chlorine from Texas also reduces risks to of wildfires. The area is not susceptible to the spread of uncontrolled wildfire; therefore, the project would have no impacts associated with exacerbating wildfire risks.

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

Less Than Significant Impact. The rail car loading facility would have structures where there is currently bare land however the facility is a compact element of a larger industrial manufacturing facility built adjacent to existing railroad tracks. The facility would not increase the amount of chlorine stored or produced onsite. There is no associated infrastructure of the rail car loading facility constructed or operated that would exacerbate fire risk resulting in less than significant impacts.

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?

No Impacts. As discussed in "a" above the facility is on flat ground adjacent to the Sacramento/San Joaquin Delta. In an industrial zoned area of the City, is not susceptible to wild fires or contain slopes or drainages that would create post fire impacts. Therefore, the project would not have an impact associated with exposing

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.

1.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion:

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. The proposed project is located in an industrial area of the City and would have no significant impacts with respect to biological resources, and the project would result in less-than significant cultural resource impacts provided that the identified best management practice of having a qualified cultural resource monitor onsite during grading is implemented. The proposed project would not

degrade the quality of the environment, reduce or threaten any fish or wildlife species (endangered or otherwise), or eliminate important examples of the major periods of California history or pre-history. Therefore, the proposed project is less than significant using facility best management practices to address the discovery of any unanticipated cultural resources discovered during construction.

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. Based on the analysis contained in this CEQA checklist, the proposed project's land uses are consistent with the City's General Plan land use projections. These land uses have been considered with the overall growth of the City including increases in traffic, noise and changes to air quality. The analysis contained in this CEQA Initial Study checklist demonstrated that the proposed project is in compliance with all applicable plans including but not limited to water quality, air quality, and habitat conservation. The proposed project would not produce impacts that considered with past, present and future projects would be cumulatively considerable because potential significant impacts were determined to 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. As discussed in the impact analysis above in this CEQA Initial Study checklist, the proposed project would not expose persons to adverse impacts related to air quality, seismic or geologic hazards, greenhouse gas emissions, hazards or hazardous materials, hydrology or water quality, land use planning, noise, population and housing, or transportation/traffic hazards, and the provisions to utility services to people. The project was identified to have no impact, or a less than significant impact in these areas. Therefore, the proposed project does not have environmental effects that would cause substantial adverse impacts on human beings directly or indirectly.

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City of Pittsburg - K2 Pure Solutions
CalEEMod Emissions Calculations Data Assumptions
Chlorine Rail Transportation Curtailment Project

General Project Data

Project Site Area – 0.02 acre (1,000 sq. ft.)
Number of additional employees at site: 0
Assume no additional Trip rate (The proposed Project operations would not require additional operators at the facility.)

CalEEMod Project Characteristics

Assumptions:
Project Location: Contra Costa County
Forecast Climate Zone: 4 (From Appendix F: Zip code 94565 - Pittsburg - Contra Costa County)
Land Use Setting: Urban
Operational Year: 2019
Utility Company: Pacific Gas & Electric Company

Land Use

Chlorine Rail Transportation Curtailment Project
- Total Disturbed Area = Less than 1,000 sq-ft = 0.02-acres.
- Rail Car Loading Rack would be installed on a concrete pad.
  Unrefrigerated Warehouse-Rail = 40 ft x 25 ft = 1,000 sq-ft

Construction Phases:

Estimates assume construction begins in May-2019. Construction assumed to be completed within 8-10 weeks. Except where noted the phase duration and equipment are default assumptions generated by CalEEMod for a construction site of this size.

Demolition – Not Applicable (CalEEMod default = 10 days)
No demolition will be required at the site for construction of the rail car loading facilities.

Site Preparation - Five days (5/6/2019 to 5/10/2019) - 5-days per week (CalEEMod default = 1 days)
Involves clearing rocks & stones prior to grading. Conservatively assumed to require 5-days.
Assume no material imported or exported.

Equipment - 1 Grader - 187-Horsepower (0.41 load factor) - 8.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 8.0 hours/day

Grading - Five days (5/13/2019 to 5/17/2019) - 5-days per week (CalEEMod default = 2 days)
Default CalEEMod construction phase, involves the cut and fill of land to ensure the proper base and slope for the construction foundation. Assume no graded materials required to be hauled off site.

Equipment - 1 Grader - 187-Horsepower (0.41 load factor) - 8.0 hours/day
- 1 Rubber Tire Dozer - 247-Horsepower (0.4 load factor) - 1.0 hours/day
- 2 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 6.0 hours/day

Building Construction - Twelve weeks / 60-days (5/20/2019 to 8/9/2019) - 5-days per week - (CalEEMod default=100 days)
The building construction phase is anticipated to be significantly shorter that CalEEMod defaults, as it entails the pouring of a slab on grade, and construction of the loading rack, rather than new construction of a building.
Activities will include:

- Pouring of a slab on grade;
- Construction of the loading rack
- Construction of approximately 700 feet of above ground pipeline from an existing fixed chlorine storage tank to the rail car loading facility.
- Installation of Rail Car loading equipment and piping.

Equipment - 1 Crane - 231-Horsepower (0.29 load factor) - 4.0 hours/day
- 2 Forklift - 89-Horsepower (0.2 load factor) - 6.0 hours/day
- 2 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 8.0 hours/day

Paving - Three-days (8/12/2019 to 8/14/2019) - 5-days per week - (CalEEMod default = 5 days)
Only minimal paving will be required at the facility to provide a walkway for K2 operators to access this station, No access roads to be paved unless damaged by construction equipment.

Equipment - 4 Cement and Mortar Mixers - 9-Horsepower (0.56 load factor) - 6.0 hours/day
- 1 Paver - 130-Horsepower (0.42 load factor) - 7.0 hours/day
- 1 Roller - 80-Horsepower (0.38 load factor) - 7.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 7.0 hours/day

Architectural Coating - Five-days (8/15/2019 to 8/21/2019) - 5-days per week (CalEEMod default = 5 days)
Architectural Coating phase includes surface coating of containment structures and painting of loading rack, piping and equipment as needed.

Equipment - 1 Air Compressor - 78-Horsepower (0.48 load factor) - 6.0 hours/day

- Exterior Coatings = 1,500 sq-ft
  (CalEEMod default = 500 sq-ft)
- Interior Coatings = 0 sq-ft External Coatings only (CalEEMod ratio of 3 to 1 Interior to Exterior).
  (CalEEMod default = 1,500 sq-ft)

Operational Emissions

Operational - Mobile Source Assumptions
The proposed Project operations would not require additional operators at the facility.

Operational - Energy Use
With the exception of additional lighting included with the project, no additional energy use will result from this project.

Natural Gas Assumptions

There will be no NG used at site. (CalEEMod default = 3.4 kBTU/size/yr).

Operational - Water and Wastewater Usage
No potable water use associated with Rail Car Loading Rack (CalEEMod default = 231,250 gal/yr).

Operational - Solid Waste
No waste generation will be associated with the Rail Car Loading Rack (CalEEMod default = 0.94 tons/year).

Operational - Off-Road Equipment
Switching locomotive for moving rail cars onsite. Conservatively assume switching operations of 1.0-hr per car loading and 58 cars per year expected maximum. The Rail Car Loading Rack will include no additional stationary sources.

Equipment -

- 1 Other General Industrial Equipment – 130-Horsepower (0.8 load factor) – 1.0 hours/day. 58 days/yr.

Vegetation
Land Use Change: Assume no change in vegetation.

Sequestration: There are no trees or other vegetation at the project site. No replanting will be required.

City of Pittsburg - K2 Pure Solutions
CalEEMod Emissions Calculations Data Assumptions
Chlorine Rail Transportation Curtailment Project

CalEEMod Report for Peak Summer Emissions

K2 Pure Solutions Chlorine Rail Transportation Curtailment Project

Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-Rail	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

K2 Pure Solutions Chlorine Rail Transportation Curtailment Project - Contra Costa County, Summer

Project Characteristics -

Land Use -

Construction Phase - See comments in "Phase Description".

Off-road Equipment - - Corrected to include appropriate construction phase equipment.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Area Coating - - Exterior surphases only. See CalEEMod data assumptions summary.

Energy Use - - Only aditional exterior lighting required.

Water And Wastewater - No additional potable water use or domestic waste water gerneration will result from this project .

Solid Waste - No waste generation will be associated with the project.

