Appendix A

Air Quality and Greenhouse Gas Emissions Report

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.

PORT OF REDWOOD CITY READY-MIX CONCRETE PLANT PROJECT

AIR AND GREENHOUSE GAS EMISSIONS STUDY

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COMPASS LAND GROUP

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1.0 PURPOSE AND SCOPE

Compass Land Group ("Compass") has prepared this Air and Greenhouse Gas Emissions Study ("Study") in support of the CEMEX Construction Materials Pacific, LLC. ("CEMEX") Port of Redwood City Ready-Mix Concrete Plant Project in San Mateo County, California ("Project"). This Study evaluates the potential air quality and greenhouse gas ("GHG") emissions from the proposed Project, as well as from existing operations at the CEMEX San Carlos ready-mix facility (i.e., baseline) that would be replaced by the Project. These emissions are compared to determine the net changes in emissions anticipated from the Project. Net emission changes from the Project are then compared against significance thresholds adopted by the Bay Area Air Quality Management District ("BAAQMD"). This Study also evaluates the potential odor impacts of the Project. This Study is intended to support the lead agency's evaluation of air quality and GHG impacts pursuant to the California Environmental Quality Act ("CEQA").

The sections that follow provide a description of the Project, methods for air quality and GHG emissions evaluation, BAAQMD significance thresholds, and emissions estimates for use in Project CEQA review.

2.0 PROJECT DESCRIPTION

2.1 Project Overview

CEMEX proposes to develop a ready-mix concrete batch plant on a ±5-acre portion of its existing aggregate and cement facilities at the Port of Redwood City. The Project site is located at 876 Seaport Boulevard on APNs 054-300-480 and would be accessible from the existing paved CEMEX cement terminal facility entrance on Frontage Road. Existing uses at the site include aggregate and cement marine terminals, aggregate processing and stockpiling, aggregate and cement material load-out and sales, construction materials recycling, and associated heavy truck traffic. The addition of a batch plant is an allowed use at the site subject to approval of a building permit by the Board of Port Commissioners, as defined under Sections 47 through 50a of the City of Redwood City Charter.

The Project would include a compact 100 foot tall ready-mix concrete batch plant tower with a two-lane drive-thru truck feed system that supports both wet and dry mixes. The plant would be fed from aggregate stockpiles using a front-end loader and conveyor system. Ancillary uses and accessory structures would include an employee office, maintenance shop building, wash rack with concrete-lined water containment, parking areas, and miscellaneous storage containers.

The Project proposes a concrete production limit of 7,000 cubic yards ("CY") per day and 250,000 CY per year. Typical hours of operation would be Monday through Saturday from 6 a.m. to 6 p.m., with occasional operations outside these hours to meet customer and project demands.

Upon Project approval, CEMEX would decommission its existing ready-mix concrete facility at 1026 Bransten Road in San Carlos, California. CEMEX operates two plants at the San Carlos facility, both of which would be replaced by the new, modernized plant at the Port of Redwood City ("Port"). The Project would eliminate the need to transport raw materials, including aggregates and cement, from the Port to the San Carlos facility for concrete production. The consolidation of production capabilities at the Port would reduce vehicle miles traveled ("VMT") and the associated environmental impacts as compared to existing conditions.

2.2 Project Construction Schedule

An estimated time schedule for Project construction activity is provided in Table 1, Anticipated Construction Schedule and Duration. This anticipated sequence and schedule is dependent upon securing lead agency and other regulatory entitlements, as well as vendor/contractor performance and availability. Per CEMEX, the construction activities are generally expected to occur in sequence without overlap.

TABLE 1
ANTICIPATED CONSTRUCTION SCHEDULE AND DURATION

Area	Timing	Duration
1. Demolition		
a. Remove existing equipment	May 2021	~1 week
2. Grading		
a. Remedial grading (2-4 feet) for compaction	May 2021	~2 weeks
3. Building Construction		
a. Install foundation piles (plant and shop)	May 2021	~1 week
b. Install plant and ancillary features	May-Aug 2021	~12 weeks
c. Install shop building	Aug-Oct 2021	~8 weeks

3.0 METHODS AND ASSUMPTIONS

This Study evaluates the potential air quality and GHG emissions from the proposed Project, as well as from existing operations at the CEMEX San Carlos ready-mix facility (i.e., baseline) that would be replaced by the proposed Project. These emissions are compared to determine the net changes in emissions anticipated from the Project. The net emissions changes from the Project are then compared against significance thresholds adopted by BAAQMD.

The CEQA baseline used for purposes of this Study is existing conditions at the San Carlos facility as defined by a 3-year averaging period of production between 2017 and 2019. Existing San Carlos facility activities include ready-mix concrete production, off-road equipment use, and other mobile sources. To establish the baseline emissions levels for Project evaluation, Compass estimated air and GHG emissions from existing activities at the San Carlos facility using U.S. Environmental Protection Agency ("EPA") AP-42 emission factors and BAAQMD regulation emissions standards for processing plant related emissions, and the California Air Resources

Board's 2021 EMFAC[1] model for mobile source emissions. Mobile source emissions are evaluated using estimates of VMT based on the average annual production and employee workforce at San Carlos for the three year period 2017-2019. Trip distances for raw material imports to San Carlos and finish product deliveries from San Carlos were provided by CEMEX. For raw material imports the actual average trip distance of 5 miles from the Port to San Carlos was used. For finish product deliveries an average trip distance of 7.5 miles was used, which is higher than the EMFAC model estimate of 6 miles for a haul truck. On-road mobile source emissions were then estimated by multiplying the VMT estimates for each trip type by the applicable EMFAC emissions factor. For greenhouse gas emissions estimates, Compass used emission factors developed for Peninsula Green Energy.

To quantify emissions for Project construction activities, Compass used the latest version of the California Emissions Estimator Model ("CalEEMod") version 2016.3.2.[2] Project construction activities are modeled as independent phases in CalEEMod. CalEEMod is a widely accepted modeling tool maintained by the California Air Pollution Control Officers Association ("CAPCOA"). CalEEMod incorporates state and locally approved emission factors and methodologies for estimating both the daily maximum and annual average emissions levels for criteria pollutants and GHG emissions associated with land development projects, including industrial activities.

The following model selection parameters were used:

1. ***Project Location:*** Location is set to the County level for San Mateo County. This sets windspeed and precipitation frequency assumptions for modeling. The Project site is located within the jurisdiction of the BAAQMD and part of the San Francisco Bay Area Air Basin ("SFBAAB"). The SFBAAB is currently designated as a nonattainment area for State and National ozone standards and national particulate matter ambient air quality standards.

2. ***Lot Acreage:*** The Project boundary encompasses ±5 acres. The model includes a more refined acreage assumption for graded areas as applicable to each construction phase.

3. ***Urbanization:*** The land use setting for purposes of modeling is designated as urban given the adjacent developments in the unincorporated County, City of Redwood City, and surrounding communities.

4. ***Climate Zone:*** The site is located within Climate Zone 5 based on the site's zip code.

5. ***Mitigated Construction:*** The "mitigated construction" results (as reported in the modeling outputs) assume that disturbed surfaces would be wetted at least two times per day for dust control. In addition, a speed limit of 15 miles per hour is assumed for

[1] EMFAC is short for "EMission FACtor."

[2] The BAAQMD CEQA Guidelines references the use of the URBEMIS model to estimate emissions. However, the URBEMIS model has been discontinued. Based on experience producing air studies in BAAQMD jurisdiction, Compass believes CalEEMod is an appropriate substitute modeling tool.

unpaved roads based on the basic construction mitigation measures recommended for all projects in the BAAQMD 2017 CEQA Guidelines (Table 8-2). On-model mitigation also assumes that all Caterpillar backhoes, dozers, excavators, loaders, motor graders, and scrapers will have Tier 3 or cleaner engines based on CEMEX's anticipated construction fleet. No other mitigations have been modeled or credited in CalEEMod. Based on the foregoing, the "mitigated construction" results have been presented in the emissions summary below.

To quantify emissions for Project operational (post construction) activities, Compass estimated air and GHG emissions using the EPA AP-42 emission factors and BAAQMD regulation emissions standards for processing plant related emissions, and the CARB 2021 EMFAC model for mobile source emissions. Mobile source emissions are evaluated using estimates of VMT based on the proposed annual production and anticipated employee workforce at the Port. For raw materials imports a conservative average trip distance of 1 mile from CEMEX's existing facilities at the Port to the proposed plant was used. For finish product deliveries an average trip distance of 7.5 miles was used, which is higher than the EMFAC model estimate of 6 miles for a haul truck. On-road mobile source emissions were then estimated by multiplying the VMT estimates for each trip type by the applicable EMFAC emissions factor. For greenhouse gas emissions estimates, Compass used emission factors developed for Peninsula Green Energy. The Project emissions evaluation accounts for plant emissions, vehicle traffic, indirect GHG emissions from electricity use, off-road heavy equipment, and on-road mobile source emissions.

For evaluation of local carbon monoxide ("CO") emissions, Compass applied BAAQMD's preliminary screening methodology, which provides a conservative indication of whether the implementation of the proposed Project would result in CO emissions that exceed the applicable thresholds of significance described in Section 4, below. BAAQMD does not publish a threshold of significance for construction-related CO. Construction activities are not usually a significant source of CO as most construction equipment is diesel-powered and produces much lower CO emissions than gasoline combustion engines. Compass also presents data from the closest BAAQMD-managed air monitoring station in Redwood City to show that the Project's CO contribution from operational activity would be de-minimis compared to the sum of all the sources that are monitored by that station. The Redwood City air monitoring station data is also well below the National Ambient Air Quality Standards ("NAAQS") and California Ambient Air Quality Standards ("CAAQS").

The Project would not involve odor-generating sources aside from direct exhaust emissions associated with operation of construction and mobile equipment that generally dissipate rapidly into the atmosphere as distance increase from the source. For consideration of odors, BAAQMD presents screening distances for a variety of land uses that typically generate odors, such as landfills, composting facilities, rendering plants, and asphalt concrete batch plants. The Project activities do not propose or fall under any of the land use categories for which screening distances are provided for odors. Compass also obtained compliance history from BAAQMD for CEMEX's existing San Carlos facility as well as aggregate and cement facilities located on the Port to show that these larger-scale permitted uses (even though not part of the Project) has not resulted in a significant number of odor complaints as compared to BAAQMD thresholds of significance that are discussed in Section 4 below. CEMEX has received zero odor complaints at San Carlos or the Port in the last three years.

Detailed estimating methods and assumptions are provided in this Study's appendices.

4.0 SIGNIFICANCE CRITERIA

The BAAQMD has established significance thresholds to assist Lead Agencies in determining whether a proposed project may have a significant air quality impact. These thresholds, contained within the district's *California Environmental Quality Act Air Quality Guidelines* (May 2017 Revision) ("BAAQMD CEQA Guidelines") are shown in Table 2, below.

TABLE 2
BAAQMD PROJECT LEVEL THRESHOLDS OF SIGNIFICANCE[1]
(ADAPTED FROM TABLE 2-1, BAAQMD CEQA GUIDELINES MAY 2017)

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lb/day)**	**Average Daily Emissions (lb/day)**	**Maximum Annual Emissions (tpy)**
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.00 ppm (1-hour average)	
GHGs – Projects other than Stationary Sources	None[2]	Compliance with Qualified GHG Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents + employees)	
GHGs – Stationary Sources	None[2]	10,000 MT/yr	
Odors	None	5 confirmed complaints per year averaged over three years	

Notes:

1. Project level thresholds of significance adapted from Tables 2-1 and 2-2 of the BAAQMD CEQA Guidelines (May 2017). *http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines (retrieved December 29, 2020).*
2. BAAQMD does not have an adopted threshold for construction-related GHG emissions. However, the Lead Agency should quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals, as required by the Public Resources Code, Section 21082.2. The Lead Agency is

encouraged to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable. (BAAQMD CEQA Guidelines at p. 2-6).

3. Definitions: CEQA = California Environmental Quality Act; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; GHGs = greenhouse gases; lb/day = pounds per day; MT = metric tons; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppm = parts per million; ROG = reactive organic gases; SO_2 = sulfur dioxide; SP = service population; TACs = toxic air contaminants; TBP = toxic best practices; tpy = tons per year.

5.0 RESULTS AND RECOMMENDED MITIGATION

5.1 Criteria Pollutant Emissions of ROG, NOx, PM10, and PM2.5

The modeling results indicate that all Project construction and operational criteria pollutant emissions (net of baseline) are below applicable BAAQMD thresholds of significance for CEQA. The Project and San Carlos baseline modeling results are summarized in Appendix A, Daily and Annual Emissions Summary. Based on these results, the Project's potential criteria pollutant impacts for construction and operations would be less-than-significant. The following sections separately address and summarize the Project's construction and operational emission analyses.

Construction Emissions

For Project construction, Table 3 presents the criteria air pollutants and ozone precursor emissions analysis relevant to the BAAQMD thresholds for construction. Since construction would be phased, the highest value emissions estimate for each pollutant is compared against the BAAQMD significance threshold for that pollutant. A complete report of Project construction modeling inputs and emissions is included as Appendices B-1 and B-2.

TABLE 3
CONSTRUCTION CRITERIA AIR POLLUTANTS AND PRECURSOR EMISSIONS ANALYSIS (LB/DAY)

Construction Phase	ROG	NOx	PM10 (Exhaust)	PM2.5 (Exhaust)
1. Remove existing equipment	2.2	24.3	1.0	1.0
2. Remedial grading for compaction	2.6	34.7	1.5	1.5
3. Install foundation piles	2.4	24. 8	1.2	1.1
4. Install plant and ancillary features	2.8	30.2	1.3	1.3
5. Install shop building	1.6	16.1	0.7	0.7
Max Emissions Phase of Construction	**2.8**	**34.7**	**1.5**	**1.5**
BAAQMD CEQA Significance Thresholds	54	54	82	54
Exceeds Threshold (Yes/No)?	**No**	**No**	**No**	**No**

Notes:

1. BAAQMD thresholds from Table 1, above.
2. See Appendices A-1 and B-2 for daily results for criteria pollutants that do not have BAAQMD adopted thresholds (e.g,. CO, SO2, Fugitive PM_{10}, and Fugitive $PM_{2.5}$).
3. The Applicant will be required to implement BAAQMD's best management practices for construction-related fugitive dust emission controls.

CEMEX's original application to the Port included a request to install a new paved access and wheel wash system on APN 054-300-380. On August 30, 2021, CEMEX submitted an application amendment to eliminate the new proposed paved access and wheel wash, and instead proposes to utilize its existing paved cement terminal facility entrance off of Frontage Road. Accordingly, the construction-related emissions for installation of new pavement and the wheel wash have been removed from the emissions analysis presented in Table 3, above. The CalEEMod model report (found in Appendix B) still includes those construction-related emissions for informational purposes, but those results have been excluded from the emissions summaries found in Appendix A-1 and have no bearing on the conclusions of this analysis.

Operational Emissions

For Project operations (post construction), Tables 4 and 5 present the *daily* and *annual* criteria air pollutants and ozone precursor emissions analysis, respectively. A complete report of Project operational modeling inputs and emissions is included as Appendices B-3 and B-4. These emissions are also summarized in more detail in Appendices A-2 and A-3. The emissions analysis accounts for the decommissioning of the existing San Carlos facility as baseline, since the proposed Project will replace the San Carlos facility (located in proximity and in the same air basin) entirely.

