

## PROJECT DESCRIPTION

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### 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)<sup>1</sup> 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.

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<sup>1</sup> 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 BNSF 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 Pittsburgh 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 Pittsburgh 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.

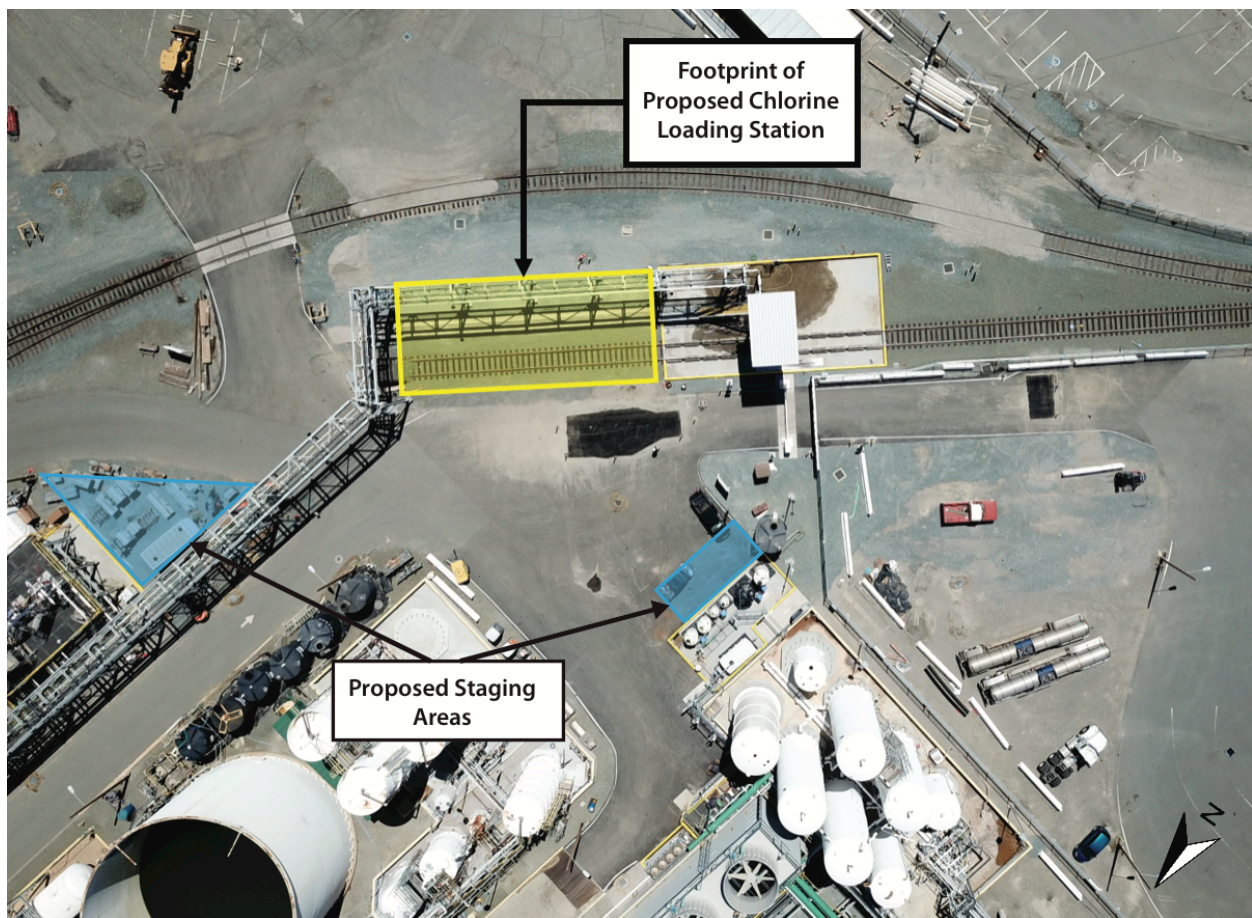
There would be some grading associated with the installation of a new cement slab constructed at the chlorine loading station. The grading and slab would be less than 1,000 sq. ft. During the grading operations, a qualified archaeological monitor would be present to ensure that no Native American artifacts 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

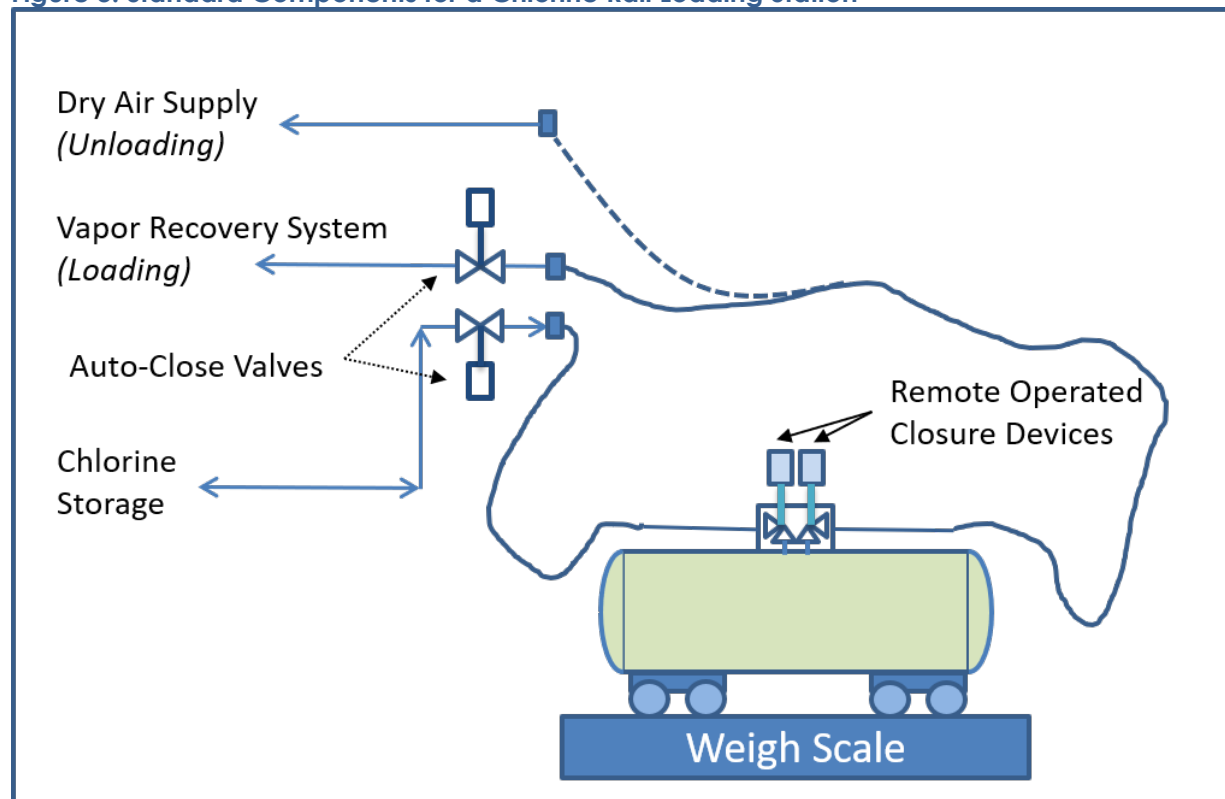
vessels without having to import a chlorine railcar from offsite to facilitate startup of the plant as would be required after such maintenance activities.

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 Pittsburgh 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 Pittsburgh. 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.