Operational Off-Road Equipment - Switching locomotive for moving rail cars onsite.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	500	1500
tblAreaCoating	Area_Nonresidential_Interior	1500	0
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	NumDays	5.00	3.00
tblConstructionPhase	NumDays	1.00	5.00
tblConstructionPhase	PhaseEndDate	10/23/2019	8/21/2019
tblConstructionPhase	PhaseEndDate	10/9/2019	8/9/2019
tblConstructionPhase	PhaseEndDate	5/22/2019	5/17/2019
tblConstructionPhase	PhaseEndDate	10/16/2019	8/14/2019
tblConstructionPhase	PhaseEndDate	5/20/2019	5/10/2019
tblConstructionPhase	PhaseStartDate	10/17/2019	8/15/2019
tblConstructionPhase	PhaseStartDate	5/23/2019	5/20/2019

tblConstructionPhase	PhaseStartDate	5/21/2019	5/13/2019
tblConstructionPhase	PhaseStartDate	10/10/2019	8/12/2019
tblConstructionPhase	PhaseStartDate	5/18/2019	5/6/2019
tblEnergyUse	NT24E	1.07	0.00
tblEnergyUse	NT24NG	0.07	0.00
tblEnergyUse	T24E	0.32	0.00
tblEnergyUse	T24NG	3.40	0.00
tblGrading	AcresOfGrading	2.50	0.00
tblGrading	AcresOfGrading	2.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Graders
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	58.00
tblOperationalOffRoadEquipment	OperHorsePower	88.00	130.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.00
tblOperationalOffRoadEquipment	OperLoadFactor	0.34	0.80
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblSolidWaste	SolidWasteGenerationRate	0.94	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	10.00
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	2.3522	15.2081	9.8430	0.0195	0.8349	0.7488	1.5837	0.4356	0.7072	1.1428	0.0000	1,903.6349	1,903.6349	0.4315	0.0000	1,914.4227
Maximum	**2.3522**	**15.2081**	**9.8430**	**0.0195**	**0.8349**	**0.7488**	**1.5837**	**0.4356**	**0.7072**	**1.1428**	**0.0000**	**1,903.6349**	**1,903.6349**	**0.4315**	**0.0000**	**1,914.4227**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	2.3522	15.2081	9.8430	0.0195	0.8349	0.7488	1.5837	0.4356	0.7072	1.1428	0.0000	1,903.6349	1,903.6349	0.4315	0.0000	1,914.4227
Maximum	**2.3522**	**15.2081**	**9.8430**	**0.0195**	**0.8349**	**0.7488**	**1.5837**	**0.4356**	**0.7072**	**1.1428**	**0.0000**	**1,903.6349**	**1,903.6349**	**0.4315**	**0.0000**	**1,914.4227**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.7600e-003	0.0146	0.0428	1.3000e-004	0.0104	1.4000e-004	0.0106	2.7900e-003	1.3000e-004	2.9200e-003		13.3067	13.3067	4.9000e-004		13.3189
Offroad	0.0692	0.6876	0.7432	1.1200e-003		0.0359	0.0359		0.0330	0.0330		110.5903	110.5903	0.0350		111.4650
Total	**0.0972**	**0.7022**	**0.7861**	**1.2500e-003**	**0.0104**	**0.0360**	**0.0464**	**2.7900e-003**	**0.0331**	**0.0359**		**123.8972**	**123.8972**	**0.0355**	**0.0000**	**124.7842**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.7600e-003	0.0146	0.0428	1.3000e-004	0.0104	1.4000e-004	0.0106	2.7900e-003	1.3000e-004	2.9200e-003		13.3067	13.3067	4.9000e-004		13.3189
Offroad	0.0692	0.6876	0.7432	1.1200e-003		0.0359	0.0359		0.0330	0.0330		110.5903	110.5903	0.0350		111.4650
Total	**0.0972**	**0.7022**	**0.7861**	**1.2500e-003**	**0.0104**	**0.0360**	**0.0464**	**2.7900e-003**	**0.0331**	**0.0359**		**123.8972**	**123.8972**	**0.0355**	**0.0000**	**124.7842**

	ROG	NOx	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

K2 Pure Solutions Chlorine Rail Transportation Curtailment Project - Contra Costa County, Summer

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/6/2019	5/10/2019	5	5	Conservatively assumed to require 5-days.
2	Grading	Grading	5/13/2019	5/17/2019	5	5	Conservatively assumed to require 5-days.
3	Building Construction	Building Construction	5/20/2019	8/9/2019	5	60	The building construction phase entails the pouring of a slab on grade, and construction of the loading rack, rather than new construction of a building.
4	Paving	Paving	8/12/2019	8/14/2019	5	3	Only minimal paving will be required at the facility to provide a walkway for K2 operators to access this station.
5	Architectural Coating	Architectural Coating	8/15/2019	8/21/2019	5	5	Architectural Coating phase includes surface coating of containment structures and painting of loading rack, piping and equipment as needed.

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,500; Non-Residential Outdoor: 500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Graders	1	8.00	187	0.41
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1061	0.0000	0.1061	0.0115	0.0000	0.0115			0.0000			0.0000
Off-Road	0.7195	8.9170	4.1407	9.7500e-003		0.3672	0.3672		0.3378	0.3378		965.1690	965.1690	0.3054		972.8032
Total	**0.7195**	**8.9170**	**4.1407**	**9.7500e-003**	**0.1061**	**0.3672**	**0.4733**	**0.0115**	**0.3378**	**0.3493**		**965.1690**	**965.1690**	**0.3054**		**972.8032**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0200	0.0123	0.1566	4.3000e-004	0.0411	2.7000e-004	0.0413	0.0109	2.5000e-004	0.0111		43.1754	43.1754	1.1700e-003		43.2046
Total	**0.0200**	**0.0123**	**0.1566**	**4.3000e-004**	**0.0411**	**2.7000e-004**	**0.0413**	**0.0109**	**2.5000e-004**	**0.0111**		**43.1754**	**43.1754**	**1.1700e-003**		**43.2046**

3.2 Site Preparation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1061	0.0000	0.1061	0.0115	0.0000	0.0115			0.0000			0.0000
Off-Road	0.7195	8.9170	4.1407	9.7500e-003		0.3672	0.3672		0.3378	0.3378	0.0000	965.1690	965.1690	0.3054		972.8032
Total	**0.7195**	**8.9170**	**4.1407**	**9.7500e-003**	**0.1061**	**0.3672**	**0.4733**	**0.0115**	**0.3378**	**0.3493**	**0.0000**	**965.1690**	**965.1690**	**0.3054**		**972.8032**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0200	0.0123	0.1566	4.3000e-004	0.0411	2.7000e-004	0.0413	0.0109	2.5000e-004	0.0111		43.1754	43.1754	1.1700e-003		43.2046
Total	**0.0200**	**0.0123**	**0.1566**	**4.3000e-004**	**0.0411**	**2.7000e-004**	**0.0413**	**0.0109**	**2.5000e-004**	**0.0111**		**43.1754**	**43.1754**	**1.1700e-003**		**43.2046**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.4398	15.1835	9.5298	0.0186		0.7483	0.7483		0.7068	0.7068		1,817.2842	1,817.2842	0.4292		1,828.0135
Total	**1.4398**	**15.1835**	**9.5298**	**0.0186**	**0.7528**	**0.7483**	**1.5010**	**0.4138**	**0.7068**	**1.1205**		**1,817.2842**	**1,817.2842**	**0.4292**		**1,828.0135**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0399	0.0246	0.3132	8.7000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		86.3508	86.3508	2.3400e-003		86.4093
Total	**0.0399**	**0.0246**	**0.3132**	**8.7000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**5.0000e-004**	**0.0223**		**86.3508**	**86.3508**	**2.3400e-003**		**86.4093**

3.3 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.4398	15.1835	9.5298	0.0186		0.7483	0.7483		0.7068	0.7068	0.0000	1,817.2842	1,817.2842	0.4292		1,828.0135
Total	**1.4398**	**15.1835**	**9.5298**	**0.0186**	**0.7528**	**0.7483**	**1.5010**	**0.4138**	**0.7068**	**1.1205**	**0.0000**	**1,817.2842**	**1,817.2842**	**0.4292**		**1,828.0135**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0399	0.0246	0.3132	8.7000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		86.3508	86.3508	2.3400e-003		86.4093
Total	**0.0399**	**0.0246**	**0.3132**	**8.7000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**5.0000e-004**	**0.0223**		**86.3508**	**86.3508**	**2.3400e-003**		**86.4093**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9576	9.8207	7.5432	0.0114		0.6054	0.6054		0.5569	0.5569		1,127.6696	1,127.6696	0.3568		1,136.5892
Total	**0.9576**	**9.8207**	**7.5432**	**0.0114**		**0.6054**	**0.6054**		**0.5569**	**0.5569**		**1,127.6696**	**1,127.6696**	**0.3568**		**1,136.5892**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9576	9.8207	7.5432	0.0114		0.6054	0.6054		0.5569	0.5569	0.0000	1,127.6696	1,127.6696	0.3568		1,136.5892
Total	**0.9576**	**9.8207**	**7.5432**	**0.0114**		**0.6054**	**0.6054**		**0.5569**	**0.5569**	**0.0000**	**1,127.6696**	**1,127.6696**	**0.3568**		**1,136.5892**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8300	7.8446	7.1478	0.0113		0.4425	0.4425		0.4106	0.4106		1,055.1823	1,055.1823	0.3016		1,062.7231
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8300**	**7.8446**	**7.1478**	**0.0113**		**0.4425**	**0.4425**		**0.4106**	**0.4106**		**1,055.1823**	**1,055.1823**	**0.3016**		**1,062.7231**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0718	0.0443	0.5638	1.5600e-003	0.1479	9.7000e-004	0.1488	0.0392	9.0000e-004	0.0401		155.4314	155.4314	4.2100e-003		155.5367
Total	**0.0718**	**0.0443**	**0.5638**	**1.5600e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**9.0000e-004**	**0.0401**		**155.4314**	**155.4314**	**4.2100e-003**		**155.5367**