TABLE 4
DAILY OPERATIONAL CRITERIA AIR POLLUTANTS AND PRECURSOR EMISSIONS ANALYSIS (LB/DAY)

Emissions Category	ROG	NOx	PM10	PM2.5
Proposed Project				
Ready Mix Concrete Plant Operations	1.2	14.4	87.0	19.8
On-Road Mobile Source Emissions	1.7	59.7	0.5	0.5
Subtotal: Project Emissions	*2.9*	*74.1*	*87.5*	*20.3*
CEQA Baseline – San Carlos Facility				
Ready Mix Concrete Plant Operations	2.2	26.9	55.7	13.0
On-Road Mobile Source Emissions	1.7	58.2	0.5	0.5
Subtotal: Baseline Emissions	*3.9*	*85.1*	*56.2*	*13.5*
PROJECT NET CHANGE	**-1.0**	**-11.0**	**+31.3**	**+6.8**
BAAQMD CEQA Significance Thresholds	54	54	82	54
Exceeds Threshold (Yes/No)?	**No**	**No**	**No**	**No**

Notes:

1. BAAQMD thresholds from Table 1, above.
2. See Appendices A-2, B-3, B-4, C-2, and C-3 for daily results for criteria pollutants that do not have BAAQMD adopted thresholds (e.g., CO, SO2, Fugitive PM).
3. Minor differences in totals due to rounding.
4. The Applicant will be required to implement BAAQMD's best management practices for construction-related fugitive dust emission controls.

TABLE 5
ANNUAL OPERATIONAL CRITERIA AIR POLLUTANTS AND PRECURSOR EMISSIONS ANALYSIS (TONS/YEAR)

Emissions Category	ROG	NOx	PM10	PM2.5
Proposed Project				
Ready Mix Concrete Plant Operations	0.2	2.2	2.7	0.7
On-Road Mobile Source Emissions	0.1	1.8	0.0	0.0
Subtotal: Project Emissions	*0.3*	*4.0*	*2.7*	*0.7*
CEQA Baseline – San Carlos Facility				
Ready Mix Concrete Plant Operations	0.3	4.0	0.9	0.3
On-Road Mobile Source Emissions	0.0	0.8	0.0	0.0
Subtotal: Baseline Emissions	*0.3*	*4.8*	*0.9*	*0.3*
PROJECT NET CHANGE	**0**	**-0.8**	**+0.9**	**+0.4**
BAAQMD CEQA Significance Thresholds	10	10	15	10
Exceeds Threshold (Yes/No)?	**No**	**No**	**No**	**No**

Notes:
1. BAAQMD thresholds from Table 1, above.
2. See Appendices A-2, B-3, B-4, C-2, and C-3 for annual results for criteria pollutants that do not have BAAQMD adopted thresholds (e.g., CO, SO2, Fugitive PM).
3. Minor differences in totals due to rounding.

The Project would achieve a substantial net reduction in NOx emissions because it would consolidate the heavy equipment operations necessary to run two separate plants at the existing San Carlos facility into a single plant at the Port. The consolidation of production capabilities at the Port would also reduce vehicle miles traveled ("VMT") and the associated air quality and GHG emissions by eliminating the need to transport raw materials, including aggregates and cement, from the Port to the San Carlos facility for concrete production. The Project's net increase in particulate matter emissions is due to the requested maximum production (of 250,000 CY per year) being higher than the 3-year average existing conditions baseline for the San Carlos facility.

5.2 Carbon Monoxide (CO) Hotspots

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuel. The largest source of CO is vehicle engines, and the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Consequently, violations of the CO standard are generally limited to major intersections during peak-hour traffic conditions. Exposure of humans to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, fatigue, impaired central nervous system function, and angina (chest pain) in persons with serious heart disease. Very high concentrations of CO can be fatal. However, high concentrations are not expected as a result of the Project.

BAAQMD's preliminary screening methodology indicates that the Project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

1. *Project is consistent with an applicable congestion management program established by the County congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.*
2. *The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.*
3. *The project traffic 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).*

Regarding screening criteria number 1, the City/County Association of Governments of San Mateo County ("C/CAG") serves as the congestion management agency for San Mateo County, and develops and implements the applicable Congestion Management Program ("CMP"). The CMP must be updated every other year. C/CAG updated the CMP most recently in 2019.[3] The purpose of the CMP is to identify strategies to respond to future transportation needs, develop procedures to alleviate and control congestion, and promote countywide solutions. The 2019 CMP, which is developed to be consistent with the Metropolitan Transportation Commission's Plan Bay Area 2040, provides updated program information and performance monitoring results for the CMP roadway system. (C/CAG 2020).

The CMP roadway system comprises of 53 roadway segments and 16 intersections. The roadway network includes all the State highways within San Mateo County in addition to Mission Street, Geneva Avenue, and Bayshore Boulevard. The intersections are located mostly along El Camino Real (State Route 82). C/CAG's 2019 monitoring results indicate that certain segments of US-101 near the Project site exceeded its Level of Service ("LOS") traffic congestion standards before the reduction of interregional trips (i.e., trips originating from outside the County). The closest of these segments to the Project site is US-101 between SR-92 and Whipple Avenue, located between the Project site and the existing San Carlos facility. Regarding intersections, all intersection locations are in compliance with their LOS standard.

Chapter 6 of the CMP includes a program to analyze the impacts of land use decisions made by local jurisdictions on these regional transportation systems. For individual large development analysis, the CMP requires local jurisdictions to notify C/CAG at the beginning of the CEQA process of all development applications or land use policy changes (i.e., General Plan amendments) that are expected to generate a net (subtracting existing uses that are currently active) 100 or more peak hour trips on the CMP network. The peak period includes 6:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m. For projects that exceed 100 peak hour trips, local jurisdictions must ensure that the developer and/or tenants will mitigate all the new peak hour trips generated by the project by selecting from a variety of options. One such option is to reduce the scope of the project so that it will generate less than 100 peak hour trips.

[3] A copy of the 2019 Congestion Management Program prepared by C/CAG is available here: https://ccag.ca.gov/programs/transportation-programs/congestion-management/

Although the Project is located in proximity to roadways of regional significance that are designated in the CMP, the Project would not conflict with the CMP. First, the Project would not generate 100 peak hour trips. On its own, the proposed Project would generate up to 93 average daily round trips (186 one-way trips), distributed roughly evenly across the typical operating hours of 6 a.m. to 6 p.m., before subtracting the existing San Carlos facility trips that would be eliminated by the Project.[4] This would amount to only approximately 16 trips per hour, on average, at maximum production. To put the Project's trip estimates into perspective, as of 2019 Caltrans' look-ahead estimates that US-101 at Whipple Avenue (between the Port and San Carlos facility), which is the closest of the nearby highway segments exceeding the CMP's LOS standard, will experience 220,000 annual average daily traffic ("AADT") with 15,800 peak hour trips.[5] Second, the Project would actually reduce VMT (and associated congestion) compared to existing conditions for each cubic yard of concrete production by eliminating the need to transport raw materials (aggregates and cement) from the Port to the San Carlos facility.

Regarding screening criteria 2 and 3, the project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per *hour* (screening criteria number 2), or to more than 24,000 vehicles *per hour* where vertical and/or horizontal mixing is substantially limited (screening criteria number 3). With the decommissioning of the existing San Carlos facility, the Project is actually expected to achieve an overall reduction in traffic volumes. Based on BAAQMD's screening criteria 1-3, the Project's potential CO impacts would be less-than-significant.

In addition, Compass' modeling results summarized in Appendix A indicate that Project CO emissions would peak at approximately 14.54 pounds per day and 1.39 tons per year. After subtracting the existing San Carlos facility baseline, the Project's net change in CO emissions would be a beneficial *reduction* of approximately 5.45 pounds per day and 0.73 tons per year. This reduction is primarily owing to a reduction in the amount of heavy equipment needed to operate the new plant at the Port compared to the two existing plants at the existing San Carlos facility. However, these values represent mass emissions estimates and not an emissions concentration, which is the metric used in BAAQMD's operational thresholds.

As documented by BAAQMD, CO concentrations in the Project area currently meet all NAAQS and CAAQS and the Bay Area Air Basin as a whole is in attainment status (meaning meeting standards) for CO.[6] State standards, which have been adopted as part of BAAQMD's operational thresholds of significance, are more restrictive than the NAAQS at 9 parts per million (ppm) for the maximum 8-hour concentration and 20 ppm for the maximum 1-hour concentration. CO measurements taken at the Redwood City air monitoring station since January 2020 indicate a

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[4] Trip estimate is based on the maximum requested annual production of 250,000 CY of concrete over an anticipated 299 days of operation per year, and 9 CY per truck load.

[5] Caltrans' traffic census data (with look ahead projections) for US-101 is available here: https://dot.ca.gov/programs/traffic-operations/census

[6] A summary of Bay Area Air Basin attainment status published by BAAQMD is available here: http://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status

maximum CO concentration of 1.5 ppm (8-hour average) and 2.1 ppm (1-hour average) occurring in September 2020.[7] To put these concentrations into perspective, in 2019 BAAQMD estimated that US-101 adjacent to the Redwood City air monitoring station that contributes to these concentrations generated 222,600 AADT based on 2017 actual traffic counts.[8] The Project would generate up to approximately 980 daily vehicle trips including employees, trucks and maintenance vehicles (or 0.4% of the traffic volume at the air monitoring station), without even accounting for the elimination of trips from the San Carlos facility.

The proposed Project's impacts relating to CO would be less-than-significant based on BAAQMD CO screening criteria and Redwood City air monitoring station data.

5.3 Greenhouse Gas Emissions

The following sections separately address and summarize the Project's construction and operational GHG emission analyses.

Construction Emissions

BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. In the absence of adopted construction thresholds, the BAAQMD CEQA Guidelines state that the lead agency should quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals.[9] BAAQMD encourages lead agencies to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable. Sources of construction-related GHGs are primarily associated with exhaust; therefore, construction best management practices should focus on direct and indirect exhaust emissions reductions. Best management practices may include, but are not limited to: using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet; using local building materials of at least 10 percent; and recycling or reusing at least 50 percent of construction waste or demolition materials.

In the absence of a BAAQMD-adopted construction GHG threshold, Compass compared Project emissions to BAAQMD's operational threshold as a reasonable proxy for furthering AB 32 GHG reduction goals. BAAQMD's operational thresholds are used to determine significance of long-term operation of land uses and developments, often with far greater GHG emissions potentials than that of the proposed Project.

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[7] The Redwood City air monitoring station (ID 06-081-1001) is located at approximate GPS coordinates 37.482934, -122.203500, at 897 Barron Ave, Redwood City, CA 94063. Station data is available here: https://www.baaqmd.gov/about-air-quality/current-air-quality/air-monitoring-data/#/air-quality-home

[8] Source: 2019 Air Monitoring Network Plan (BAAQMD, Revised July 1, 2019).

[9] AB 32, the California Global Warming Solutions Act of 2006, requires California to reduce its GHG emissions to 1990 levels by 2020 — a reduction of approximately 15 percent below emissions expected under a "business as usual" scenario.

The modeling results indicate that Project construction-related GHG emissions are below applicable BAAQMD operational thresholds of significance for CEQA. Table 6 presents the GHG emissions analysis. A complete report of Project construction-related modeling inputs and emissions is included as Appendices B-1 and B-2.

TABLE 6
GREENHOUSE GAS EMISSIONS ANALYSIS (MT/YEAR)[2]
PROJECT CONSTRUCTION

Emissions Category	**CO_2e**
Project Construction Emissions	249.5
BAAQMD CEQA Significance Threshold[3]	1,100
Exceeds Threshold (Yes/No)?	**No**

Notes:
1. MT= metric tons. CO_2e = carbon dioxide equivalent.
2. See Appendix B-2 at Annual Results, for detail. The reported construction-related GHG emissions exclude installation of new pavement and the wheel wash, since those items have been eliminated from the proposed project.
3. BAAQMD thresholds from Table 2, above, for operational emissions.

Given that modeled construction GHG emissions are at only about 23 percent of the operational threshold, the Project is not expected to generate a cumulatively considerable contribution of GHG emissions. Therefore, the Project's potential GHG impacts associated with construction would be less-than-significant.

Operational Emissions

For Project operations, the modeling results indicate that Project GHG emissions are below applicable BAAQMD operational thresholds of significance for CEQA. Therefore, the Project's potential GHG impacts associated with operations would be less-than-significant. Table 7 presents the GHG emissions analysis. A complete report of Project modeling inputs and emissions is included as Appendix B. A complete report of baseline modeling inputs and emissions is included as Appendix C.

TABLE 7
GREENHOUSE GAS EMISSIONS ANALYSIS (MT/YEAR)[2]
PROJECT OPERATIONS

Emissions Category	CO_2e
Project Emissions	1,025.2
Baseline Emissions	748.1
Project Net Change	**277.1**
BAAQMD CEQA Significance Threshold[3]	10,000
Exceeds Threshold (Yes/No)?	**No**

Notes:
1. MT= metric tons. CO_2e = carbon dioxide equivalent.
2. See Appendix B for detail.
3. BAAQMD thresholds from Table 2, above, for operational emissions.

GHG Mitigations

Compass recognizes that air quality and GHG emissions models are imperfect (like other models) as they are based on a set of assumptions used at the time of modeling. These assumptions (e.g., the duration of a construction activity or the vehicle miles traveled by haulers, contractors and vendors) are subject to change and actual emissions at the time of construction could be more or less than what is modeled. For these reasons, Compass offers the following mitigation measures (some of which are adapted from Tables 8-2 and 8-3 of the BAAQMD CEQA Guidelines) that can be considered if needed to further minimize GHG emissions associated with construction activity or Project operations:

1. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. [Measure applies to idling times for all equipment other than diesel-powered equipment].

2. Minimize the idling time of diesel-powered construction equipment to two minutes. [Measure applies to idling times for diesel-powered equipment only].

3. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.

4. Use at least 10 percent local building materials in Project construction (e.g., construction aggregates, concrete pipe).

5. Recycle or reuse at least 50 percent of Project construction waste or demolition materials, if feasible.

6. Perform on-site material hauling with trucks equipped with on-road engines (if less emissive of GHG emissions than off-road engines), if available.

7. Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power, as feasible for each construction site.

5.4 Odors

Project construction and operational activities are not expected to introduce significant sources of odors. The Project does not involve odor-generating sources aside from direct exhaust emissions associated with operation of construction, off-road and mobile equipment that generally dissipate rapidly into the atmosphere as distance increases from the source. BAAQMD has not adopted construction-related thresholds of significance for odors. BAAQMD's operational threshold of significance is five confirmed odor complaints per year averaged over three years.

The BAAQMD CEQA Guidelines provide screening distance criteria for a variety of land uses that have the potential to generate odors, such as landfills, composting facilities, rendering plants, and asphalt batch plants. The Project does not involve installation or operation of any of the land use categories that might be expected to generate odors. Compass obtained compliance history from BAAQMD for the existing San Carlos facility as well as CEMEX's aggregate and cement facilities at the Port to compare it against BAAQMD's operational threshold. For the period January 1, 2016 to January 7, 2021, BAAQMD has recorded zero odor complaints for CEMEX's existing San Carlos or Port facilities.