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8300	7.8446	7.1478	0.0113		0.4425	0.4425		0.4106	0.4106	0.0000	1,055.1823	1,055.1823	0.3016		1,062.7231
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8300**	**7.8446**	**7.1478**	**0.0113**		**0.4425**	**0.4425**		**0.4106**	**0.4106**	**0.0000**	**1,055.1823**	**1,055.1823**	**0.3016**		**1,062.7231**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0718	0.0443	0.5638	1.5600e-003	0.1479	9.7000e-004	0.1488	0.0392	9.0000e-004	0.0401		155.4314	155.4314	4.2100e-003		155.5367
Total	**0.0718**	**0.0443**	**0.5638**	**1.5600e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**9.0000e-004**	**0.0401**		**155.4314**	**155.4314**	**4.2100e-003**		**155.5367**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.0858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**2.3522**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.0858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**2.3522**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.7600e-003	0.0146	0.0428	1.3000e-004	0.0104	1.4000e-004	0.0106	2.7900e-003	1.3000e-004	2.9200e-003		13.3067	13.3067	4.9000e-004		13.3189
Unmitigated	3.7600e-003	0.0146	0.0428	1.3000e-004	0.0104	1.4000e-004	0.0106	2.7900e-003	1.3000e-004	2.9200e-003		13.3067	13.3067	4.9000e-004		13.3189

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-Rail	1.68	1.68	1.68	4,905	4,905
Total	1.68	1.68	1.68	4,905	4,905

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
Unrefrigerated Warehouse-Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Unrefrigerated Warehouse-Rail	0.571348	0.041302	0.187452	0.129481	0.019048	0.005152	0.010609	0.022861	0.001566	0.001884	0.005572	0.002772	0.000953

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0214					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0243**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0214					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0243**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Other General Industrial Equipment	1	1.00	58	130	0.80	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Other General Industrial Equipment	0.0692	0.6876	0.7432	1.1200e-003		0.0359	0.0359		0.0330	0.0330		110.5903	110.5903	0.0350		111.4650
Total	**0.0692**	**0.6876**	**0.7432**	**1.1200e-003**		**0.0359**	**0.0359**		**0.0330**	**0.0330**		**110.5903**	**110.5903**	**0.0350**		**111.4650**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

City of Pittsburg - K2 Pure Solutions
CalEEMod Emissions Calculations Data Assumptions
Chlorine Rail Transportation Curtailment Project

CalEEMod Report for Annual Emissions

K2 Pure Solutions Chlorine Rail Transportation Curtailment Project

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-Rail	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

K2 Pure Solutions Chlorine Rail Transportation Curtailment Project - Contra Costa County, Annual

Project Characteristics -

Land Use -

Construction Phase - See comments in "Phase Description".

Off-road Equipment - - Corrected to include appropriate construction phase equipment.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Area Coating - - Exterior surphases only. See CalEEMod data assumptions summary.

Energy Use - - Only aditional exterior lighting required.

Water And Wastewater - No additional potable water use or domestic waste water gerneration will result from this project .

Solid Waste - No waste generation will be associated with the project.

Operational Off-Road Equipment - Switching locomotive for moving rail cars onsite.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	500	1500
tblAreaCoating	Area_Nonresidential_Interior	1500	0
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	NumDays	5.00	3.00
tblConstructionPhase	NumDays	1.00	5.00
tblConstructionPhase	PhaseEndDate	10/23/2019	8/21/2019
tblConstructionPhase	PhaseEndDate	10/9/2019	8/9/2019
tblConstructionPhase	PhaseEndDate	5/22/2019	5/17/2019
tblConstructionPhase	PhaseEndDate	10/16/2019	8/14/2019
tblConstructionPhase	PhaseEndDate	5/20/2019	5/10/2019
tblConstructionPhase	PhaseStartDate	10/17/2019	8/15/2019
tblConstructionPhase	PhaseStartDate	5/23/2019	5/20/2019

tblConstructionPhase	PhaseStartDate	5/21/2019	5/13/2019
tblConstructionPhase	PhaseStartDate	10/10/2019	8/12/2019
tblConstructionPhase	PhaseStartDate	5/18/2019	5/6/2019
tblEnergyUse	NT24E	1.07	0.00
tblEnergyUse	NT24NG	0.07	0.00
tblEnergyUse	T24E	0.32	0.00
tblEnergyUse	T24NG	3.40	0.00
tblGrading	AcresOfGrading	2.50	0.00
tblGrading	AcresOfGrading	2.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Graders
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	58.00
tblOperationalOffRoadEquipment	OperHorsePower	88.00	130.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.00
tblOperationalOffRoadEquipment	OperLoadFactor	0.34	0.80
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblSolidWaste	SolidWasteGenerationRate	0.94	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	10.00
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0415	0.3714	0.2776	4.4000e-004	2.6600e-003	0.0219	0.0246	1.2000e-003	0.0203	0.0215	0.0000	39.5384	39.5384	0.0119	0.0000	39.8347
Maximum	**0.0415**	**0.3714**	**0.2776**	**4.4000e-004**	**2.6600e-003**	**0.0219**	**0.0246**	**1.2000e-003**	**0.0203**	**0.0215**	**0.0000**	**39.5384**	**39.5384**	**0.0119**	**0.0000**	**39.8347**

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					
2019	0.0415	0.3714	0.2776	4.4000e-004	2.6600e-003	0.0219	0.0246	1.2000e-003	0.0203	0.0215	0.0000	39.5383	39.5383	0.0119	0.0000	39.8346
Maximum	**0.0415**	**0.3714**	**0.2776**	**4.4000e-004**	**2.6600e-003**	**0.0219**	**0.0246**	**1.2000e-003**	**0.0203**	**0.0215**	**0.0000**	**39.5383**	**39.5383**	**0.0119**	**0.0000**	**39.8346**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-6-2019	8-5-2019	0.3473	0.3473
2	8-6-2019	9-30-2019	0.0353	0.0353
		Highest	0.3473	0.3473

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	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.6226	0.6226	3.0000e-005	1.0000e-005	0.6250
Mobile	5.8000e-004	2.7500e-003	7.2700e-003	2.0000e-005	1.8300e-003	2.0000e-005	1.8600e-003	4.9000e-004	2.0000e-005	5.2000e-004	0.0000	2.0484	2.0484	8.0000e-005	0.0000	2.0504
Offroad	2.0100e-003	0.0199	0.0216	3.0000e-005		1.0400e-003	1.0400e-003		9.6000e-004	9.6000e-004	0.0000	2.9095	2.9095	9.2000e-004	0.0000	2.9325
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.0200e-003**	**0.0227**	**0.0288**	**5.0000e-005**	**1.8300e-003**	**1.0600e-003**	**2.9000e-003**	**4.9000e-004**	**9.8000e-004**	**1.4800e-003**	**0.0000**	**5.5804**	**5.5804**	**1.0300e-003**	**1.0000e-005**	**5.6079**

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	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.6226	0.6226	3.0000e-005	1.0000e-005	0.6250
Mobile	5.8000e-004	2.7500e-003	7.2700e-003	2.0000e-005	1.8300e-003	2.0000e-005	1.8600e-003	4.9000e-004	2.0000e-005	5.2000e-004	0.0000	2.0484	2.0484	8.0000e-005	0.0000	2.0504
Offroad	2.0100e-003	0.0199	0.0216	3.0000e-005		1.0400e-003	1.0400e-003		9.6000e-004	9.6000e-004	0.0000	2.9095	2.9095	9.2000e-004	0.0000	2.9325
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.0200e-003**	**0.0227**	**0.0288**	**5.0000e-005**	**1.8300e-003**	**1.0600e-003**	**2.9000e-003**	**4.9000e-004**	**9.8000e-004**	**1.4800e-003**	**0.0000**	**5.5804**	**5.5804**	**1.0300e-003**	**1.0000e-005**	**5.6079**

	ROG	NOx	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

K2 Pure Solutions Chlorine Rail Transportation Curtailment Project - Contra Costa County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/6/2019	5/10/2019	5	5	Conservatively assumed to require 5-days.
2	Grading	Grading	5/13/2019	5/17/2019	5	5	Conservatively assumed to require 5-days.
3	Building Construction	Building Construction	5/20/2019	8/9/2019	5	60	The building construction phase entails the pouring of a slab on grade, and construction of the loading rack, rather than new construction of a building.
4	Paving	Paving	8/12/2019	8/14/2019	5	3	Only minimal paving will be required at the facility to provide a walkway for K2 operators to access this station.
5	Architectural Coating	Architectural Coating	8/15/2019	8/21/2019	5	5	Architectural Coating phase includes surface coating of containment structures and painting of loading rack, piping and equipment as needed.