The Project's potential odor impacts would be less-than-significant based on the nature of the Project, BAAQMD's odor screening criteria, and BAAQMD's record of zero complaints for CEMEX's existing facilities at San Carlos and the Port.

Appendix A:
Daily and Annual Emissions Summary

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

A-1. Daily Construction Emissions Summary (lbs/day)

Activity	ROG[1]	NOx	PM10[2] (exhaust)	PM2.5[2] (exhaust)	CO	SOx	CO_2e[3]
PROPOSED PROJECT							
Construction Emissions (App. B-2)							
1. Demolition: Remove existing equipment	2.18	24.38	1.02	0.98	23.05	0.05	4,994.26
2. Grading: Remedial grading for compaction	2.64	34.71	1.52	1.47	36.60	0.07	6,534.22
3. Building Construction: Install foundation piles	2.36	24.78	1.21	1.15	24.49	0.05	4,661.98
4. Building Construction: Install plant and ancillary features	2.78	30.24	1.32	1.27	28.76	0.06	5,379.54
5. Building Construction: Install shop building	1.60	16.09	0.71	0.67	15.50	0.04	2,928.70
6. Paving: Pave site entry/exit	1.19	14.84	0.52	0.49	13.46	0.03	3458.02
7. Site Preparation: Install wheel wash	3.30	33.44	1.62	1.54	22.85	0.04	4,197.63
- new entrance and wheel wash no longer proposed; items 6 and 7 excluded from this summary total and report analysis							
Max Daily Project Emissions - Phased Construction (lbs/day)	**2.78**	**34.71**	**1.52**	**1.47**	**36.60**	**0.07**	**6534.22**
BAAQMD CEQA Significance Thresholds							
Threshold (lbs/day)	54	54	82	54	N/A[4]	N/A[5]	N/A[6]
Exceeds Threshold?	**No**	**No**	**No**	**No**	**N/A**	**N/A**	**N/A**

Notes:
1. VOC results reported as ROG for summary table where applicable.
2. PM emissions represent controlled (or abated) emissions, where applicable. Construction PM thresholds are for exhaust only.
3. Greenhouse gas (CO2e) emissions are only reported as annual emissions in Metric Tons per year.
4. BAAQMD has no construction threshold for CO emissions.
5. BAAQMD has no published CEQA threshold for SOx emissions.
6. BAAQMD has no published construction threshold for CO_2e.

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

A-2. Daily Operations Emissions Summary (lbs/day)

Activity		**ROG[1]**	**NOx**	**PM10[2]**	**PM2.5[2]**	**CO**	**SOx**	**CO_2e[3]**
PROPOSED PROJECT								
Ready Mix Concrete Plant Operations (App. B-3)								
1. Plant Emissions		--	--	60.70	12.97	--	--	--
2. Vehicle Traffic		--	--	25.77	6.32	--	--	--
3. GHG Emissions from Electricity Use (Indirect)[3]		--	--	--	--	--	--	--
4. Off-Road Heavy Equipment		1.12	13.58	0.53	0.49	6.69	0.01	--
5. Vehicle Idling		0.06	0.87	0.00	0.00	0.74	--	--
	Subtotal	1.18	14.44	87.00	19.79	7.42	0.01	--
On-Road Mobile Source Emissions (App. B-4)		1.73	59.70	0.48	0.46	7.16	--	--
	Subtotal	1.73	59.70	0.48	0.46	7.16	--	--
Project Emissions (lbs/day)		**2.90**	**74.14**	**87.49**	**20.25**	**14.58**	**0.01**	**--**
CEQA BASELINE - EXISTING SAN CARLOS FACILITY								
Ready Mix Concrete Plant Operations (App. C-2)								
1. Plant Emissions		--	--	44.30	9.52	--	--	--
2. Vehicle Traffic		--	--	10.43	2.56	--	--	--
3. GHG Emissions from Electricity Use (Indirect)[3]		--	--	--	--	--	--	--
4. Off-Road Heavy Equipment		2.16	26.23	1.01	0.93	12.57	0.03	--
5. Vehicle Idling		0.04	0.63	0.00	0.00	0.54	--	--
	Subtotal	2.21	26.87	55.74	13.01	13.10	0.03	--
On-Road Mobile Source Emissions (App. C-3)		1.68	58.17	0.47	0.45	6.93	--	--
	Subtotal	1.68	58.17	0.47	0.45	6.93	--	--
Baseline Emissions (lbs/day)		**3.89**	**85.04**	**56.21**	**13.46**	**20.04**	**0.03**	**--**
PROJECT NET CHANGE (lbs/day)		**-0.99**	**-10.90**	**31.28**	**6.79**	**-5.45**	**-0.01**	**--**
BAAQMD CEQA Significance Thresholds								
Threshold (lbs/day)		54	54	82	54	N/A[4]	N/A[5]	N/A[6]
Exceeds Threshold?		**No**	**No**	**No**	**No**	**N/A**	**N/A**	**N/A**

Notes:
1. VOC results reported as ROG for summary table where applicable.
2. PM emissions represent controlled (or abated) emissions, where applicable.
3. Greenhouse gas (CO2e) emissions are only reported as annual emissions in Metric Tons per year. See Table A-2.
4. BAAQMD threshold for Local CO is expressed as a concentration: 9.0 ppm (8-hour average), 20.00 ppm (1-hour average). Not directly comparable to a lb/day emission estimate.
5. BAAQMD has no published CEQA threshold for SOx emissions.
6. BAAQMD has no published daily CEQA threshold for CO_2e.

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

A-3. Annual Operations Emissions Summary (tons/year)

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
PROPOSED PROJECT								
Ready Mix Concrete Plant Operations (App. B-3)								
1. Plant Emissions		--	--	1.85	0.43	--	--	--
2. Vehicle Traffic		--	--	0.77	0.19	--	--	--
3. GHG Emissions from Electricity Use (Indirect)		--	--	--	--	--	--	5.78
4. Off-Road Heavy Equipment		0.17	2.03	0.08	0.07	1.00	0.00	191.79
5. Vehicle Idling		0.01	0.13	0.00	0.00	0.11	--	22.22
	Subtotal	0.18	2.16	2.69	0.69	1.11	0.00	219.79
On-Road Mobile Source Emissions (App. B-4)		0.05	1.78	0.01	0.01	0.28	--	805.39
	Subtotal	0.05	1.78	0.01	0.01	0.28	--	805.39
Project Emissions (tons/year)		**0.23**	**3.94**	**2.71**	**0.70**	**1.39**	**0.00**	**1,025.18**
CEQA BASELINE - EXISTING SAN CARLOS FACILITY								
Ready Mix Concrete Plant Operations (App. C-2)								
1. Plant Emissions		--	--	0.63	0.17	--	--	--
2. Vehicle Traffic		--	--	0.14	0.03	--	--	--
3. GHG Emissions from Electricity Use (Indirect)		--	--	--	--	--	--	1.89
4. Off-Road Heavy Equipment		0.32	3.92	0.15	0.14	1.88	0.00	366.69
5. Vehicle Idling		0.01	0.09	0.00	0.00	0.08	--	16.19
	Subtotal	0.33	4.02	0.93	0.34	1.96	0.00	384.77
On-Road Mobile Source Emissions (App. C-3)		0.02	0.78	0.01	0.01	0.16	--	363.35
	Subtotal	0.02	0.78	0.01	0.01	0.16	--	363.35
Baseline Emissions (tons/year)		**0.35**	**4.80**	**0.93**	**0.35**	**2.12**	**0.00**	**748.11**
PROJECT NET CHANGE (tons/year)		**-0.13**	**-0.86**	**1.78**	**0.35**	**-0.73**	**0.00**	**277.07**
BAAQMD CEQA Significance Thresholds								
Threshold (tons/year)		10	10	15	10	N/A[4]	N/A[5]	10,000 MT
Exceeds Threshold?		**No**	**No**	**No**	**No**	**N/A**	**N/A**	**No**

Notes:

1. VOC results reported as ROG for summary table where applicable.
2. PM emissions represent controlled (or abated) emissions, where applicable.
3. Greenhouse gas (CO2e) emissions are reported as annual emissions in Metric Tons per year.
4. BAAQMD threshold for Local CO is expressed as a concentration: 9.0 ppm (8-hour average), 20.00 ppm (1-hour average). Not directly comparable to a tons/year emission estimate.
5. BAAQMD has no published CEQA threshold for SOx emissions.

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

A-4. Annual Operations PM Emissions Summary (tons/year)

Activity		PM10 (Exhaust)	PM10 (Fugitive)	PM10 (Total)	PM2.5 (Exhaust)	PM2.5 (Fugitive)	PM2.5 (Total)
PROPOSED PROJECT							
Ready Mix Concrete Plant Operations (App. B-3)							
1. Plant Emissions		0.00	1.85	1.85	0.00	0.43	0.43
2. Vehicle Traffic		0.00	0.77	0.77	0.00	0.19	0.19
4. Off-Road Heavy Equipment		0.08	0.00	0.08	0.07	0.00	0.07
5. Vehicle Idling		0.00	0.00	0.00	0.00	0.00	0.00
	Subtotal	0.08	2.61	2.69	0.07	0.61	0.69
On-Road Mobile Source Emissions (App. B-4)		0.01	0.00	0.01	0.01	0.00	0.01
	Subtotal	0.01	0.00	0.01	0.01	0.00	0.01
Project Emissions (tons/year)		**0.09**	**2.61**	**2.71**	**0.09**	**0.61**	**0.70**
CEQA BASELINE - EXISTING SAN CARLOS FACILITY							
Ready Mix Concrete Plant Operations (App. C-2)							
1. Plant Emissions		0.00	0.63	0.63	0.00	0.17	0.17
2. Vehicle Traffic		0.00	0.14	0.14	0.00	0.03	0.03
4. Off-Road Heavy Equipment		0.15	0.00	0.15	0.14	0.00	0.14
5. Vehicle Idling		0.00	0.00	0.00	0.00	0.00	0.00
	Subtotal	0.15	0.77	0.93	0.14	0.20	0.34
On-Road Mobile Source Emissions (App. C-3)		0.01	0.00	0.01	0.01	0.00	0.01
	Subtotal	0.01	0.00	0.01	0.01	0.00	0.01
Baseline Emissions (tons/year)		**0.16**	**0.77**	**0.93**	**0.14**	**0.20**	**0.35**
PROJECT NET CHANGE (tons/year)		**-0.06**	**1.84**	**1.78**	**-0.06**	**0.41**	**0.35**
BAAQMD CEQA Significance Thresholds							
Threshold (tons/year)		N/A	N/A	15	N/A	N/A	10
Exceeds Threshold?				**No**			**No**

Notes:
1. PM emissions represent controlled (or abated) emissions, where applicable.
2. All on-road mobile source emissions from App. B-4 assumed to be exhaust.

Appendix B:
Proposed Project Models and Inputs

Appendix B-1:
CalEEMod Modeling Assumptions for Construction

Appendix B-1
CalEEMod Modeling Assumptions for Construction
CEMEX Port of Redwood City
Ready-Mix Concrete Plant Project
January 2021

EQUIPMENT USE

See attached for equipment model and horsepower assumptions.

CALEEMOD RUN 1

Per CEMEX, Project construction would generally occur in a series of five phases over a period of approximately six months (for all civil, mechanical, and electrical), including:

1. Demolition: removal of existing equipment and supplies from the Project area
2. Grading: remedial grading of top 2-4 feet for compaction per Project geotechnical recommendations
3. Building construction: delivery/installation of ready-mix concrete plant (with office), feed hopper, conveyor, wheel wash, weir ponds, and shop
4. Paving: site entry/exit segment
5. Site Preparation: install wheel wash system

CalEEMod Construction Tabs

General: "Off-Highway Truck" (402 horsepower model) is used as proxy for water truck per CalEEMod User Guide Section 4.3.2.

1. Demolition – Remove existing equipment.
    a. Description: Remove existing equipment in Project area, including old aggregate binds, scrap parts, and utility boxes to prepare for development of plant and parking areas.
    b. Equipment: Concrete/industrial saw, Cat 330 excavator, Cat D8 dozer, Cat 966 loader, off-highway truck.
    c. Crew size: 6, including equipment operators (4) and laborers (2).
    d. Duration: 5 days.
2. Grading – Remedial grading for compaction.
    a. Description: Remedial grading of top 2-4 feet of plant site and conveyor hopper surfaces in preparation for foundation construction.
    b. Equipment: Cat 14 motor grader, Cat D8 dozer, Cat 621G scrapers (2), water truck.
    c. Crew size: 8, including equipment operators (5), foreman, grade setter, and compaction technician.
    d. Duration: 10 days.
    e. Graded acres: <2 acres.

3. Building Construction – Install foundation piles.
    a. Description: Install foundation piles up to 100 feet deep to support foundations for ready-mix concrete plant and ancillary facilities.
    b. Equipment: Crane (80-ton), boring/pile driving machine, Cat 330 excavator, welder.
    c. Crew size: 8, including equipment operators (4), foreman, laborers/welders (2), and geotechnical technician (1).
    d. Duration: 5 days, per input from Geocon.
    e. Vendor Trips: 4 per day (2 vendor visit per day) to deliver steel.
4. Building Construction – Install plant and ancillary features.
    a. Description: Install ready-mix concrete plant (with office) and ancillary features including feed hopper, conveyor assembly, weir ponds, and parking areas.
    b. Equipment: Crane (25-ton), crane (80-ton), Cat 330 excavator, forklift, generator set, Cat 966 loader, Cat 442 backhoe (2), welders (2), aerial lift.
    c. Crew size: 15, including equipment operators (8), foreman, laborers/welders (4), and electricians (2).
    d. Duration: 60 days.
    e. Vendor Trips: 10 per day (5 vendor visit per day) to deliver construction materials.
    f. Import material quantity: 200 CY concrete.
    g. Hauling trips: 44 trips. (200 CY concrete / 9 CY per load x 2 trips)
    h. Adjustment for % Paved Hauling: Reduced to 90% to account for on-site haul.
5. Building Construction – Install shop building.
    a. Description: Install 2,500 sq. ft. maintenance shop building.
    b. Equipment: Aerial lift, crane (25-ton), forklift, generator set, skid steer loader, Cat 442 backhoe, welder.
    c. Crew size: 12, including equipment operators (5), foreman, laborers/welders (4), and electricians (2).
    d. Duration: 40 days.
    e. Vendor Trips: 10 per day (5 vendor visit per day) to deliver construction materials.
    f. Import material quantity: 140 CY concrete.
    g. Hauling trips: 32 trips. (140 CY concrete / 9 CY per load x 2 trips)
    h. Adjustment for % Paved Hauling: Reduced to 90% to account for on-site haul.
6. Paving – Pave site entry/exit.
    a. Description: Pave 13,000 sq. ft. site entry/exit drive (65’ x 200’).
    b. Equipment: Paver, paving equipment, roller, Cat 14 motor grader (1/2 time), water truck (1/2 time).
    c. Crew size: 8, including equipment operators (5), foreman, and laborers (2).

   d. Duration: 5 days.
   e. Graded acres: <1 acres.
   f. Import material quantity: 240 CY base rock (assumes 6-inch subgrade base lift), 318 CY concrete (assumes 6-inch lift).
   g. Hauling trips: 64 trips.
      i. Base rock = 240 CY base rock / 15 CY per load x 2 trips = 32 trips
      ii. Concrete = 140 CY concrete / 9 CY per load x 2 trips = 32 trips
   h. Adjustment for % Paved Hauling: Reduced to 90% to account for on-site haul.
7. Site Preparation – Install wheel wash.
   a. Description: Install wheel wash for new paved exit drive.
   b. Equipment: Air compressor, forklift, pump, Cat 442 backhoe, welder.
   c. Crew size: 7, including equipment operators (2), foreman, laborers (2), welder, electrician.
   d. Duration: 5 days.
   e. Vendor Trips: 4 per day (2 vendor visit per day) to deliver construction materials.
   f. Import material quantity: <2 CY concrete (for curbing).
   g. Hauling trips: 2 trips. (2 CY concrete in single load x 2 trips)
   h. Adjustment for % Paved Hauling: Reduced to 90% to account for on-site haul.

On-Model Mitigation Assumptions

Consistent with BAAQMD requirements, on-model mitigation for construction activity assumes:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) are watered two times per day.
2. All vehicle speeds on unpaved roads are limited to 15 mph.
3. Engine tier: backhoe, dozer, excavator, loader, motor grader, and scraper all Tier 3 or better.

Appendix B-1
CalEEMod Modeling Assumptions for Construction
CEMEX Port of Redwood City Ready-Mix Concrete Plant Project
January 2021

Equipment Input Assumptions

Equipment	Model (or equivalent)	HP
Backhoe	CAT 442/444	100
Boring / Pile Driving Machine	Varies	Default used
Compactor	CAT 815	248
Crane - 25-ton hydro crane	Grove or equiv.	Default used
Crane - 80 -ton hydro crane	Grove GRT880	275
Dozer	CAT D8R	303
Excavator	CAT 330 or equiv.	239
Fork Lift	Gradall or equiv.	Default used
Loader	CAT 966	276
Motor Grader	CAT 14G/H/M	238
Scraper	CAT 621G	365
Skid Steer Loader	Bobcat	Default used
Water Truck	Varies	Default used

Notes:
Equipment to be used based on input from CEMEX.
Horsepower references to CAT based on CAT Handbook, Ed. 48.
"Default used" refers to CalEEMod default equipment HP rating.

Appendix B-2:
CalEEMod Modeling Results for Construction

CEMEX Port of Redwood City Ready-Mix Concrete Plant Project

San Mateo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	5.00	User Defined Unit	5.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project construction model. Plant operations modeled separately.

Land Use - Project area approximately 5 acres per site plan.

Construction Phase - See Appendix A-1 for construction assumption details.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Grading - Less than 2 acres subject to remedial grading. See Appendix A-1 for detail.

Demolition - Assume up to 10 tons of C&D debris.

Trips and VMT - See Appendix A-1 for detail.

On-road Fugitive Dust - Adjustment to 90 percent to account for on-site travel on unpaved roads.

Energy Use -

Construction Off-road Equipment Mitigation - See Appendix A-1 for detail.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	5.00
tblConstructionPhase	NumDays	230.00	60.00
tblConstructionPhase	NumDays	230.00	40.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	5.00
tblGrading	AcresOfGrading	22.50	2.00
tblLandUse	LotAcreage	0.00	5.00
tblOffRoadEquipment	HorsePower	231.00	275.00
tblOffRoadEquipment	HorsePower	231.00	275.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	203.00	276.00
tblOffRoadEquipment	HorsePower	187.00	238.00
tblOffRoadEquipment	HorsePower	247.00	303.00
tblOffRoadEquipment	HorsePower	247.00	303.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	367.00	365.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	203.00	276.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	187.00	238.00

tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.37
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00

tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	HaulingTripNumber	1.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	44.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	64.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	23.00	16.00
tblTripsAndVMT	WorkerTripNumber	0.00	16.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00
tblTripsAndVMT	WorkerTripNumber	13.00	16.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.3269	44.1691	34.4663	0.0669	63.4310	2.0760	63.9985	12.7346	1.9401	14.6747	0.0000	6,482.7037	6,482.7037	2.0605	0.0000	6,534.2160
Maximum	**4.3269**	**44.1691**	**34.4663**	**0.0669**	**63.4310**	**2.0760**	**63.9985**	**12.7346**	**1.9401**	**14.6747**	**0.0000**	**6,482.7037**	**6,482.7037**	**2.0605**	**0.0000**	**6,534.2160**

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					
2021	3.2993	34.7100	36.5754	0.0669	38.9617	1.6231	39.4855	6.1976	1.5402	7.7377	0.0000	6,482.7037	6,482.7037	2.0605	0.0000	6,534.2160
Maximum	**3.2993**	**34.7100**	**36.5754**	**0.0669**	**38.9617**	**1.6231**	**39.4855**	**6.1976**	**1.5402**	**7.7377**	**0.0000**	**6,482.7037**	**6,482.7037**	**2.0605**	**0.0000**	**6,534.2160**

	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	**23.75**	**21.42**	**-6.12**	**0.00**	**38.58**	**21.82**	**38.30**	**51.33**	**20.62**	**47.27**	**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	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**0.0000**	**1.1700e-003**

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	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**0.0000**	**1.1700e-003**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - remove existing equipment	Demolition	5/3/2021	5/7/2021	5	5	Remove existing equipment from project area
2	Grading - remedial grading for compaction	Grading	5/10/2021	5/21/2021	5	10	Remedial grading 2-4 feet for compaction
3	Building - Install foundation piles	Building Construction	5/24/2021	5/28/2021	5	5	Install foundation piles for plant and shop
4	Building - Install plant and ancillary features	Building Construction	5/31/2021	8/20/2021	5	60	Install concrete plant hopper conveyor and ponds
5	Building - Install shop building	Building Construction	8/23/2021	10/15/2021	5	40	Install 2500 sq ft shop
6	Paving: Pave site entry-exit	Paving	10/18/2021	10/22/2021	5	5	Pave 13000 sq ft site entry-exit
7	Site Prep: Install wheel wash	Site Preparation	10/25/2021	10/29/2021	5	5	Install wheel wash at paved entry-exit

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - remove existing equipment	Concrete/Industrial Saws	1	8.00	81	0.73
Building - Install foundation piles	Cranes	1	8.00	275	0.29

Building - Install plant and ancillary features	Cranes		1	8.00	275	0.29
Building - Install shop building	Cranes		1	8.00	231	0.29
Demolition - remove existing equipment	Excavators		1	8.00	239	0.38
Building - Install foundation piles	Bore/Drill Rigs		1	8.00	221	0.50
Building - Install plant and ancillary features	Excavators		1	8.00	239	0.38
Building - Install plant and ancillary features	Forklifts		1	8.00	89	0.20
Building - Install shop building	Forklifts		1	8.00	89	0.20
Building - Install plant and ancillary features	Rubber Tired Loaders		1	8.00	276	0.36
Building - Install plant and ancillary features	Generator Sets		1	8.00	84	0.74
Building - Install shop building	Generator Sets		1	8.00	84	0.74
Grading - remedial grading for compaction	Graders		1	4.00	238	0.41
Paving: Pave site entry-exit	Pavers		1	8.00	130	0.42
Paving: Pave site entry-exit	Paving Equipment		1	8.00	132	0.36
Paving: Pave site entry-exit	Rollers		1	8.00	80	0.38
Demolition - remove existing equipment	Rubber Tired Dozers		1	8.00	303	0.40
Grading - remedial grading for compaction	Rubber Tired Dozers		1	8.00	303	0.40
Demolition - remove existing equipment	Off-Highway Trucks		1	8.00	402	0.38
Building - Install plant and ancillary features	Cranes		1	8.00	231	0.29
Building - Install plant and ancillary features	Tractors/Loaders/Backhoes		2	8.00	100	0.37
Building - Install shop building	Tractors/Loaders/Backhoes		1	8.00	100	0.37
Grading - remedial grading for compaction	Scrapers		2	8.00	365	0.37
Site Prep: Install wheel wash	Tractors/Loaders/Backhoes		1	4.00	100	0.37
Building - Install foundation piles	Welders		1	8.00	46	0.45
Building - Install plant and ancillary features	Welders		2	8.00	46	0.45
Building - Install shop building	Welders		1	8.00	46	0.45

Demolition - remove existing equipment	Rubber Tired Loaders	1	8.00	276	0.36
Grading - remedial grading for compaction	Off-Highway Trucks	1	8.00	402	0.38
Building - Install foundation piles	Excavators	1	8.00	239	0.38
Building - Install shop building	Skid Steer Loaders	1	8.00	65	0.37
Building - Install shop building	Aerial Lifts	2	8.00	63	0.31
Site Prep: Install wheel wash	Air Compressors	1	8.00	78	0.48
Site Prep: Install wheel wash	Forklifts	1	4.00	89	0.20
Site Prep: Install wheel wash	Pumps	1	8.00	84	0.74
Site Prep: Install wheel wash	Welders	1	8.00	46	0.45
Building - Install plant and ancillary features	Aerial Lifts	1	8.00	63	0.31
Paving: Pave site entry-exit	Graders	1	4.00	238	0.41
Paving: Pave site entry-exit	Off-Highway Trucks	1	4.00	402	0.38
Grading - remedial grading for compaction	Excavators	1	8.00	158	0.38
Building - Install foundation piles	Forklifts	3	8.00	89	0.20
Building - Install foundation piles	Generator Sets	1	8.00	84	0.74
Site Prep: Install wheel wash	Rubber Tired Dozers	3	8.00	247	0.40
Building - Install foundation piles	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading - remedial grading for compaction	Tractors/Loaders/Backhoes	3	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
Demolition - remove existing equipment	5	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading - remedial grading for compactio	9	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install foundation piles	11	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install plant and ancillary features	11	30.00	10.00	44.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install shop building	8	24.00	10.00	32.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving: Pave site entry-exit	5	16.00	0.00	64.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Prep: Install wheel wash	8	14.00	4.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - remove existing equipment - 2021

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					0.0428	0.0000	0.0428	6.4800e-003	0.0000	6.4800e-003			0.0000			0.0000
Off-Road	2.7698	26.4954	20.3816	0.0464		1.1177	1.1177		1.0421	1.0421		4,477.1785	4,477.1785	1.2908		4,509.4471
Total	**2.7698**	**26.4954**	**20.3816**	**0.0464**	**0.0428**	**1.1177**	**1.1605**	**6.4800e-003**	**1.0421**	**1.0486**		**4,477.1785**	**4,477.1785**	**1.2908**		**4,509.4471**

3.2 Demolition - remove existing equipment - 2021

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	0.0308	0.0176	0.2300	8.9000e-004	19.1630	5.8000e-004	19.1635	1.9273	5.3000e-004	1.9278		88.7725	88.7725	1.6000e-003		88.8125
Total	**0.0308**	**0.0176**	**0.2300**	**8.9000e-004**	**19.1630**	**5.8000e-004**	**19.1635**	**1.9273**	**5.3000e-004**	**1.9278**		**88.7725**	**88.7725**	**1.6000e-003**		**88.8125**

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					0.0193	0.0000	0.0193	2.9200e-003	0.0000	2.9200e-003			0.0000			0.0000
Off-Road	2.1473	24.3637	22.8240	0.0464		1.0209	1.0209		0.9799	0.9799	0.0000	4,477.178 5	4,477.178 5	1.2908		4,509.447 1
Total	**2.1473**	**24.3637**	**22.8240**	**0.0464**	**0.0193**	**1.0209**	**1.0401**	**2.9200e-003**	**0.9799**	**0.9828**	**0.0000**	**4,477.178 5**	**4,477.178 5**	**1.2908**		**4,509.447 1**

3.2 Demolition - remove existing equipment - 2021

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	0.0308	0.0176	0.2300	8.9000e-004	11.7674	5.8000e-004	11.7680	1.1877	5.3000e-004	1.1883		88.7725	88.7725	1.6000e-003		88.8125
Total	**0.0308**	**0.0176**	**0.2300**	**8.9000e-004**	**11.7674**	**5.8000e-004**	**11.7680**	**1.1877**	**5.3000e-004**	**1.1883**		**88.7725**	**88.7725**	**1.6000e-003**		**88.8125**

3.3 Grading - remedial grading for compaction - 2021

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					6.2342	0.0000	6.2342	3.3331	0.0000	3.3331			0.0000			0.0000
Off-Road	4.1625	44.1457	34.1597	0.0657		1.8868	1.8868		1.7358	1.7358		6,364.3405	6,364.3405	2.0584		6,415.7994
Total	**4.1625**	**44.1457**	**34.1597**	**0.0657**	**6.2342**	**1.8868**	**8.1209**	**3.3331**	**1.7358**	**5.0689**		**6,364.3405**	**6,364.3405**	**2.0584**		**6,415.7994**

3.3 Grading - remedial grading for compaction - 2021

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	0.0410	0.0234	0.3066	1.1900e-003	25.5506	7.7000e-004	25.5514	2.5697	7.1000e-004	2.5704		118.3633	118.3633	2.1300e-003		118.4166
Total	**0.0410**	**0.0234**	**0.3066**	**1.1900e-003**	**25.5506**	**7.7000e-004**	**25.5514**	**2.5697**	**7.1000e-004**	**2.5704**		**118.3633**	**118.3633**	**2.1300e-003**		**118.4166**

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					2.8054	0.0000	2.8054	1.4999	0.0000	1.4999			0.0000			0.0000
Off-Road	2.5956	34.6866	36.2688	0.0657		1.5230	1.5230		1.4655	1.4655	0.0000	6,364.3405	6,364.3405	2.0584		6,415.7994
Total	**2.5956**	**34.6866**	**36.2688**	**0.0657**	**2.8054**	**1.5230**	**4.3284**	**1.4999**	**1.4655**	**2.9654**	**0.0000**	**6,364.3405**	**6,364.3405**	**2.0584**		**6,415.7994**

3.3 Grading - remedial grading for compaction - 2021

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	0.0410	0.0234	0.3066	1.1900e-003	15.6899	7.7000e-004	15.6906	1.5836	7.1000e-004	1.5843		118.3633	118.3633	2.1300e-003		118.4166
Total	**0.0410**	**0.0234**	**0.3066**	**1.1900e-003**	**15.6899**	**7.7000e-004**	**15.6906**	**1.5836**	**7.1000e-004**	**1.5843**		**118.3633**	**118.3633**	**2.1300e-003**		**118.4166**

3.4 Building - Install foundation piles - 2021

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	2.4740	23.7860	22.1250	0.0460		1.1565	1.1565		1.0833	1.0833		4,396.7753	4,396.7753	1.2122		4,427.0806
Total	**2.4740**	**23.7860**	**22.1250**	**0.0460**		**1.1565**	**1.1565**		**1.0833**	**1.0833**		**4,396.7753**	**4,396.7753**	**1.2122**		**4,427.0806**

3.4 Building - Install foundation piles - 2021

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	0.0125	0.4108	0.1716	1.0600e-003	4.3224	9.3000e-004	4.3233	0.4361	8.9000e-004	0.4370		116.2404	116.2404	9.8800e-003		116.4873
Worker	0.0410	0.0234	0.3066	1.1900e-003	25.5506	7.7000e-004	25.5514	2.5697	7.1000e-004	2.5704		118.3633	118.3633	2.1300e-003		118.4166
Total	**0.0535**	**0.4342**	**0.4782**	**2.2500e-003**	**29.8730**	**1.7000e-003**	**29.8747**	**3.0058**	**1.6000e-003**	**3.0074**		**234.6036**	**234.6036**	**0.0120**		**234.9039**