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,500; Non-Residential Outdoor: 500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Graders	1	8.00	187	0.41
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8000e-003	0.0223	0.0104	2.0000e-005		9.2000e-004	9.2000e-004		8.4000e-004	8.4000e-004	0.0000	2.1890	2.1890	6.9000e-004	0.0000	2.2063
Total	**1.8000e-003**	**0.0223**	**0.0104**	**2.0000e-005**	**2.7000e-004**	**9.2000e-004**	**1.1900e-003**	**3.0000e-005**	**8.4000e-004**	**8.7000e-004**	**0.0000**	**2.1890**	**2.1890**	**6.9000e-004**	**0.0000**	**2.2063**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0898	0.0898	0.0000	0.0000	0.0899
Total	**5.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0898**	**0.0898**	**0.0000**	**0.0000**	**0.0899**

3.2 Site Preparation - 2019

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8000e-003	0.0223	0.0104	2.0000e-005		9.2000e-004	9.2000e-004		8.4000e-004	8.4000e-004	0.0000	2.1890	2.1890	6.9000e-004	0.0000	2.2063
Total	**1.8000e-003**	**0.0223**	**0.0104**	**2.0000e-005**	**2.7000e-004**	**9.2000e-004**	**1.1900e-003**	**3.0000e-005**	**8.4000e-004**	**8.7000e-004**	**0.0000**	**2.1890**	**2.1890**	**6.9000e-004**	**0.0000**	**2.2063**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0898	0.0898	0.0000	0.0000	0.0899
Total	**5.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0898**	**0.0898**	**0.0000**	**0.0000**	**0.0899**

3.3 Grading - 2019

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					1.8800e-003	0.0000	1.8800e-003	1.0300e-003	0.0000	1.0300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-003	0.0380	0.0238	5.0000e-005		1.8700e-003	1.8700e-003		1.7700e-003	1.7700e-003	0.0000	4.1215	4.1215	9.7000e-004	0.0000	4.1459
Total	**3.6000e-003**	**0.0380**	**0.0238**	**5.0000e-005**	**1.8800e-003**	**1.8700e-003**	**3.7500e-003**	**1.0300e-003**	**1.7700e-003**	**2.8000e-003**	**0.0000**	**4.1215**	**4.1215**	**9.7000e-004**	**0.0000**	**4.1459**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.0000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1797	0.1797	0.0000	0.0000	0.1798
Total	**9.0000e-005**	**7.0000e-005**	**7.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1797**	**0.1797**	**0.0000**	**0.0000**	**0.1798**

3.3 Grading - 2019

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					1.8800e-003	0.0000	1.8800e-003	1.0300e-003	0.0000	1.0300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-003	0.0380	0.0238	5.0000e-005		1.8700e-003	1.8700e-003		1.7700e-003	1.7700e-003	0.0000	4.1215	4.1215	9.7000e-004	0.0000	4.1459
Total	**3.6000e-003**	**0.0380**	**0.0238**	**5.0000e-005**	**1.8800e-003**	**1.8700e-003**	**3.7500e-003**	**1.0300e-003**	**1.7700e-003**	**2.8000e-003**	**0.0000**	**4.1215**	**4.1215**	**9.7000e-004**	**0.0000**	**4.1459**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.0000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1797	0.1797	0.0000	0.0000	0.1798
Total	**9.0000e-005**	**7.0000e-005**	**7.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1797**	**0.1797**	**0.0000**	**0.0000**	**0.1798**

3.4 Building Construction - 2019

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	0.0287	0.2946	0.2263	3.4000e-004		0.0182	0.0182		0.0167	0.0167	0.0000	30.6901	30.6901	9.7100e-003	0.0000	30.9329
Total	**0.0287**	**0.2946**	**0.2263**	**3.4000e-004**		**0.0182**	**0.0182**		**0.0167**	**0.0167**	**0.0000**	**30.6901**	**30.6901**	**9.7100e-003**	**0.0000**	**30.9329**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2019

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	0.0287	0.2946	0.2263	3.4000e-004		0.0182	0.0182		0.0167	0.0167	0.0000	30.6901	30.6901	9.7100e-003	0.0000	30.9329
Total	**0.0287**	**0.2946**	**0.2263**	**3.4000e-004**		**0.0182**	**0.0182**		**0.0167**	**0.0167**	**0.0000**	**30.6901**	**30.6901**	**9.7100e-003**	**0.0000**	**30.9329**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2019

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	1.2400e-003	0.0118	0.0107	2.0000e-005		6.6000e-004	6.6000e-004		6.2000e-004	6.2000e-004	0.0000	1.4359	1.4359	4.1000e-004	0.0000	1.4461
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2400e-003**	**0.0118**	**0.0107**	**2.0000e-005**		**6.6000e-004**	**6.6000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**1.4359**	**1.4359**	**4.1000e-004**	**0.0000**	**1.4461**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	7.0000e-005	7.6000e-004	0.0000	2.1000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1940	0.1940	1.0000e-005	0.0000	0.1942
Total	**1.0000e-004**	**7.0000e-005**	**7.6000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1940**	**0.1940**	**1.0000e-005**	**0.0000**	**0.1942**

3.5 Paving - 2019

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	1.2400e-003	0.0118	0.0107	2.0000e-005		6.6000e-004	6.6000e-004		6.2000e-004	6.2000e-004	0.0000	1.4359	1.4359	4.1000e-004	0.0000	1.4461
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2400e-003**	**0.0118**	**0.0107**	**2.0000e-005**		**6.6000e-004**	**6.6000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**1.4359**	**1.4359**	**4.1000e-004**	**0.0000**	**1.4461**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	7.0000e-005	7.6000e-004	0.0000	2.1000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1940	0.1940	1.0000e-005	0.0000	0.1942
Total	**1.0000e-004**	**7.0000e-005**	**7.6000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1940**	**0.1940**	**1.0000e-005**	**0.0000**	**0.1942**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.2100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	**5.8800e-003**	**4.5900e-003**	**4.6000e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**0.6383**	**0.6383**	**5.0000e-005**	**0.0000**	**0.6397**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.2100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	**5.8800e-003**	**4.5900e-003**	**4.6000e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**0.6383**	**0.6383**	**5.0000e-005**	**0.0000**	**0.6397**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	5.8000e-004	2.7500e-003	7.2700e-003	2.0000e-005	1.8300e-003	2.0000e-005	1.8600e-003	4.9000e-004	2.0000e-005	5.2000e-004	0.0000	2.0484	2.0484	8.0000e-005	0.0000	2.0504
Unmitigated	5.8000e-004	2.7500e-003	7.2700e-003	2.0000e-005	1.8300e-003	2.0000e-005	1.8600e-003	4.9000e-004	2.0000e-005	5.2000e-004	0.0000	2.0484	2.0484	8.0000e-005	0.0000	2.0504

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-Rail	1.68	1.68	1.68	4,905	4,905
Total	1.68	1.68	1.68	4,905	4,905

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
Unrefrigerated Warehouse-Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Unrefrigerated Warehouse-Rail	0.571348	0.041302	0.187452	0.129481	0.019048	0.005152	0.010609	0.022861	0.001566	0.001884	0.005572	0.002772	0.000953

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	0.6226	0.6226	3.0000e-005	1.0000e-005	0.6250
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.6226	0.6226	3.0000e-005	1.0000e-005	0.6250
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-Rail	2140	0.6226	3.0000e-005	1.0000e-005	0.6250
Total		**0.6226**	**3.0000e-005**	**1.0000e-005**	**0.6250**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-Rail	2140	0.6226	3.0000e-005	1.0000e-005	0.6250
Total		**0.6226**	**3.0000e-005**	**1.0000e-005**	**0.6250**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.4300e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.4300e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

	Indoor/ Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/ Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Other General Industrial Equipment	1	1.00	58	130	0.80	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Other General Industrial Equipment	2.0100e-003	0.0199	0.0216	3.0000e-005		1.0400e-003	1.0400e-003		9.6000e-004	9.6000e-004	0.0000	2.9095	2.9095	9.2000e-004	0.0000	2.9325
Total	**2.0100e-003**	**0.0199**	**0.0216**	**3.0000e-005**		**1.0400e-003**	**1.0400e-003**		**9.6000e-004**	**9.6000e-004**	**0.0000**	**2.9095**	**2.9095**	**9.2000e-004**	**0.0000**	**2.9325**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

A California Corporation
Specializing in Geotechnical Engineering

Hultgren-Tillis Engineers

December 22, 2016
Project No. 197.54

K2 Pure Solutions
950 Loveridge Road
Pittsburg, California 94565

Attention: Mr. Michael Cordova

Geotechnical Report Update
K2 Plus Project
K2 Pure Facility
Pittsburg, California
Purchase Order K2PS-G511-C0003-45

Dear Mr. Cordova:

This letter presents a geotechnical report update for the K2 Plus Project at the K2 Pure Solutions facility in Pittsburg, California. The facility is located near the north end of Loveridge Road, as shown on the attached Vicinity Map, Plate 1. We previously performed two geotechnical investigations for the facility and presented the results in reports dated July 17, 2009 and September 15, 2011. We recently provided preliminary geotechnical pile design criteria in a letter dated November 16, 2016.