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	2.3057	24.3545	24.0091	0.0460		1.2097	1.2097		1.1509	1.1509	0.0000	4,396.7753	4,396.7753	1.2122		4,427.0806
Total	**2.3057**	**24.3545**	**24.0091**	**0.0460**		**1.2097**	**1.2097**		**1.1509**	**1.1509**	**0.0000**	**4,396.7753**	**4,396.7753**	**1.2122**		**4,427.0806**

3.4 Building - Install foundation piles - 2021

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	0.0125	0.4108	0.1716	1.0600e-003	2.6561	9.3000e-004	2.6570	0.2695	8.9000e-004	0.2704		116.2404	116.2404	9.8800e-003		116.4873
Worker	0.0410	0.0234	0.3066	1.1900e-003	15.6899	7.7000e-004	15.6906	1.5836	7.1000e-004	1.5843		118.3633	118.3633	2.1300e-003		118.4166
Total	**0.0535**	**0.4342**	**0.4782**	**2.2500e-003**	**18.3460**	**1.7000e-003**	**18.3477**	**1.8531**	**1.6000e-003**	**1.8547**		**234.6036**	**234.6036**	**0.0120**		**234.9039**

3.5 Building - Install plant and ancillary features - 2021

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	3.0676	28.8672	23.9117	0.0502		1.2877	1.2877		1.2099	1.2099		4,767.0945	4,767.0945	1.2919		4,799.3918
Total	**3.0676**	**28.8672**	**23.9117**	**0.0502**		**1.2877**	**1.2877**		**1.2099**	**1.2099**		**4,767.0945**	**4,767.0945**	**1.2919**		**4,799.3918**

3.5 Building - Install plant and ancillary features - 2021

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	6.1400e-003	0.2129	0.1015	5.9000e-004	2.1702	6.5000e-004	2.1709	0.2186	6.3000e-004	0.2193		66.6915	66.6915	8.4800e-003		66.9034
Vendor	0.0312	1.0270	0.4290	2.6400e-003	10.8059	2.3400e-003	10.8083	1.0903	2.2400e-003	1.0925		290.6009	290.6009	0.0247		291.2182
Worker	0.0769	0.0439	0.5749	2.2200e-003	47.9074	1.4400e-003	47.9088	4.8182	1.3200e-003	4.8195		221.9311	221.9311	4.0000e-003		222.0312
Total	**0.1143**	**1.2838**	**1.1054**	**5.4500e-003**	**60.8836**	**4.4300e-003**	**60.8880**	**6.1271**	**4.1900e-003**	**6.1313**		**579.2235**	**579.2235**	**0.0372**		**580.1527**

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	2.6716	28.9632	27.6538	0.0502		1.3221	1.3221		1.2704	1.2704	0.0000	4,767.0945	4,767.0945	1.2919		4,799.3918
Total	**2.6716**	**28.9632**	**27.6538**	**0.0502**		**1.3221**	**1.3221**		**1.2704**	**1.2704**	**0.0000**	**4,767.0945**	**4,767.0945**	**1.2919**		**4,799.3918**

3.5 Building - Install plant and ancillary features - 2021

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	6.1400e-003	0.2129	0.1015	5.9000e-004	1.3333	6.5000e-004	1.3339	0.1349	6.3000e-004	0.1356		66.6915	66.6915	8.4800e-003		66.9034
Vendor	0.0312	1.0270	0.4290	2.6400e-003	6.6402	2.3400e-003	6.6426	0.6737	2.2400e-003	0.6759		290.6009	290.6009	0.0247		291.2182
Worker	0.0769	0.0439	0.5749	2.2200e-003	29.4185	1.4400e-003	29.4199	2.9693	1.3200e-003	2.9706		221.9311	221.9311	4.0000e-003		222.0312
Total	**0.1143**	**1.2838**	**1.1054**	**5.4500e-003**	**37.3920**	**4.4300e-003**	**37.3964**	**3.7780**	**4.1900e-003**	**3.7822**		**579.2235**	**579.2235**	**0.0372**		**580.1527**

3.6 Building - Install shop building - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5458	14.8627	14.4624	0.0251		0.7014	0.7014		0.6646	0.6646		2,372.9262	2,372.9262	0.5577		2,386.8677
Total	**1.5458**	**14.8627**	**14.4624**	**0.0251**		**0.7014**	**0.7014**		**0.6646**	**0.6646**		**2,372.9262**	**2,372.9262**	**0.5577**		**2,386.8677**

3.6 Building - Install shop building - 2021

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	6.7000e-003	0.2323	0.1107	6.4000e-004	2.3675	7.1000e-004	2.3682	0.2385	6.8000e-004	0.2392		72.7543	72.7543	9.2500e-003		72.9855
Vendor	0.0312	1.0270	0.4290	2.6400e-003	10.8059	2.3400e-003	10.8083	1.0903	2.2400e-003	1.0925		290.6009	290.6009	0.0247		291.2182
Worker	0.0615	0.0351	0.4599	1.7800e-003	38.3259	1.1500e-003	38.3271	3.8546	1.0600e-003	3.8556		177.5449	177.5449	3.2000e-003		177.6249
Total	**0.0994**	**1.2944**	**0.9996**	**5.0600e-003**	**51.4994**	**4.2000e-003**	**51.5036**	**5.1834**	**3.9800e-003**	**5.1873**		**540.9001**	**540.9001**	**0.0371**		**541.8286**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4999	14.7962	14.4962	0.0251		0.7054	0.7054		0.6724	0.6724	0.0000	2,372.9262	2,372.9262	0.5577		2,386.8677
Total	**1.4999**	**14.7962**	**14.4962**	**0.0251**		**0.7054**	**0.7054**		**0.6724**	**0.6724**	**0.0000**	**2,372.9262**	**2,372.9262**	**0.5577**		**2,386.8677**

3.6 Building - Install shop building - 2021

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	6.7000e-003	0.2323	0.1107	6.4000e-004	1.4545	7.1000e-004	1.4552	0.1472	6.8000e-004	0.1479		72.7543	72.7543	9.2500e-003		72.9855
Vendor	0.0312	1.0270	0.4290	2.6400e-003	6.6402	2.3400e-003	6.6426	0.6737	2.2400e-003	0.6759		290.6009	290.6009	0.0247		291.2182
Worker	0.0615	0.0351	0.4599	1.7800e-003	23.5348	1.1500e-003	23.5360	2.3755	1.0600e-003	2.3765		177.5449	177.5449	3.2000e-003		177.6249
Total	**0.0994**	**1.2944**	**0.9996**	**5.0600e-003**	**31.6295**	**4.2000e-003**	**31.6337**	**3.1964**	**3.9800e-003**	**3.2003**		**540.9001**	**540.9001**	**0.0371**		**541.8286**

3.7 Paving: Pave site entry-exit - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2205	12.8746	10.2624	0.0223		0.5553	0.5553		0.5109	0.5109		2,154.4077	2,154.4077	0.6968		2,171.8272
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2205**	**12.8746**	**10.2624**	**0.0223**		**0.5553**	**0.5553**		**0.5109**	**0.5109**		**2,154.4077**	**2,154.4077**	**0.6968**		**2,171.8272**

3.7 Paving: Pave site entry-exit - 2021

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	0.1072	3.7166	1.7711	0.0102	37.8803	0.0114	37.8918	3.8162	0.0109	3.8271		1,164.0695	1,164.0695	0.1480		1,167.7686
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	0.0410	0.0234	0.3066	1.1900e-003	25.5506	7.7000e-004	25.5514	2.5697	7.1000e-004	2.5704		118.3633	118.3633	2.1300e-003		118.4166
Total	**0.1482**	**3.7400**	**2.0777**	**0.0114**	**63.4310**	**0.0122**	**63.4431**	**6.3859**	**0.0116**	**6.3975**		**1,282.4328**	**1,282.4328**	**0.1501**		**1,286.1852**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0355	11.1008	11.3751	0.0223		0.5116	0.5116		0.4767	0.4767	0.0000	2,154.4077	2,154.4077	0.6968		2,171.8272
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0355**	**11.1008**	**11.3751**	**0.0223**		**0.5116**	**0.5116**		**0.4767**	**0.4767**	**0.0000**	**2,154.4077**	**2,154.4077**	**0.6968**		**2,171.8272**

3.7 Paving: Pave site entry-exit - 2021

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	0.1072	3.7166	1.7711	0.0102	23.2718	0.0114	23.2832	2.3553	0.0109	2.3663		1,164.0695	1,164.0695	0.1480		1,167.7686
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	0.0410	0.0234	0.3066	1.1900e-003	15.6899	7.7000e-004	15.6906	1.5836	7.1000e-004	1.5843		118.3633	118.3633	2.1300e-003		118.4166
Total	**0.1482**	**3.7400**	**2.0777**	**0.0114**	**38.9617**	**0.0122**	**38.9739**	**3.9390**	**0.0116**	**3.9506**		**1,282.4328**	**1,282.4328**	**0.1501**		**1,286.1852**

3.8 Site Prep: Install wheel wash - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.2752	41.2354	21.7452	0.0411		2.0740	2.0740		1.9383	1.9383		3,916.9526	3,916.9526	0.9636		3,941.0427
Total	**4.2752**	**41.2354**	**21.7452**	**0.0411**	**18.0663**	**2.0740**	**20.1403**	**9.9307**	**1.9383**	**11.8689**		**3,916.9526**	**3,916.9526**	**0.9636**		**3,941.0427**

3.8 Site Prep: Install wheel wash - 2021

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	3.3500e-003	0.1161	0.0554	3.2000e-004	1.1838	3.6000e-004	1.1841	0.1193	3.4000e-004	0.1196		36.3772	36.3772	4.6200e-003		36.4928
Vendor	0.0125	0.4108	0.1716	1.0600e-003	4.3224	9.3000e-004	4.3233	0.4361	8.9000e-004	0.4370		116.2404	116.2404	9.8800e-003		116.4873
Worker	0.0359	0.0205	0.2683	1.0400e-003	22.3568	6.7000e-004	22.3575	2.2485	6.2000e-004	2.2491		103.5679	103.5679	1.8700e-003		103.6146
Total	**0.0517**	**0.5474**	**0.4952**	**2.4200e-003**	**27.8629**	**1.9600e-003**	**27.8649**	**2.8039**	**1.8500e-003**	**2.8057**		**256.1854**	**256.1854**	**0.0164**		**256.5946**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.2476	32.8877	22.3534	0.0411		1.6211	1.6211		1.5383	1.5383	0.0000	3,916.9526	3,916.9526	0.9636		3,941.0427
Total	**3.2476**	**32.8877**	**22.3534**	**0.0411**	**8.1298**	**1.6211**	**9.7509**	**4.4688**	**1.5383**	**6.0071**	**0.0000**	**3,916.9526**	**3,916.9526**	**0.9636**		**3,941.0427**

3.8 Site Prep: Install wheel wash - 2021

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	3.3500e-003	0.1161	0.0554	3.2000e-004	0.7272	3.6000e-004	0.7276	0.0736	3.4000e-004	0.0740		36.3772	36.3772	4.6200e-003		36.4928
Vendor	0.0125	0.4108	0.1716	1.0600e-003	2.6561	9.3000e-004	2.6570	0.2695	8.9000e-004	0.2704		116.2404	116.2404	9.8800e-003		116.4873
Worker	0.0359	0.0205	0.2683	1.0400e-003	13.7286	6.7000e-004	13.7293	1.3857	6.2000e-004	1.3863		103.5679	103.5679	1.8700e-003		103.6146
Total	**0.0517**	**0.5474**	**0.4952**	**2.4200e-003**	**17.1120**	**1.9600e-003**	**17.1139**	**1.7288**	**1.8500e-003**	**1.7306**		**256.1854**	**256.1854**	**0.0164**		**256.5946**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

5.2 Energy by Land Use - NaturalGas

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	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	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CEMEX Port of Redwood City Ready-Mix Concrete Plant Project

San Mateo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	5.00	User Defined Unit	5.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project construction model. Plant operations modeled separately.

Land Use - Project area approximately 5 acres per site plan.

Construction Phase - See Appendix A-1 for construction assumption details.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Grading - Less than 2 acres subject to remedial grading. See Appendix A-1 for detail.

Demolition - Assume up to 10 tons of C&D debris.

Trips and VMT - See Appendix A-1 for detail.

On-road Fugitive Dust - Adjustment to 90 percent to account for on-site travel on unpaved roads.

Energy Use -

Construction Off-road Equipment Mitigation - See Appendix A-1 for detail.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	5.00
tblConstructionPhase	NumDays	230.00	60.00
tblConstructionPhase	NumDays	230.00	40.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	5.00
tblGrading	AcresOfGrading	22.50	2.00
tblLandUse	LotAcreage	0.00	5.00
tblOffRoadEquipment	HorsePower	231.00	275.00
tblOffRoadEquipment	HorsePower	231.00	275.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	203.00	276.00
tblOffRoadEquipment	HorsePower	187.00	238.00
tblOffRoadEquipment	HorsePower	247.00	303.00
tblOffRoadEquipment	HorsePower	247.00	303.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	367.00	365.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	203.00	276.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	187.00	238.00

tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.37
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00

tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
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tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	HaulingTripNumber	1.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	44.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	64.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	23.00	16.00
tblTripsAndVMT	WorkerTripNumber	0.00	16.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00
tblTripsAndVMT	WorkerTripNumber	13.00	16.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.3319	44.1746	34.4554	0.0668	63.4310	2.0760	63.9988	12.7346	1.9402	14.6747	0.0000	6,475.4218	6,475.4218	2.0604	0.0000	6,526.9315
Maximum	**4.3319**	**44.1746**	**34.4554**	**0.0668**	**63.4310**	**2.0760**	**63.9988**	**12.7346**	**1.9402**	**14.6747**	**0.0000**	**6,475.4218**	**6,475.4218**	**2.0604**	**0.0000**	**6,526.9315**

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					
2021	3.3042	34.7155	36.5645	0.0668	38.9617	1.6231	39.4858	6.1976	1.5402	7.7378	0.0000	6,475.4218	6,475.4218	2.0604	0.0000	6,526.9315
Maximum	**3.3042**	**34.7155**	**36.5645**	**0.0668**	**38.9617**	**1.6231**	**39.4858**	**6.1976**	**1.5402**	**7.7378**	**0.0000**	**6,475.4218**	**6,475.4218**	**2.0604**	**0.0000**	**6,526.9315**

	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	**23.72**	**21.41**	**-6.12**	**0.00**	**38.58**	**21.82**	**38.30**	**51.33**	**20.61**	**47.27**	**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	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**0.0000**	**1.1700e-003**

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	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**0.0000**	**1.1700e-003**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - remove existing equipment	Demolition	5/3/2021	5/7/2021	5	5	Remove existing equipment from project area
2	Grading - remedial grading for compaction	Grading	5/10/2021	5/21/2021	5	10	Remedial grading 2-4 feet for compaction
3	Building - Install foundation piles	Building Construction	5/24/2021	5/28/2021	5	5	Install foundation piles for plant and shop
4	Building - Install plant and ancillary features	Building Construction	5/31/2021	8/20/2021	5	60	Install concrete plant hopper conveyor and ponds
5	Building - Install shop building	Building Construction	8/23/2021	10/15/2021	5	40	Install 2500 sq ft shop
6	Paving: Pave site entry-exit	Paving	10/18/2021	10/22/2021	5	5	Pave 13000 sq ft site entry-exit
7	Site Prep: Install wheel wash	Site Preparation	10/25/2021	10/29/2021	5	5	Install wheel wash at paved entry-exit

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - remove existing equipment	Concrete/Industrial Saws	1	8.00	81	0.73
Building - Install foundation piles	Cranes	1	8.00	275	0.29

Building - Install plant and ancillary features	Cranes	1	8.00	275	0.29
Building - Install shop building	Cranes	1	8.00	231	0.29
Demolition - remove existing equipment	Excavators	1	8.00	239	0.38
Building - Install foundation piles	Bore/Drill Rigs	1	8.00	221	0.50
Building - Install plant and ancillary features	Excavators	1	8.00	239	0.38
Building - Install plant and ancillary features	Forklifts	1	8.00	89	0.20
Building - Install shop building	Forklifts	1	8.00	89	0.20
Building - Install plant and ancillary features	Rubber Tired Loaders	1	8.00	276	0.36
Building - Install plant and ancillary features	Generator Sets	1	8.00	84	0.74
Building - Install shop building	Generator Sets	1	8.00	84	0.74
Grading - remedial grading for compaction	Graders	1	4.00	238	0.41
Paving: Pave site entry-exit	Pavers	1	8.00	130	0.42
Paving: Pave site entry-exit	Paving Equipment	1	8.00	132	0.36
Paving: Pave site entry-exit	Rollers	1	8.00	80	0.38
Demolition - remove existing equipment	Rubber Tired Dozers	1	8.00	303	0.40
Grading - remedial grading for compaction	Rubber Tired Dozers	1	8.00	303	0.40
Demolition - remove existing equipment	Off-Highway Trucks	1	8.00	402	0.38
Building - Install plant and ancillary features	Cranes	1	8.00	231	0.29
Building - Install plant and ancillary features	Tractors/Loaders/Backhoes	2	8.00	100	0.37
Building - Install shop building	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Grading - remedial grading for compaction	Scrapers	2	8.00	365	0.37
Site Prep: Install wheel wash	Tractors/Loaders/Backhoes	1	4.00	100	0.37
Building - Install foundation piles	Welders	1	8.00	46	0.45
Building - Install plant and ancillary features	Welders	2	8.00	46	0.45
Building - Install shop building	Welders	1	8.00	46	0.45

Demolition - remove existing equipment	Rubber Tired Loaders	1	8.00	276	0.36
Grading - remedial grading for compaction	Off-Highway Trucks	1	8.00	402	0.38
Building - Install foundation piles	Excavators	1	8.00	239	0.38
Building - Install shop building	Skid Steer Loaders	1	8.00	65	0.37
Building - Install shop building	Aerial Lifts	2	8.00	63	0.31
Site Prep: Install wheel wash	Air Compressors	1	8.00	78	0.48
Site Prep: Install wheel wash	Forklifts	1	4.00	89	0.20
Site Prep: Install wheel wash	Pumps	1	8.00	84	0.74
Site Prep: Install wheel wash	Welders	1	8.00	46	0.45
Building - Install plant and ancillary features	Aerial Lifts	1	8.00	63	0.31
Paving: Pave site entry-exit	Graders	1	4.00	238	0.41
Paving: Pave site entry-exit	Off-Highway Trucks	1	4.00	402	0.38
Grading - remedial grading for compaction	Excavators	1	8.00	158	0.38
Building - Install foundation piles	Forklifts	3	8.00	89	0.20
Building - Install foundation piles	Generator Sets	1	8.00	84	0.74
Site Prep: Install wheel wash	Rubber Tired Dozers	3	8.00	247	0.40
Building - Install foundation piles	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading - remedial grading for compaction	Tractors/Loaders/Backhoes	3	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
Demolition - remove existing equipment	5	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading - remedial grading for compactio	9	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install foundation piles	11	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install plant and ancillary features	11	30.00	10.00	44.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install shop building	8	24.00	10.00	32.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving: Pave site entry-exit	5	16.00	0.00	64.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Prep: Install wheel wash	8	14.00	4.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - remove existing equipment - 2021

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					0.0428	0.0000	0.0428	6.4800e-003	0.0000	6.4800e-003			0.0000			0.0000
Off-Road	2.7698	26.4954	20.3816	0.0464		1.1177	1.1177		1.0421	1.0421		4,477.1785	4,477.1785	1.2908		4,509.4471
Total	**2.7698**	**26.4954**	**20.3816**	**0.0464**	**0.0428**	**1.1177**	**1.1605**	**6.4800e-003**	**1.0421**	**1.0486**		**4,477.1785**	**4,477.1785**	**1.2908**		**4,509.4471**

3.2 Demolition - remove existing equipment - 2021

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	0.0344	0.0217	0.2218	8.4000e-004	19.1630	5.8000e-004	19.1635	1.9273	5.3000e-004	1.9278		83.3110	83.3110	1.5200e-003		83.3491
Total	**0.0344**	**0.0217**	**0.2218**	**8.4000e-004**	**19.1630**	**5.8000e-004**	**19.1635**	**1.9273**	**5.3000e-004**	**1.9278**		**83.3110**	**83.3110**	**1.5200e-003**		**83.3491**

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					0.0193	0.0000	0.0193	2.9200e-003	0.0000	2.9200e-003			0.0000			0.0000
Off-Road	2.1473	24.3637	22.8240	0.0464		1.0209	1.0209		0.9799	0.9799	0.0000	4,477.1785	4,477.1785	1.2908		4,509.4471
Total	**2.1473**	**24.3637**	**22.8240**	**0.0464**	**0.0193**	**1.0209**	**1.0401**	**2.9200e-003**	**0.9799**	**0.9828**	**0.0000**	**4,477.1785**	**4,477.1785**	**1.2908**		**4,509.4471**

3.2 Demolition - remove existing equipment - 2021

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	0.0344	0.0217	0.2218	8.4000e-004	11.7674	5.8000e-004	11.7680	1.1877	5.3000e-004	1.1883		83.3110	83.3110	1.5200e-003		83.3491
Total	**0.0344**	**0.0217**	**0.2218**	**8.4000e-004**	**11.7674**	**5.8000e-004**	**11.7680**	**1.1877**	**5.3000e-004**	**1.1883**		**83.3110**	**83.3110**	**1.5200e-003**		**83.3491**

3.3 Grading - remedial grading for compaction - 2021

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					6.2342	0.0000	6.2342	3.3331	0.0000	3.3331			0.0000			0.0000
Off-Road	4.1625	44.1457	34.1597	0.0657		1.8868	1.8868		1.7358	1.7358		6,364.3405	6,364.3405	2.0584		6,415.7994
Total	**4.1625**	**44.1457**	**34.1597**	**0.0657**	**6.2342**	**1.8868**	**8.1209**	**3.3331**	**1.7358**	**5.0689**		**6,364.3405**	**6,364.3405**	**2.0584**		**6,415.7994**

3.3 Grading - remedial grading for compaction - 2021

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	0.0458	0.0289	0.2957	1.1100e-003	25.5506	7.7000e-004	25.5514	2.5697	7.1000e-004	2.5704		111.0814	111.0814	2.0300e-003		111.1321
Total	**0.0458**	**0.0289**	**0.2957**	**1.1100e-003**	**25.5506**	**7.7000e-004**	**25.5514**	**2.5697**	**7.1000e-004**	**2.5704**		**111.0814**	**111.0814**	**2.0300e-003**		**111.1321**

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					2.8054	0.0000	2.8054	1.4999	0.0000	1.4999			0.0000			0.0000
Off-Road	2.5956	34.6866	36.2688	0.0657		1.5230	1.5230		1.4655	1.4655	0.0000	6,364.3405	6,364.3405	2.0584		6,415.7994
Total	**2.5956**	**34.6866**	**36.2688**	**0.0657**	**2.8054**	**1.5230**	**4.3284**	**1.4999**	**1.4655**	**2.9654**	**0.0000**	**6,364.3405**	**6,364.3405**	**2.0584**		**6,415.7994**

3.3 Grading - remedial grading for compaction - 2021

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	0.0458	0.0289	0.2957	1.1100e-003	15.6899	7.7000e-004	15.6906	1.5836	7.1000e-004	1.5843		111.0814	111.0814	2.0300e-003		111.1321
Total	**0.0458**	**0.0289**	**0.2957**	**1.1100e-003**	**15.6899**	**7.7000e-004**	**15.6906**	**1.5836**	**7.1000e-004**	**1.5843**		**111.0814**	**111.0814**	**2.0300e-003**		**111.1321**

3.4 Building - Install foundation piles - 2021

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	2.4740	23.7860	22.1250	0.0460		1.1565	1.1565		1.0833	1.0833		4,396.7753	4,396.7753	1.2122		4,427.0806
Total	**2.4740**	**23.7860**	**22.1250**	**0.0460**		**1.1565**	**1.1565**		**1.0833**	**1.0833**		**4,396.7753**	**4,396.7753**	**1.2122**		**4,427.0806**

3.4 Building - Install foundation piles - 2021

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	0.0132	0.4165	0.1864	1.0400e-003	4.3224	9.8000e-004	4.3234	0.4361	9.4000e-004	0.4371		114.2206	114.2206	0.0101		114.4728
Worker	0.0458	0.0289	0.2957	1.1100e-003	25.5506	7.7000e-004	25.5514	2.5697	7.1000e-004	2.5704		111.0814	111.0814	2.0300e-003		111.1321
Total	**0.0590**	**0.4454**	**0.4821**	**2.1500e-003**	**29.8730**	**1.7500e-003**	**29.8747**	**3.0058**	**1.6500e-003**	**3.0075**		**225.3019**	**225.3019**	**0.0121**		**225.6049**

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	2.3057	24.3545	24.0091	0.0460		1.2097	1.2097		1.1509	1.1509	0.0000	4,396.7753	4,396.7753	1.2122		4,427.0806
Total	**2.3057**	**24.3545**	**24.0091**	**0.0460**		**1.2097**	**1.2097**		**1.1509**	**1.1509**	**0.0000**	**4,396.7753**	**4,396.7753**	**1.2122**		**4,427.0806**

3.4 Building - Install foundation piles - 2021

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	0.0132	0.4165	0.1864	1.0400e-003	2.6561	9.8000e-004	2.6571	0.2695	9.4000e-004	0.2704		114.2206	114.2206	0.0101		114.4728
Worker	0.0458	0.0289	0.2957	1.1100e-003	15.6899	7.7000e-004	15.6906	1.5836	7.1000e-004	1.5843		111.0814	111.0814	2.0300e-003		111.1321
Total	**0.0590**	**0.4454**	**0.4821**	**2.1500e-003**	**18.3460**	**1.7500e-003**	**18.3477**	**1.8531**	**1.6500e-003**	**1.8548**		**225.3019**	**225.3019**	**0.0121**		**225.6049**

3.5 Building - Install plant and ancillary features - 2021

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	3.0676	28.8672	23.9117	0.0502		1.2877	1.2877		1.2099	1.2099		4,767.0945	4,767.0945	1.2919		4,799.3918
Total	**3.0676**	**28.8672**	**23.9117**	**0.0502**		**1.2877**	**1.2877**		**1.2099**	**1.2099**		**4,767.0945**	**4,767.0945**	**1.2919**		**4,799.3918**

3.5 Building - Install plant and ancillary features - 2021

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	6.2600e-003	0.2195	0.1034	5.8000e-004	2.1702	6.7000e-004	2.1709	0.2186	6.4000e-004	0.2193		65.9822	65.9822	8.5300e-003		66.1955
Vendor	0.0329	1.0413	0.4661	2.5900e-003	10.8059	2.4500e-003	10.8084	1.0903	2.3500e-003	1.0926		285.5515	285.5515	0.0252		286.1820
Worker	0.0859	0.0541	0.5544	2.0900e-003	47.9074	1.4400e-003	47.9088	4.8182	1.3200e-003	4.8195		208.2775	208.2775	3.8100e-003		208.3727
Total	**0.1251**	**1.3149**	**1.1239**	**5.2600e-003**	**60.8836**	**4.5600e-003**	**60.8881**	**6.1271**	**4.3100e-003**	**6.1314**		**559.8112**	**559.8112**	**0.0376**		**560.7502**

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	2.6716	28.9632	27.6538	0.0502		1.3221	1.3221		1.2704	1.2704	0.0000	4,767.0945	4,767.0945	1.2919		4,799.3918
Total	**2.6716**	**28.9632**	**27.6538**	**0.0502**		**1.3221**	**1.3221**		**1.2704**	**1.2704**	**0.0000**	**4,767.0945**	**4,767.0945**	**1.2919**		**4,799.3918**

3.5 Building - Install plant and ancillary features - 2021

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	6.2600e-003	0.2195	0.1034	5.8000e-004	1.3333	6.7000e-004	1.3340	0.1349	6.4000e-004	0.1356		65.9822	65.9822	8.5300e-003		66.1955
Vendor	0.0329	1.0413	0.4661	2.5900e-003	6.6402	2.4500e-003	6.6427	0.6737	2.3500e-003	0.6761		285.5515	285.5515	0.0252		286.1820
Worker	0.0859	0.0541	0.5544	2.0900e-003	29.4185	1.4400e-003	29.4199	2.9693	1.3200e-003	2.9706		208.2775	208.2775	3.8100e-003		208.3727
Total	**0.1251**	**1.3149**	**1.1239**	**5.2600e-003**	**37.3920**	**4.5600e-003**	**37.3966**	**3.7780**	**4.3100e-003**	**3.7823**		**559.8112**	**559.8112**	**0.0376**		**560.7502**

3.6 Building - Install shop building - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5458	14.8627	14.4624	0.0251		0.7014	0.7014		0.6646	0.6646		2,372.9262	2,372.9262	0.5577		2,386.8677
Total	**1.5458**	**14.8627**	**14.4624**	**0.0251**		**0.7014**	**0.7014**		**0.6646**	**0.6646**		**2,372.9262**	**2,372.9262**	**0.5577**		**2,386.8677**

3.6 Building - Install shop building - 2021

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	6.8300e-003	0.2395	0.1128	6.3000e-004	2.3675	7.3000e-004	2.3683	0.2385	7.0000e-004	0.2392		71.9805	71.9805	9.3100e-003		72.2133
Vendor	0.0329	1.0413	0.4661	2.5900e-003	10.8059	2.4500e-003	10.8084	1.0903	2.3500e-003	1.0926		285.5515	285.5515	0.0252		286.1820
Worker	0.0687	0.0433	0.4436	1.6700e-003	38.3259	1.1500e-003	38.3271	3.8546	1.0600e-003	3.8556		166.6220	166.6220	3.0500e-003		166.6982
Total	**0.1084**	**1.3241**	**1.0224**	**4.8900e-003**	**51.4994**	**4.3300e-003**	**51.5037**	**5.1834**	**4.1100e-003**	**5.1875**		**524.1540**	**524.1540**	**0.0376**		**525.0934**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4999	14.7962	14.4962	0.0251		0.7054	0.7054		0.6724	0.6724	0.0000	2,372.9262	2,372.9262	0.5577		2,386.8677
Total	**1.4999**	**14.7962**	**14.4962**	**0.0251**		**0.7054**	**0.7054**		**0.6724**	**0.6724**	**0.0000**	**2,372.9262**	**2,372.9262**	**0.5577**		**2,386.8677**