The attached Site Plan, Plate 2, shows an overall foundation plan for the K2 Plus Project. The project will consist of a plant expansion including installation of new equipment, vessels, pipe racks, rail loading dock, and other process related features. Site work will include demolition of existing infrastructure, grading to re-route existing underground utilities and roadways, foundations, underground utility installation, and paving.

Most of the planned structures and vessels will be supported on shallow spread footings or mat foundations, except the new HCL Burner Number 2. The burner will be on a pile supported mat to resist large overturning forces. The mat will be approximately 25 feet wide and 36 feet long, supported by auger cast piles spaced about 7 to 8 feet on centers.

SURFACE AND SUBSURFACE CONDITIONS

The ground surface includes both paved and unpaved areas that are relatively level or slope slightly to facilitate surface water run-off. Ground surface elevations range from about 10 to 13 feet above the Dow vertical datum, generally increasing to the north. The Dow vertical datum is approximately 1.2 feet above NGVD29 and 3.8 feet above NAVD88. Unless noted otherwise, elevations in this letter are based on the Dow vertical datum.

The area is generally underlain by fill over firm alluvial deposits. Variations in the original topography resulted in little to no fill in some areas and up to 10 feet of fill in others.

The fills include soft to stiff silts and clays with occasional sand layers typically less than a foot thick. Some of the clays have moderate to high plasticity and will shrink/swell with moisture

variations. In general, the fill is poorly compacted based on observations during various projects on the Dow property and samples collected during previous investigations. Additionally, the fill has varying amounts of debris, slag, and concrete remnants from previous foundations or other site improvements.

Groundwater levels in the area are variable. Groundwater was encountered in previous investigations at depths ranging from 1 to 8 feet below existing grades, corresponding to approximately Elevations +4 to +11 feet. In general, stabilized groundwater levels were not recorded because the borings were immediately backfilled or groundwater levels were obscured by the drilling methods.

The above descriptions of soil and groundwater conditions include field observations and results from previous borings by others at the times of their investigations. Conditions vary across the site due to previous land use, recent construction activity, and seasonal weather. At greater depths variations are due to conditions inherent in alluvial deposition and erosion processes.

SEISMIC CONSIDERATIONS

The predominant seismic hazard for the site is strong groundshaking resulting from earthquakes. The structures should be designed to accommodate such groundshaking in accordance with existing codes. No known active faults pass through the site and we conclude that the risk of fault rupture at the site is low. For use with the 2013 or 2016 California Building Code (CBC), the site can be classified as Site Class D, a stiff soil profile.

The following seismic design criteria based on the CBC can be used for the project. The site coordinates are estimated to be: Latitude 38.02485 and Longitude -121.85702. From the USGS website calculator, the mapped acceleration parameters S_S and S_1 are 1.743 and 0.592, respectively.

Soil liquefaction is a phenomenon in which a loose to medium dense, saturated granular soil undergoes reduction of internal strength as a result of increased pore water pressure generated by shear strains within the soil mass. This behavior is most commonly induced by strong groundshaking associated with earthquakes. Subsurface conditions consist mainly of clayey soils and medium dense to dense sands. Where the medium dense sands are located, there is a risk of triggering liquefaction due to a large earthquake. We estimate that the consequences of liquefaction, if it occurred, would be surface settlements of less than 1-inch.

CONCLUSIONS AND RECOMMENDATIONS

We conclude that the planned shallow foundations can be designed using the same geotechnical criteria presented in our reports dated July 17, 2009 and September 15, 2011. We reviewed our preliminary pile recommendations and conclude that the HCL Burner Number 2 can be supported on auger cast piles using the criteria presented in our November 16, 2016 letter. The updated seismic parameters presented herein should be used for seismic design. Other geotechnical conclusions and recommendations from the previous reports can be used for earthwork design issues where applicable.

The piles should be installed in accordance with the Process Industry Practices (PIP) STS02465, *Augered Cast-in-Place Piles Installation Specification* dated February 2012. For this

project, we judge that pile load tests are not necessary. Our field engineer should observe geotechnical aspects of the pile installations on a full time basis.

Temporary shoring, bracing, underpinning, and dewatering may be needed during construction to stabilize excavations. The contractor should be solely responsible for design and construction of these temporary features. Preconstruction surveys and periodic monitoring should be performed where foundation excavations may impact existing site improvements. The contractor's shoring/bracing, underpinning, dewatering, and monitoring plans should be submitted for review by the project team.

During construction, we should observe and/or test geotechnical aspects of the work including excavations, placement and compaction of fill and backfill, subgrade preparation for pavements and railroads, and foundation installations. If conditions encountered during construction are not consistent with those described herein, we should be contacted to review our recommendations and provide supplemental recommendations, as needed.

It should be noted that the site vicinity has a long history of chemical manufacturing and industrial use dating back more than 100 years. At an industrial facility such as this, there is always the possibility that hazardous chemicals may have leaked into the ground or were contained in groundwater. The purpose of our services was limited to evaluating some of the characteristics of the soils as they relate to foundation design. We did not assess the possible chemical constituents within the soils or groundwater. Designers and contractors working at the site should contact the appropriate safety officer regarding the risk of encountering hazardous materials in the soils and groundwater.

If you have any questions regarding this letter, please call.

Sincerely,

Hultgren - Tillis Engineers

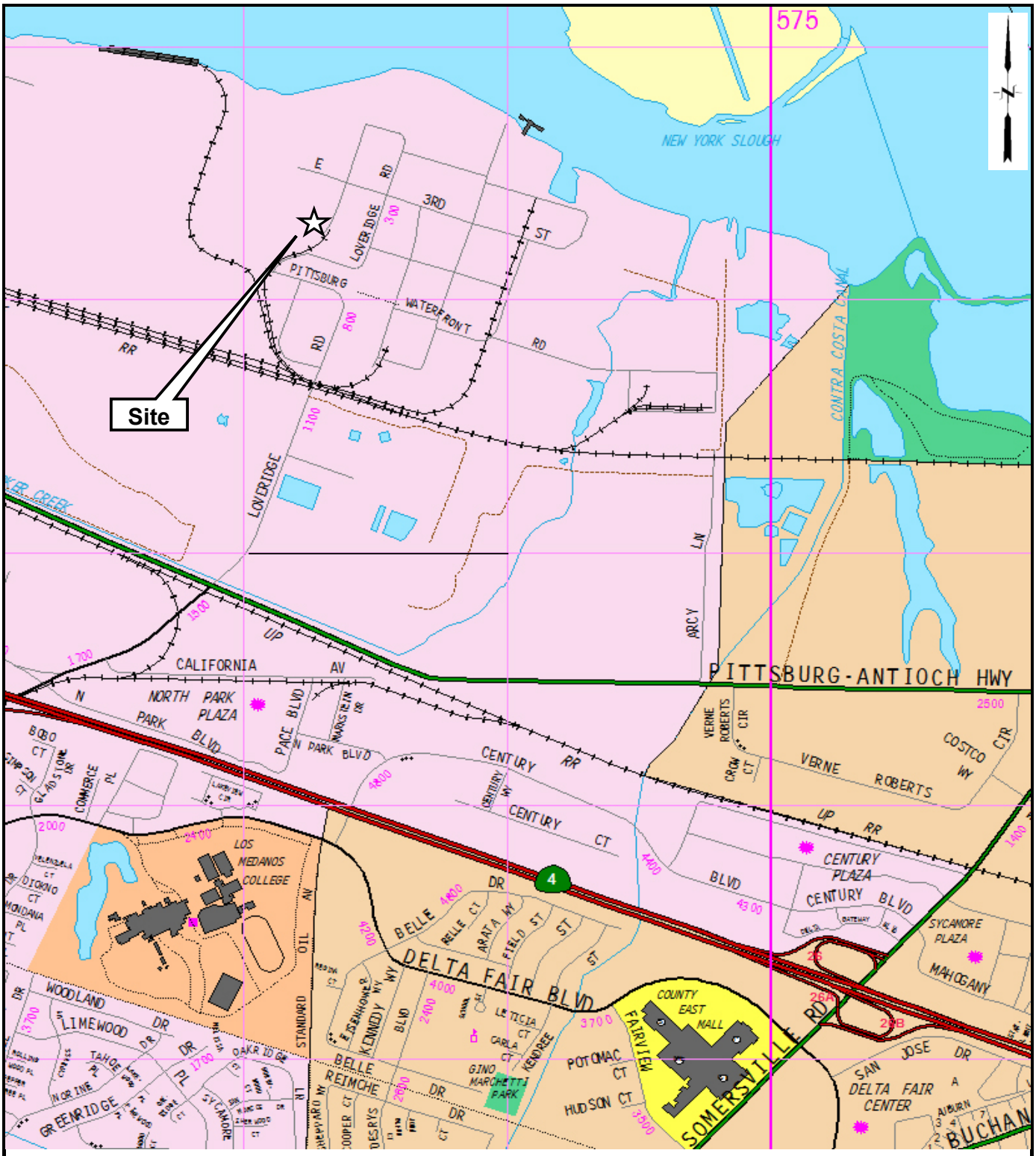
Christian P. Muller
Geotechnical Engineer