3.6 Building - Install shop building - 2021

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	6.8300e-003	0.2395	0.1128	6.3000e-004	1.4545	7.3000e-004	1.4552	0.1472	7.0000e-004	0.1479		71.9805	71.9805	9.3100e-003		72.2133
Vendor	0.0329	1.0413	0.4661	2.5900e-003	6.6402	2.4500e-003	6.6427	0.6737	2.3500e-003	0.6761		285.5515	285.5515	0.0252		286.1820
Worker	0.0687	0.0433	0.4436	1.6700e-003	23.5348	1.1500e-003	23.5360	2.3755	1.0600e-003	2.3765		166.6220	166.6220	3.0500e-003		166.6982
Total	**0.1084**	**1.3241**	**1.0224**	**4.8900e-003**	**31.6295**	**4.3300e-003**	**31.6338**	**3.1964**	**4.1100e-003**	**3.2005**		**524.1540**	**524.1540**	**0.0376**		**525.0934**

3.7 Paving: Pave site entry-exit - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2205	12.8746	10.2624	0.0223		0.5553	0.5553		0.5109	0.5109		2,154.4077	2,154.4077	0.6968		2,171.8272
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2205**	**12.8746**	**10.2624**	**0.0223**		**0.5553**	**0.5553**		**0.5109**	**0.5109**		**2,154.4077**	**2,154.4077**	**0.6968**		**2,171.8272**

3.7 Paving: Pave site entry-exit - 2021

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	0.1093	3.8311	1.8043	0.0101	37.8803	0.0117	37.8921	3.8162	0.0112	3.8274		1,151.688 4	1,151.688 4	0.1490		1,155.412 5
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	0.0458	0.0289	0.2957	1.1100e-003	25.5506	7.7000e-004	25.5514	2.5697	7.1000e-004	2.5704		111.0814	111.0814	2.0300e-003		111.1321
Total	**0.1551**	**3.8600**	**2.1000**	**0.0112**	**63.4310**	**0.0125**	**63.4434**	**6.3859**	**0.0119**	**6.3978**		**1,262.769 7**	**1,262.769 7**	**0.1510**		**1,266.544 6**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0355	11.1008	11.3751	0.0223		0.5116	0.5116		0.4767	0.4767	0.0000	2,154.407 7	2,154.407 7	0.6968		2,171.827 2
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0355**	**11.1008**	**11.3751**	**0.0223**		**0.5116**	**0.5116**		**0.4767**	**0.4767**	**0.0000**	**2,154.407 7**	**2,154.407 7**	**0.6968**		**2,171.827 2**

3.7 Paving: Pave site entry-exit - 2021

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	0.1093	3.8311	1.8043	0.0101	23.2718	0.0117	23.2835	2.3553	0.0112	2.3665		1,151.6884	1,151.6884	0.1490		1,155.4125
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	0.0458	0.0289	0.2957	1.1100e-003	15.6899	7.7000e-004	15.6906	1.5836	7.1000e-004	1.5843		111.0814	111.0814	2.0300e-003		111.1321
Total	**0.1551**	**3.8600**	**2.1000**	**0.0112**	**38.9617**	**0.0125**	**38.9742**	**3.9390**	**0.0119**	**3.9509**		**1,262.7697**	**1,262.7697**	**0.1510**		**1,266.5446**

3.8 Site Prep: Install wheel wash - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.2752	41.2354	21.7452	0.0411		2.0740	2.0740		1.9383	1.9383		3,916.9526	3,916.9526	0.9636		3,941.0427
Total	**4.2752**	**41.2354**	**21.7452**	**0.0411**	**18.0663**	**2.0740**	**20.1403**	**9.9307**	**1.9383**	**11.8689**		**3,916.9526**	**3,916.9526**	**0.9636**		**3,941.0427**

3.8 Site Prep: Install wheel wash - 2021

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	3.4200e-003	0.1197	0.0564	3.2000e-004	1.1838	3.7000e-004	1.1841	0.1193	3.5000e-004	0.1196		35.9903	35.9903	4.6600e-003		36.1066
Vendor	0.0132	0.4165	0.1864	1.0400e-003	4.3224	9.8000e-004	4.3234	0.4361	9.4000e-004	0.4371		114.2206	114.2206	0.0101		114.4728
Worker	0.0401	0.0253	0.2587	9.7000e-004	22.3568	6.7000e-004	22.3575	2.2485	6.2000e-004	2.2491		97.1962	97.1962	1.7800e-003		97.2406
Total	**0.0567**	**0.5615**	**0.5016**	**2.3300e-003**	**27.8629**	**2.0200e-003**	**27.8649**	**2.8039**	**1.9100e-003**	**2.8058**		**247.4070**	**247.4070**	**0.0165**		**247.8200**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.2476	32.8877	22.3534	0.0411		1.6211	1.6211		1.5383	1.5383	0.0000	3,916.9526	3,916.9526	0.9636		3,941.0427
Total	**3.2476**	**32.8877**	**22.3534**	**0.0411**	**8.1298**	**1.6211**	**9.7509**	**4.4688**	**1.5383**	**6.0071**	**0.0000**	**3,916.9526**	**3,916.9526**	**0.9636**		**3,941.0427**

3.8 Site Prep: Install wheel wash - 2021

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	3.4200e-003	0.1197	0.0564	3.2000e-004	0.7272	3.7000e-004	0.7276	0.0736	3.5000e-004	0.0740		35.9903	35.9903	4.6600e-003		36.1066
Vendor	0.0132	0.4165	0.1864	1.0400e-003	2.6561	9.8000e-004	2.6571	0.2695	9.4000e-004	0.2704		114.2206	114.2206	0.0101		114.4728
Worker	0.0401	0.0253	0.2587	9.7000e-004	13.7286	6.7000e-004	13.7293	1.3857	6.2000e-004	1.3863		97.1962	97.1962	1.7800e-003		97.2406
Total	**0.0567**	**0.5615**	**0.5016**	**2.3300e-003**	**17.1120**	**2.0200e-003**	**17.1140**	**1.7288**	**1.9100e-003**	**1.7307**		**247.4070**	**247.4070**	**0.0165**		**247.8200**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	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
	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

Land Use	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
	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	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	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**5.0000e-005**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CEMEX Port of Redwood City Ready-Mix Concrete Plant Project

San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	5.00	User Defined Unit	5.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project construction model. Plant operations modeled separately.

Land Use - Project area approximately 5 acres per site plan.

Construction Phase - See Appendix A-1 for construction assumption details.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Off-road Equipment - See Appendix A-1 for detail.

Grading - Less than 2 acres subject to remedial grading. See Appendix A-1 for detail.

Demolition - Assume up to 10 tons of C&D debris.

Trips and VMT - See Appendix A-1 for detail.

On-road Fugitive Dust - Adjustment to 90 percent to account for on-site travel on unpaved roads.

Energy Use -

Construction Off-road Equipment Mitigation - See Appendix A-1 for detail.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	5.00
tblConstructionPhase	NumDays	230.00	60.00
tblConstructionPhase	NumDays	230.00	40.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	5.00
tblGrading	AcresOfGrading	22.50	2.00
tblLandUse	LotAcreage	0.00	5.00
tblOffRoadEquipment	HorsePower	231.00	275.00
tblOffRoadEquipment	HorsePower	231.00	275.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	203.00	276.00
tblOffRoadEquipment	HorsePower	187.00	238.00
tblOffRoadEquipment	HorsePower	247.00	303.00
tblOffRoadEquipment	HorsePower	247.00	303.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	367.00	365.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	203.00	276.00
tblOffRoadEquipment	HorsePower	158.00	239.00
tblOffRoadEquipment	HorsePower	187.00	238.00

tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.37
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00

tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
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tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	HaulingTripNumber	1.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	44.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	64.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	23.00	16.00
tblTripsAndVMT	WorkerTripNumber	0.00	16.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00
tblTripsAndVMT	WorkerTripNumber	13.00	16.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1770	1.7229	1.4257	3.0300e-003	2.7744	0.0746	2.8490	0.3135	0.0700	0.3834	0.0000	265.1433	265.1433	0.0662	0.0000	266.7974
Maximum	**0.1770**	**1.7229**	**1.4257**	**3.0300e-003**	**2.7744**	**0.0746**	**2.8490**	**0.3135**	**0.0700**	**0.3834**	**0.0000**	**265.1433**	**265.1433**	**0.0662**	**0.0000**	**266.7974**

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					
2021	0.1513	1.6480	1.5643	3.0300e-003	1.6924	0.0726	1.7649	0.1867	0.0695	0.2562	0.0000	265.1430	265.1430	0.0662	0.0000	266.7971
Maximum	**0.1513**	**1.6480**	**1.5643**	**3.0300e-003**	**1.6924**	**0.0726**	**1.7649**	**0.1867**	**0.0695**	**0.2562**	**0.0000**	**265.1430**	**265.1430**	**0.0662**	**0.0000**	**266.7971**

	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	**14.49**	**4.35**	**-9.72**	**0.00**	**39.00**	**2.76**	**38.05**	**40.46**	**0.66**	**33.20**	**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	**5-3-2021**	**8-2-2021**	1.0693	1.0110
2	**8-3-2021**	**9-30-2021**	0.4622	0.4587
		Highest	1.0693	1.0110

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-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	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	**0.0000**	**0.0000**	**5.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-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	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	**0.0000**	**0.0000**	**5.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

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

3.0 Construction Detail

Construction Phase

CEMEX Port of Redwood City Ready-Mix Concrete Plant Project - San Mateo County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - remove existing equipment	Demolition	5/3/2021	5/7/2021	5	5	Remove existing equipment from project area
2	Grading - remedial grading for compaction	Grading	5/10/2021	5/21/2021	5	10	Remedial grading 2-4 feet for compaction
3	Building - Install foundation piles	Building Construction	5/24/2021	5/28/2021	5	5	Install foundation piles for plant and shop
4	Building - Install plant and ancillary features	Building Construction	5/31/2021	8/20/2021	5	60	Install concrete plant hopper conveyor and ponds
5	Building - Install shop building	Building Construction	8/23/2021	10/15/2021	5	40	Install 2500 sq ft shop
6	Paving: Pave site entry-exit	Paving	10/18/2021	10/22/2021	5	5	Pave 13000 sq ft site entry-exit
7	Site Prep: Install wheel wash	Site Preparation	10/25/2021	10/29/2021	5	5	Install wheel wash at paved entry-exit

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - remove existing equipment	Concrete/Industrial Saws	1	8.00	81	0.73
Building - Install foundation piles	Cranes	1	8.00	275	0.29
Building - Install plant and ancillary features	Cranes	1	8.00	275	0.29
Building - Install shop building	Cranes	1	8.00	231	0.29
Demolition - remove existing equipment	Excavators	1	8.00	239	0.38
Building - Install foundation piles	Bore/Drill Rigs	1	8.00	221	0.50
Building - Install plant and ancillary features	Excavators	1	8.00	239	0.38
Building - Install plant and ancillary features	Forklifts	1	8.00	89	0.20

Building - Install shop building	Forklifts	1	8.00	89	0.20
Building - Install plant and ancillary features	Rubber Tired Loaders	1	8.00	276	0.36
Building - Install plant and ancillary features	Generator Sets	1	8.00	84	0.74
Building - Install shop building	Generator Sets	1	8.00	84	0.74
Grading - remedial grading for compaction	Graders	1	4.00	238	0.41
Paving: Pave site entry-exit	Pavers	1	8.00	130	0.42
Paving: Pave site entry-exit	Paving Equipment	1	8.00	132	0.36
Paving: Pave site entry-exit	Rollers	1	8.00	80	0.38
Demolition - remove existing equipment	Rubber Tired Dozers	1	8.00	303	0.40
Grading - remedial grading for compaction	Rubber Tired Dozers	1	8.00	303	0.40
Demolition - remove existing equipment	Off-Highway Trucks	1	8.00	402	0.38
Building - Install plant and ancillary features	Cranes	1	8.00	231	0.29
Building - Install plant and ancillary features	Tractors/Loaders/Backhoes	2	8.00	100	0.37
Building - Install shop building	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Grading - remedial grading for compaction	Scrapers	2	8.00	365	0.37
Site Prep: Install wheel wash	Tractors/Loaders/Backhoes	1	4.00	100	0.37
Building - Install foundation piles	Welders	1	8.00	46	0.45
Building - Install plant and ancillary features	Welders	2	8.00	46	0.45
Building - Install shop building	Welders	1	8.00	46	0.45
Demolition - remove existing equipment	Rubber Tired Loaders	1	8.00	276	0.36
Grading - remedial grading for compaction	Off-Highway Trucks	1	8.00	402	0.38
Building - Install foundation piles	Excavators	1	8.00	239	0.38
Building - Install shop building	Skid Steer Loaders	1	8.00	65	0.37
Building - Install shop building	Aerial Lifts	2	8.00	63	0.31
Site Prep: Install wheel wash	Air Compressors	1	8.00	78	0.48

Site Prep: Install wheel wash	Forklifts	1	4.00	89	0.20
Site Prep: Install wheel wash	Pumps	1	8.00	84	0.74
Site Prep: Install wheel wash	Welders	1	8.00	46	0.45
Building - Install plant and ancillary features	Aerial Lifts	1	8.00	63	0.31
Paving: Pave site entry-exit	Graders	1	4.00	238	0.41
Paving: Pave site entry-exit	Off-Highway Trucks	1	4.00	402	0.38
Grading - remedial grading for compaction	Excavators	1	8.00	158	0.38
Building - Install foundation piles	Forklifts	3	8.00	89	0.20
Building - Install foundation piles	Generator Sets	1	8.00	84	0.74
Site Prep: Install wheel wash	Rubber Tired Dozers	3	8.00	247	0.40
Building - Install foundation piles	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading - remedial grading for compaction	Tractors/Loaders/Backhoes	3	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
Demolition - remove existing equipment	5	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading - remedial grading for compactio	9	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install foundation piles	11	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install plant and ancillary features	11	30.00	10.00	44.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building - Install shop building	8	24.00	10.00	32.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving: Pave site entry-exit	5	16.00	0.00	64.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Prep: Install wheel wash	8	14.00	4.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - remove existing equipment - 2021

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					1.1000e-004	0.0000	1.1000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9200e-003	0.0662	0.0510	1.2000e-004		2.7900e-003	2.7900e-003		2.6100e-003	2.6100e-003	0.0000	10.1541	10.1541	2.9300e-003	0.0000	10.2273
Total	**6.9200e-003**	**0.0662**	**0.0510**	**1.2000e-004**	**1.1000e-004**	**2.7900e-003**	**2.9000e-003**	**2.0000e-005**	**2.6100e-003**	**2.6300e-003**	**0.0000**	**10.1541**	**10.1541**	**2.9300e-003**	**0.0000**	**10.2273**