CPM:JAH:lm:la

Attachments: Plate 1 – Vicinity Map
Plate 2 – Site Plan

cc: Mr. Chuks Mbeledogu and Mr. Kevin Kelley, K2 Pure Solutions; and Mr. Kurtis Boehm and Mr. Scott Cooper, KBR (via email)

Filename: 19754L02 report update



0 1400 feet

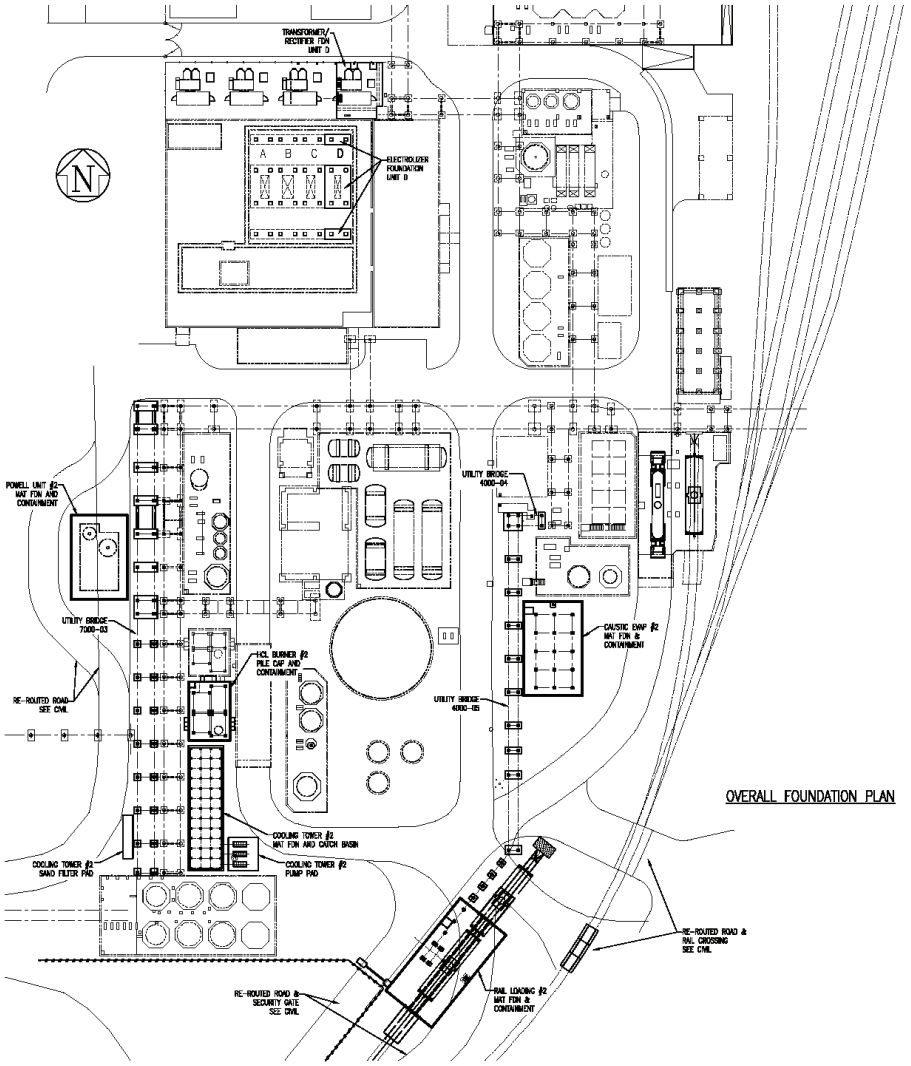
APPROXIMATE SCALE

Base: Thomas Guide Map

K2 Plus Project
K2 Pure Facility
Pittsburg, California

Vicinity Map

Hultgren - Tillis Engineers	Project No. 197.54	Plate No. 1



OVERALL FOUNDATION PLAN

FOUNDATION DRAWINGS AND EQUIPMENT COATING SPECIFICATION REFERENCE TABLE (NOTE 1)			
EQUIPMENT	AREA	DRAWING REF	EXPOSURE CONDITION SPEC REF
TRANSFORMER/RECTIFIER	2000	2000-S3-300	N/A
ELECTROLIZER FLOOR UNIT D	2000	TBD	SECTION 2.02 ITEM 15
CAUSTIC EVAP #2 CONTAINMENT	4000	4000-S3-300	SECTION 2.02 ITEM 5
RAILCAR LOADING #2 CONTAINMENT	4000	4000-S3-301	SECTION 2.02 ITEM 5
UTILITY BRIDGE 4000-04	4000	4000-S3-303	N/A
UTILITY BRIDGE 4000-05	4000	4000-S3-302 & -303	N/A
HCL BURNER #2 CONTAINMENT	6000	6000-S3-300	SECTION 2.02 ITEM 11
COOLING TOWER #2 CATCH BASIN	7000	7000-S3-301	N/A
POWELL UNIT #2 CONTAINMENT	7000	7000-S3-300	SECTION 2.02 ITEM 10
UTILITY BRIDGE 7000-03	7000	7000-S3-302 & -303	N/A

NOTES

1. EXPOSED CONCRETE WITHIN NOTED CONTAINMENT AREAS TO BE COATED PER K2 SPECIFICATION SPECIAL COATINGS, 09 80 00.

ISSUED FOR ESTIMATING BID

PRELIMINARY – NOT FOR CONSTRUCTION

KBR TECHNICAL SERVICES, INC.
3000 RIVERCHASE GALLERIA
SUITE 1400
BIRMINGHAM, ALABAMA 35244

KBR PROJECT NUMBER: G511-6999-5-FEL2

k2 Pure Solutions

550 LOVERIDGE ROAD
PITTSBURG, CA 94565

PROJECT: K2 – PLUS

TITLE: STRUCTURAL CONCRETE OVERALL FOUNDATION PLAN

DRAWN	DATE	ENGINEER	DATE
PWB	8/18	MMB	8/18
CHECKED	DATE	APPROVAL	DATE

ANSI D | DRAWING 0000-S3-300 | REV 0

SCALE 1/30"=1'-0" | SHEET 1 OF 1

REVISION HISTORY

0	8/18/18	ISSUED FOR ESTIMATING BID

K2 Plus Project
K2 Pure Facility
Pittsburg, California

Site Plan

Hultgren - Tillis Engineers	Project No. 197.54	Plate No. 2

APPENDIX B

Health Risk Screening Analysis

Air Toxics Exposure Assessment (Operational Impacts)

Human health risks potentially associated with hazardous substance emissions from the proposed operation of the K2 Pure Solutions (K2) proposed Chlorine Rail Transportation Curtailment Project (proposed Project) were evaluated, including compounds on the list of Office of Environmental Health Hazard Assessment (OEHHA) toxic air contaminants (TACs) and U.S. Environmental Protection Agency (USEPA) hazardous air pollutants (HAPs). The health risk screening analysis (HRSA) was conducted in accordance with Bay Area Air Quality Management District (BAAQMD) Regulation 2, Rule 5, and the following guidance:

- *BAAQMD California Environmental Quality Act (CEQA) Guidelines (BAAQMD 2017);*
- *BAAQMD Air Toxics NSR Program, Health Risk Screening Analysis (HRSA) Guidelines (BAAQMD 2010);*
- *BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards (BAAQMD 2012);*

The HRSA process follows the approach depicted in Figure 5-2 of the BAAQMD CEQA Guidelines (BAAQMD 2017), "*Phased Approach for Estimating Community Risks and Hazards – New Sources*". This phased approach requires the following steps to estimate human health impacts:

1) identify and quantify project generated emissions,
2) estimate screening level impacts using trigger levels,
3) if the Proposed Project Toxic Air Contaminate (TAC) risk and hazard are greater than CEQA thresholds, evaluate pollutant transport (air dispersion modeling) to estimate ground level TAC concentrations at each receptor location, assess human exposure, and use a risk characterization model to estimate the potential health risk at each receptor location.

The following sections describe in detail the methods used in this HRSA.

B.1 Air Toxics Emission Calculations

Air toxics (TACs and HAPs) emission sources associated with the proposed Project will include fugitive emissions of Chlorine gas from the proposed liquid chlorine rail car loading facility, and emissions of diesel exhaust particulate matter from diesel powered rail switcher equipment used for moving the rail cars onsite.

B.1.1 Liquid chlorine rail car loading facility

Chlorine emissions from loading operations are expected to be very small. The venting of chlorine, that would occur while loading a pressurized railcar, would be directed to K2's existing bleach production unit, an existing source on K2's BAAQMD air quality permit to operate. The only new source of emissions would be the result of residual chlorine gas in the loading hoses after the hoses are disconnected and isolated. The design of the proposed Project includes a purging system for the hoses that includes a small scrubber at the loading station. The scrubber would be used to purge the approximately 50-ft of 1-inch diameter loading hose, to safely shutdown after a loading event.

Following the Chlorine Vent Scrubber vendor emission estimation methodology, resulting additional chlorine emissions are estimated to be 0.0033 lbs per loading event (assuming 30 minute per evacuation/purge), or 0.22-lbs/yr, assuming 66 loading hose purge events per year. The emissions

calculations are detailed in Table B-1. The BAAQMD Reg 2, Rule 5: New Source Review of Toxic Air Contaminants Table 2-5-1 Toxic Air Contaminant Trigger Levels for Chlorine are 0.26 lbs/hr and 7.7 lbs/yr.

TABLE B-1
Chlorine Vent Scrubber Emission Calculations

Vent Chlorine Supply Line

Description	Units	Qty	Notes
Pipeline Data			
Pipe Diameter	in	1	
Pipe Length	ft	50	
Scrubber Data			
Eductor	#	1	
Caustic Depth	ft	6	
Eductor Transfer Units	#	3	3 Transfer units assumed per eductor
Liquid Transfer Units	#	6	1 Transfer Unit/1ft. Liquid Depth
Total Number of Transfer Units (NTU)	#	9	
Gas Flow Data			
Cl2 mass In (ClmIn)	lb/hr	50.02	Pipeline volume x density Cl2 / evacuation time
Cl2 molar rate In (ClmrIn)	lbmol/hr	0.7054	ClmrIn=ClmIn/70.9
Cl2 mole fraction In (ClmfIn)	mol fraction	1.00	
Cl2 mole fraction Out (ClmfOut)	mol fraction	0.00013	ClmfOut=ClmfIn*(1/e^NTU)
Total Gas molar rate Out (TGmrOut)	lbmol/hr	0.00009251	TGmrOut=ClmrIn*ClmfOut
Cl2Gas Flow Out(ClgfOut)	lb/hr	0.00655901	ClgfOut=TGmrOut*70.9
Time			
Evacuation Time	Minutes	30	
Events per Year	#	66	
Emissions Data			
Chlorine Emissions per Event	lb	0.0033	ClgfOut * Evacuation time
Chlorine Emissions per Year	lb	0.216	Lb/Event * Events per year
Caustic Consumed (100% Basis) per Event	lb	28.2	
Scrubber Efficiency	%	99.9869%	

B.1.2 Rail-yard Switcher engine

The proposed Project may result in an increase the rail car movement onsite. Switcher equipment used for moving the rail cars onsite would result in operational emissions of diesel exhaust particulate matter, a BAAQMD Regulation 2 Rule 5 Toxic Air Contaminant. The switcher engine currently planned for use moving chlorine rail cars between the liquid chlorine rail car loading facility and the Dow facility is a 130-hp Trackmobile Viking mobile railcar mover. The switcher engine exhaust emissions estimate is based on the California Air Resources Board (CARB) OFFROAD2011 methodology using the equation presented below:

$$Emission_{DieselEx} = EF \times AvgHp \times Load \times Activity$$

Where:

EF = Emission factor in grams per horsepower-hour (g/bhp-hr)

AvgHp = Maximum rated average horsepower

Load = Load factor

Activity = Hours of operation

Attachment 1 contains the specification sheet for the Trackmobile Viking mobile railcar mover and the ARB certification letter for the Trackmobile Viking Cummins QSB4.5 engine. To convert the certification levels (CERT) for diesel particulate matter (PM) in grams per kilowatt-hour (g/kW-hr) to grams per brake horsepower-hour (g/bhp-hr), multiply it by 0.7457 kW/bhp. The maximum rated average horsepower for the Trackmobile Viking is 130-hp, the Load Factor is conservatively assumed to be 0.8 and the Activity is 66 hours per year.

$Emission_{DieselEx}$ = 0.015 g/bhp-hr x 130-bhp x 0.8 x 66 hr/yr x 1 lb / 453.6 g = 0.23 lb/yr

B.2 Screening Level Impacts

The Thresholds of Significance for Toxic Air Contaminants (TAC) in the 2017 guidance is whether the "ground-level concentrations of carcinogenic TACs from any source result in an increased cancer risk greater than 10.0 in one million, assuming a 70-year lifetime exposure", or “ground-level concentrations of non-carcinogenic TACs that result in an increased chronic or acute Hazard Index (HI) from any source greater than 1.0” (BAAQMD, 2017). The BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants Table 2-5-1 (Adopted December 7, 2016) includes Toxic Air Contaminant Trigger Levels for acute and chronic exposure to TACs. For non-carcinogenic adverse health effects, a TAC specific concentration that would result in the target chronic hazard index of 0.2 is used in the calculation of the chronic trigger level. For carcinogenic health effects, a TAC specific concentration that would result in the target residential cancer risk of one in a million is used in the calculation of the chronic trigger level. Therefore, for carcinogenic health effects, an emission rate below the Table 2-5-1 Toxic Air Contaminant Trigger Levels conservatively estimates the target residential cancer risk of less than one in a million.

A summary of the air toxics emissions included in the HRSA is presented in Table B-2. The details of the emission calculations are provided in Section B.1.

TABLE B-2
Emission Sources Included In HRSA

Source (Type)	Pollutant	CAS Number	Emissions (lbs/hr)	Emissions (lbs/yr)	Table 2-5-1 Chronic Trigger Level (lbs/yr)
Liquid chlorine rail car loading facility	Chlorine	7782-50-5	6.56-03	0.22	7.7
Rail-yard Switcher engine	Diesel Exhaust Particulate Matter		3.42-03	0.23	0.26

As detailed in Section B.1.1 liquid chlorine rail car loading facility emission are estimated to result in additional chlorine emissions of 6.56-03 lbs/hr and 0.22 lbs/yr, assuming 66 loading hose purge events per year. The BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants Table 2-5-1 acute and chronic Trigger Levels for Chlorine are 0.46 lbs/hr and 7.7 lbs/yr.

As detailed in Section B.1.2, emissions from the proposed increase in rail car movement onsite are estimated to result in additional diesel particulate matter emissions of 0.23 lb/yr, conservatively assuming switching operations of 1.0 hour per car loading, a Load Factor of 0.8, and 66 cars per year expected maximum. The BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants Table 2-5-1 chronic Trigger Level for diesel particulate matter emissions is 0.26 lbs/yr. There is no acute Toxic Air Contaminant Trigger Level for diesel particulate matter.

The proposed Project Toxic Air Contaminate (TAC) risk and hazard are less than the CEQA thresholds of an increased cancer risk of 10.0 in one million, and an increased chronic or acute Hazard Index (HI) from any source of 1.0. Therefore, no further Toxic Air Contaminant analysis is required.

B.3 References

BAAQMD. 2010. *BAAQMD Air Toxics NSR Program, Health Risk Screening Analysis (HRSA) Guidelines*. San Francisco, CA Jan 2017. http://www.baaqmd.gov/~/media/Files/Engineering/Air%20Toxics%20Programs/hrsa_guidelines.ashx

BAAQMD. 2012. *BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards*. San Francisco, CA May 2012. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf

BAAQMD. 2017. *Bay Area Air Quality Management District California Environmental Quality Act Air Quality Guidelines*. San Francisco, CA May 2017. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf

Attachment 1

Specification sheet for the Trackmobile Viking mobile railcar mover

ARB certification letter for the Trackmobile Viking Cummins QSB4.5 engine

Certification Summary Information Report

TRACKMOBILE®
MOBILE RAILCAR MOVERS

VIKING
Specifications

Leading Railcar Mobility Since 1948

Maximum Tractive Effort

Double Coupled*	42,689 lbs. [19,363 kg]
Single Coupled*	27,014 lbs. [12,253 kg]

Dimensions / Performance

	On Rail	On Road
Wheel Base	121" [3,792 mm]	82.5" [2,096 mm]
Rail & Road Clearance	3.5" [88.9 mm]	6.5" [165.1 mm]
Rail & Road Height **	142" [3,607 mm]	153" [3,988 mm]
Length	152" [3,861 mm]	
Width	123" [3,124 mm]	
Weight, Non-Ballasted	34,360 lbs. [15,585 kg]	
Rail Gauge **	AAR Standard 56.5" [1,435 mm]	
Centerline to Cab Side	63.47" [1,612.14 mm]	
Centerline to Non-Cab Side	59.03" [1,499.36 mm]	
Cab Interior Cubic Feet[3]	150 cu. ft.	

Road Turning Radius

Inside Tire	13' 10" [4.0 m]
Outside Tire	21' 5" [6.5 m]
Outside Clearance	23' 6" [7.2 m]

Speeds (Forward & Reverse)***

Low	2.4 MPH, [3.9 km/h]	1.5 MPH, [2.4 km/h]
2nd Gear	4.0 MPH, [6.4 km/h]	2.5 MPH, [4.0 km/h]
3rd Gear	8.0 MPH, [12.8 km/h]	5.1 MPH, [8.2 km/h]
4th Gear	13.6 MPH, [21.9 km/h]	8.7 MPH, [14.0 km/h]

Engine

Cummins Electronic Turbo-Charged Diesel Engine	QSB-4.5 Liter
Meets EPA Tier III EU Stage III A Emissions	**Standard**
Meets EPA Tier IV Final and EU Stage IV Emissions	**Optional**
Configuration	4 Cylinder inline
Valves per Cylinder	4
Engine Displacement Tier III & Tier IV	275 In^3 [4.5 liters]
Horsepower Tier III & Tier IV	130hp [97 kW] @ 2500 rpm
Maximum Torque Tier III	459lb-ft [622 N-m] @ 1500 rpm
Maximum Torque Tier IV	457lb-ft [620 N-m] @ 1500 rpm

Fuel Tank - Steel Twenty-five (25) gallon [94.5 liter] capacity

Air Intake

Intake Air Heater - preheats incoming combustion air prior to start[1]
3 - Stage Filtration, High- Efficiency Pre-Cleaner, Primary and Safety Filter

Powertrain

Transmission

Funk, DF 150 series, constant mesh spur gearing Four Speed Forward and Reverse with selectable Power shift manual or automatic with 4th or 3rd and 4th Lock-Out for Rail, Road, or Both

Axles

On Road - Two Heavy duty steel axles

On-Rail - Two (2) out-board internal planetary type with high-strength ductile iron rear axle drive hubs with friction drive

Differential -Two (2 Rigid, outboard planetary air actuated, auto-control differential locking

Transfer Case - Heavy duty, hardened alloy steel spur gears with oil bath lubrication

Automatic Shutdown

Automatic shutdown as a result of: High Engine Temperature; Low Engine Coolant Level; High Compressor Temperature; High Hydraulic System Oil Temperature; (Optional Low Hydraulic System Oil Level)

Brake System

On-Road Machine Braking[2] - Hydraulic disc brakes with Dual Calipers
On-Rail Machine Braking[2] - Hydraulic disc brakes, 18" [457 mm] diameter
Machine Parking Brake - Spring applied, air released 14" [355.6 mm] diameter disc, driveline mounted
Selectable Neutral Braking - Automatically applies brake to full pressure within 5 seconds of operator inactivity

Train Air Brakes - glad hand connections

16 CFM Engine Driven Dual piston air compressor Tier III	**STANDARD**
60 CFM Twin Piston air compressor Tier IV	**STANDARD**
100 CFM Rotary Screw air compressor Tier III only	**OPTIONAL**
In-Cab Train Air Valves	

Pneumatic System

Air dryer for machine air system and to fill air ride seat. Heated with internal thermostatically controlled 12-Volt heater to prevent pneumatic line release valve freeze ups in damp/cold climates.

Hydraulic

Constant Pressure Hydraulic System, piston pump and O-ring face seal fittings and oil filtered below ISO 18/16/13
On-Road Machine Braking[2] - Hydraulic disc brakes, dual calipers
On-Rail Machine Braking[2] - Hydraulic disc brakes, 18" [457 mm] diameter

Steering

On Road - front axle power steering w/pivot away steering wheel

Electrical

H D 12 Volt DC, 160 AMP Alternator with Dual 925 CCA Batteries
Digital Instrumentation - SAE-J1939 CAN-Bus Control System
7" Digital Display for real-time machine statistics and diagnostic data
Safe-T-Vue™ 360° visibility and railing camera with 10" color monitor
Additional 2 outputs for extra camera locations
Alarms - Automatic Backup Road-Mode Alarm, Selectable Electronic Warble-type alarm, blast type air horn, and amber strobe warning lights

Wheels/ Tire

On Road

Four (4), 16 Ply 9.00 x 20 Heavy duty Mine Service Rubber Tires

On Rail

AAR Profile Standard Gauge 56 1/2" [1,435 mm] ****
Four (4) , 27" [685.8 mm], heat-treated, cast steel, ring-style flanged railwheels
Eight (8) Individual, Air- Operated, Electronically-Controlled Sanders

Main Frame

Heavy duty -High strength 2" [51.0 mm] thick welded steel Main Frame with (2) 3" [76.2 mm] thick cross-members

Body Frame

Heavy duty all-welded construction using pre-formed steel plates and structural forms

Suspension

Six (6) mounts between cab and body frame (deck), four (4) Lord rubber mounts between body and main frame

Couplers

Two heavy duty cast steel weight transfer design positive coupling and uncoupling with AAR contour coupler and locking knuckle
Optional wide traverse coupler beam for adverse and severe curve radius
Standard width beam handles most standard curve radius

Note[1] ***Not to be used in conjunction with Ether starting fluid.***
Note[2] ***Maximum application pressure is varied automatically, depending on whether the machine is in rail or road mode. If the machine is on rail, the application pressure will vary depending on weight transferred, for best stopping capability.***

TIER IV ENGINES ADD APPROXIMATELY 2" ADDITIONAL HEIGHT DUE TO HEIGHT OF EXHAUST STACK ON NEW EXHAUST SYSTEM.
*** Depending on weight package option, actual tractive effort may vary with rail and weather conditions.**
**** For shipping purposes, add 1.5" (38 mm) to Rail height for a 2 x 4 block under wheel tread. Additional variations may occur due to options selected.**
***** Actual speeds obtained will depend on grade, load, altitude, and other factors.**
****** Rail Gauges available in a various sizes, speak to your local dealer regarding the gauge best suited for your line.**

VIKING

VIKING STANDARD FEATURES:

- CAN-Bus Control System
- On Board Diagnostics
- UltraView 7" Color Touch Screen Display
- Safe-T-Vue™ 360° Visibilty and Railing Camera with 10" Monitor
- Air Ride, High Back 180° Swivel Seat
- Joystick and Armrest Controls
- Neutral Braking with Programmed Throttle Control
- Automatic / Manual Power-Shift Transmission
- 16 CFM Engine Driven Air Compressor*
- In-Cab Train Air Valve
- Incremental Train Air Brake Controller
- Train Air Hold Button
- Wide Coupler Table
- Front and Rear Train Air Valves
- Ring Style Railwheels
- Accessible External Disc Brakes
- Impact Sensor/Recorder
- Coupler Rollers
- LED head lighting, strobes, and work lighting
- GPS Positioning Capabilities*
- Telematics Remote Monitoring & Diagnostic Capabilities

**60 CFM on Tier IV Viking Models*

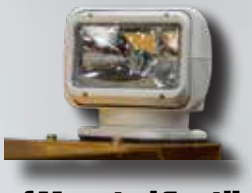
Customized for Optimum Efficiency

Having the right tools to do the job improves productivity. Trackmobile serves many different industries receiving materials through rail service, with each industry representing unique challenges in their daily operations. To meet these demands, we offer a wide variety of options to customize your Trackmobile to your specific needs.

Popular Options:

- Tier IV Final and EURO Stage IV Emissions
- Radio Remote Control System with Train Air Indicator
- MAX-Tran Automatic Weight Transfer System
- MAX-Trac Automatic Traction Control System
- GCS- Ground Control System for ground crew safety
- Train Air Charge Indicator
- Cab Extensions
- Extended Coupler Beam
- Rail Line-of-Sight Cameras
- Spark Arrestor
- Vigilance Control
- Air Conditioning
- Flange Lubricators
- Rotary Broom
- Ballast Box
- Cab Pressurization

Cab Extension



Roof Mounted Spotlight

Rotary Broom

Train Air Charge Indicator

A Marmon/Berkshire Hathaway Company

California Environmental Protection Agency Air Resources Board	CUMMINS INC.	EXECUTIVE ORDER U-R-002-0662 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-14-012;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2018	JCEXL04.5AAH	4.5	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Engine Control Module, Exhaust Gas Recirculation, Electronic Direct Injection, Turbocharger, Charge Air Cooler, Diesel Oxidation Catalyst, Selective Catalytic Reduction – Urea, Ammonia Oxidation Catalyst	Crane, Loader, Tractor, Dozer, Pump, and Compressor

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for non-methane hydrocarbon (NMHC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
75 ≤ kW < 130	Tier 4 Final	STD	0.19	0.40	N/A	5.0	0.02	N/A	N/A	N/A
		CERT	0.04	0.10	--	0.04	0.02	--	--	--

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 15th day of August 2017.

M. Frank

For Annette Hebert, Chief
Emissions Compliance, Automotive Regulations and Science Division

U-R-002-0662

Attachment #3 1 of 1

6/23/2017

Engine Model Summary Template

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
JCEXL04.5AAH	4189:FR94118	QSB4.5	173@2500	115	97	520@1500	155	78	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94220	QSB4.5	162@2500	109	93	466@1500	138	70	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94221	QSB4.5	129@2500	92	77	457@1500	136	68.6	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94222	QSB4.5	158@2300	112	87	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94223	QSB4.5	129@2300	95	74	378@1500	113	57	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94224	QSB4.5	158@2200	117	86	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4189:FR94593	QSB4.5	139@2200	104	77	440@1500	131	66	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4189:FR94225	QSB4.5	129@2200	98	73	430@1500	128	64.6	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94226	QSB4.5	119@2200	92	68	347@1500	104	52.5	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4189:FR94227	QSB4.5	173@2000	141	94	520@1500	155	78	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94228	QSB4.5	154@2000	125	84	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4222:FR94229	QSB4.5	138@2000	113	76	457@1500	136	68.6	SCR,DOC,DDI,TC, EGR,CAC,ECM
JCEXL04.5AAH	4831:FR95210	QSB4.5	154@2000	125	84	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM

+Annex