3.2 Demolition - remove existing equipment - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.4000e-004	0.0000	0.0388	0.0000	0.0388	3.9000e-003	0.0000	3.9000e-003	0.0000	0.1897	0.1897	0.0000	0.0000	0.1898
Total	**8.0000e-005**	**5.0000e-005**	**5.4000e-004**	**0.0000**	**0.0388**	**0.0000**	**0.0388**	**3.9000e-003**	**0.0000**	**3.9000e-003**	**0.0000**	**0.1897**	**0.1897**	**0.0000**	**0.0000**	**0.1898**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3700e-003	0.0609	0.0571	1.2000e-004		2.5500e-003	2.5500e-003		2.4500e-003	2.4500e-003	0.0000	10.1541	10.1541	2.9300e-003	0.0000	10.2272
Total	**5.3700e-003**	**0.0609**	**0.0571**	**1.2000e-004**	**5.0000e-005**	**2.5500e-003**	**2.6000e-003**	**1.0000e-005**	**2.4500e-003**	**2.4600e-003**	**0.0000**	**10.1541**	**10.1541**	**2.9300e-003**	**0.0000**	**10.2272**

3.2 Demolition - remove existing equipment - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.4000e-004	0.0000	0.0238	0.0000	0.0238	2.4100e-003	0.0000	2.4100e-003	0.0000	0.1897	0.1897	0.0000	0.0000	0.1898
Total	**8.0000e-005**	**5.0000e-005**	**5.4000e-004**	**0.0000**	**0.0238**	**0.0000**	**0.0238**	**2.4100e-003**	**0.0000**	**2.4100e-003**	**0.0000**	**0.1897**	**0.1897**	**0.0000**	**0.0000**	**0.1898**

3.3 Grading - remedial grading for compaction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0312	0.0000	0.0312	0.0167	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0208	0.2207	0.1708	3.3000e-004		9.4300e-003	9.4300e-003		8.6800e-003	8.6800e-003	0.0000	28.8682	28.8682	9.3400e-003	0.0000	29.1016
Total	**0.0208**	**0.2207**	**0.1708**	**3.3000e-004**	**0.0312**	**9.4300e-003**	**0.0406**	**0.0167**	**8.6800e-003**	**0.0254**	**0.0000**	**28.8682**	**28.8682**	**9.3400e-003**	**0.0000**	**29.1016**

3.3 Grading - remedial grading for compaction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.3000e-004	1.4400e-003	1.0000e-005	0.1033	0.0000	0.1034	0.0104	0.0000	0.0104	0.0000	0.5058	0.5058	1.0000e-005	0.0000	0.5060
Total	**2.0000e-004**	**1.3000e-004**	**1.4400e-003**	**1.0000e-005**	**0.1033**	**0.0000**	**0.1034**	**0.0104**	**0.0000**	**0.0104**	**0.0000**	**0.5058**	**0.5058**	**1.0000e-005**	**0.0000**	**0.5060**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0140	0.0000	0.0140	7.5000e-003	0.0000	7.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0130	0.1734	0.1813	3.3000e-004		7.6100e-003	7.6100e-003		7.3300e-003	7.3300e-003	0.0000	28.8681	28.8681	9.3400e-003	0.0000	29.1015
Total	**0.0130**	**0.1734**	**0.1813**	**3.3000e-004**	**0.0140**	**7.6100e-003**	**0.0216**	**7.5000e-003**	**7.3300e-003**	**0.0148**	**0.0000**	**28.8681**	**28.8681**	**9.3400e-003**	**0.0000**	**29.1015**

3.3 Grading - remedial grading for compaction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.3000e-004	1.4400e-003	1.0000e-005	0.0635	0.0000	0.0635	6.4200e-003	0.0000	6.4300e-003	0.0000	0.5058	0.5058	1.0000e-005	0.0000	0.5060
Total	**2.0000e-004**	**1.3000e-004**	**1.4400e-003**	**1.0000e-005**	**0.0635**	**0.0000**	**0.0635**	**6.4200e-003**	**0.0000**	**6.4300e-003**	**0.0000**	**0.5058**	**0.5058**	**1.0000e-005**	**0.0000**	**0.5060**

3.4 Building - Install foundation piles - 2021

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	6.1800e-003	0.0595	0.0553	1.1000e-004		2.8900e-003	2.8900e-003		2.7100e-003	2.7100e-003	0.0000	9.9717	9.9717	2.7500e-003	0.0000	10.0405
Total	**6.1800e-003**	**0.0595**	**0.0553**	**1.1000e-004**		**2.8900e-003**	**2.8900e-003**		**2.7100e-003**	**2.7100e-003**	**0.0000**	**9.9717**	**9.9717**	**2.7500e-003**	**0.0000**	**10.0405**

3.4 Building - Install foundation piles - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.0400e-003	4.5000e-004	0.0000	8.7400e-003	0.0000	8.7500e-003	8.8000e-004	0.0000	8.9000e-004	0.0000	0.2617	0.2617	2.0000e-005	0.0000	0.2623
Worker	1.0000e-004	7.0000e-005	7.2000e-004	0.0000	0.0517	0.0000	0.0517	5.2000e-003	0.0000	5.2100e-003	0.0000	0.2529	0.2529	0.0000	0.0000	0.2530
Total	**1.3000e-004**	**1.1100e-003**	**1.1700e-003**	**0.0000**	**0.0604**	**0.0000**	**0.0604**	**6.0800e-003**	**0.0000**	**6.1000e-003**	**0.0000**	**0.5146**	**0.5146**	**2.0000e-005**	**0.0000**	**0.5153**

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	5.7600e-003	0.0609	0.0600	1.1000e-004		3.0200e-003	3.0200e-003		2.8800e-003	2.8800e-003	0.0000	9.9717	9.9717	2.7500e-003	0.0000	10.0404
Total	**5.7600e-003**	**0.0609**	**0.0600**	**1.1000e-004**		**3.0200e-003**	**3.0200e-003**		**2.8800e-003**	**2.8800e-003**	**0.0000**	**9.9717**	**9.9717**	**2.7500e-003**	**0.0000**	**10.0404**

3.4 Building - Install foundation piles - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.0400e-003	4.5000e-004	0.0000	5.3800e-003	0.0000	5.3800e-003	5.5000e-004	0.0000	5.5000e-004	0.0000	0.2617	0.2617	2.0000e-005	0.0000	0.2623
Worker	1.0000e-004	7.0000e-005	7.2000e-004	0.0000	0.0318	0.0000	0.0318	3.2100e-003	0.0000	3.2100e-003	0.0000	0.2529	0.2529	0.0000	0.0000	0.2530
Total	**1.3000e-004**	**1.1100e-003**	**1.1700e-003**	**0.0000**	**0.0371**	**0.0000**	**0.0371**	**3.7600e-003**	**0.0000**	**3.7600e-003**	**0.0000**	**0.5146**	**0.5146**	**2.0000e-005**	**0.0000**	**0.5153**

3.5 Building - Install plant and ancillary features - 2021

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	0.0920	0.8660	0.7174	1.5100e-003		0.0386	0.0386		0.0363	0.0363	0.0000	129.7391	129.7391	0.0352	0.0000	130.6181
Total	**0.0920**	**0.8660**	**0.7174**	**1.5100e-003**		**0.0386**	**0.0386**		**0.0363**	**0.0363**	**0.0000**	**129.7391**	**129.7391**	**0.0352**	**0.0000**	**130.6181**

3.5 Building - Install plant and ancillary features - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.5400e-003	3.0600e-003	2.0000e-005	0.0527	2.0000e-005	0.0527	5.3200e-003	2.0000e-005	5.3400e-003	0.0000	1.8069	1.8069	2.3000e-004	0.0000	1.8127
Vendor	9.6000e-004	0.0312	0.0134	8.0000e-005	0.2623	7.0000e-005	0.2624	0.0265	7.0000e-005	0.0266	0.0000	7.8511	7.8511	6.8000e-004	0.0000	7.8681
Worker	2.2900e-003	1.4900e-003	0.0162	6.0000e-005	1.1626	4.0000e-005	1.1627	0.1171	4.0000e-005	0.1171	0.0000	5.6899	5.6899	1.0000e-004	0.0000	5.6925
Total	**3.4400e-003**	**0.0393**	**0.0326**	**1.6000e-004**	**1.4776**	**1.3000e-004**	**1.4777**	**0.1490**	**1.3000e-004**	**0.1491**	**0.0000**	**15.3479**	**15.3479**	**1.0100e-003**	**0.0000**	**15.3733**

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	0.0802	0.8689	0.8296	1.5100e-003		0.0397	0.0397		0.0381	0.0381	0.0000	129.7389	129.7389	0.0352	0.0000	130.6179
Total	**0.0802**	**0.8689**	**0.8296**	**1.5100e-003**		**0.0397**	**0.0397**		**0.0381**	**0.0381**	**0.0000**	**129.7389**	**129.7389**	**0.0352**	**0.0000**	**130.6179**

3.5 Building - Install plant and ancillary features - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.5400e-003	3.0600e-003	2.0000e-005	0.0324	2.0000e-005	0.0324	3.2900e-003	2.0000e-005	3.3100e-003	0.0000	1.8069	1.8069	2.3000e-004	0.0000	1.8127
Vendor	9.6000e-004	0.0312	0.0134	8.0000e-005	0.1613	7.0000e-005	0.1614	0.0164	7.0000e-005	0.0165	0.0000	7.8511	7.8511	6.8000e-004	0.0000	7.8681
Worker	2.2900e-003	1.4900e-003	0.0162	6.0000e-005	0.7143	4.0000e-005	0.7144	0.0723	4.0000e-005	0.0723	0.0000	5.6899	5.6899	1.0000e-004	0.0000	5.6925
Total	**3.4400e-003**	**0.0393**	**0.0326**	**1.6000e-004**	**0.9080**	**1.3000e-004**	**0.9081**	**0.0920**	**1.3000e-004**	**0.0921**	**0.0000**	**15.3479**	**15.3479**	**1.0100e-003**	**0.0000**	**15.3733**

3.6 Building - Install shop building - 2021

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	0.0309	0.2973	0.2893	5.0000e-004		0.0140	0.0140		0.0133	0.0133	0.0000	43.0537	43.0537	0.0101	0.0000	43.3066
Total	**0.0309**	**0.2973**	**0.2893**	**5.0000e-004**		**0.0140**	**0.0140**		**0.0133**	**0.0133**	**0.0000**	**43.0537**	**43.0537**	**0.0101**	**0.0000**	**43.3066**

3.6 Building - Install shop building - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4000e-004	4.7600e-003	2.2300e-003	1.0000e-005	0.0383	1.0000e-005	0.0383	3.8700e-003	1.0000e-005	3.8800e-003	0.0000	1.3141	1.3141	1.7000e-004	0.0000	1.3183
Vendor	6.4000e-004	0.0208	8.9400e-003	5.0000e-005	0.1749	5.0000e-005	0.1749	0.0177	5.0000e-005	0.0177	0.0000	5.2341	5.2341	4.5000e-004	0.0000	5.2454
Worker	1.2200e-003	8.0000e-004	8.6300e-003	3.0000e-005	0.6201	2.0000e-005	0.6201	0.0625	2.0000e-005	0.0625	0.0000	3.0346	3.0346	6.0000e-005	0.0000	3.0360
Total	**2.0000e-003**	**0.0264**	**0.0198**	**9.0000e-005**	**0.8332**	**8.0000e-005**	**0.8333**	**0.0840**	**8.0000e-005**	**0.0841**	**0.0000**	**9.5828**	**9.5828**	**6.8000e-004**	**0.0000**	**9.5997**

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	0.0300	0.2959	0.2899	5.0000e-004		0.0141	0.0141		0.0135	0.0135	0.0000	43.0536	43.0536	0.0101	0.0000	43.3066
Total	**0.0300**	**0.2959**	**0.2899**	**5.0000e-004**		**0.0141**	**0.0141**		**0.0135**	**0.0135**	**0.0000**	**43.0536**	**43.0536**	**0.0101**	**0.0000**	**43.3066**

3.6 Building - Install shop building - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4000e-004	4.7600e-003	2.2300e-003	1.0000e-005	0.0236	1.0000e-005	0.0236	2.3900e-003	1.0000e-005	2.4000e-003	0.0000	1.3141	1.3141	1.7000e-004	0.0000	1.3183
Vendor	6.4000e-004	0.0208	8.9400e-003	5.0000e-005	0.1075	5.0000e-005	0.1076	0.0110	5.0000e-005	0.0110	0.0000	5.2341	5.2341	4.5000e-004	0.0000	5.2454
Worker	1.2200e-003	8.0000e-004	8.6300e-003	3.0000e-005	0.3810	2.0000e-005	0.3810	0.0386	2.0000e-005	0.0386	0.0000	3.0346	3.0346	6.0000e-005	0.0000	3.0360
Total	**2.0000e-003**	**0.0264**	**0.0198**	**9.0000e-005**	**0.5121**	**8.0000e-005**	**0.5121**	**0.0519**	**8.0000e-005**	**0.0520**	**0.0000**	**9.5828**	**9.5828**	**6.8000e-004**	**0.0000**	**9.5997**

3.7 Paving: Pave site entry-exit - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0500e-003	0.0322	0.0257	6.0000e-005		1.3900e-003	1.3900e-003		1.2800e-003	1.2800e-003	0.0000	4.8861	4.8861	1.5800e-003	0.0000	4.9256
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.0500e-003**	**0.0322**	**0.0257**	**6.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**4.8861**	**4.8861**	**1.5800e-003**	**0.0000**	**4.9256**

3.7 Paving: Pave site entry-exit - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	9.5200e-003	4.4500e-003	3.0000e-005	0.0766	3.0000e-005	0.0767	7.7300e-003	3.0000e-005	7.7600e-003	0.0000	2.6283	2.6283	3.4000e-004	0.0000	2.6367
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	7.2000e-004	0.0000	0.0517	0.0000	0.0517	5.2000e-003	0.0000	5.2100e-003	0.0000	0.2529	0.2529	0.0000	0.0000	0.2530
Total	**3.7000e-004**	**9.5900e-003**	**5.1700e-003**	**3.0000e-005**	**0.1283**	**3.0000e-005**	**0.1283**	**0.0129**	**3.0000e-005**	**0.0130**	**0.0000**	**2.8812**	**2.8812**	**3.4000e-004**	**0.0000**	**2.8897**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5900e-003	0.0278	0.0284	6.0000e-005		1.2800e-003	1.2800e-003		1.1900e-003	1.1900e-003	0.0000	4.8861	4.8861	1.5800e-003	0.0000	4.9256
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.5900e-003**	**0.0278**	**0.0284**	**6.0000e-005**		**1.2800e-003**	**1.2800e-003**		**1.1900e-003**	**1.1900e-003**	**0.0000**	**4.8861**	**4.8861**	**1.5800e-003**	**0.0000**	**4.9256**

3.7 Paving: Pave site entry-exit - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	9.5200e-003	4.4500e-003	3.0000e-005	0.0471	3.0000e-005	0.0471	4.7800e-003	3.0000e-005	4.8100e-003	0.0000	2.6283	2.6283	3.4000e-004	0.0000	2.6367
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	7.2000e-004	0.0000	0.0318	0.0000	0.0318	3.2100e-003	0.0000	3.2100e-003	0.0000	0.2529	0.2529	0.0000	0.0000	0.2530
Total	**3.7000e-004**	**9.5900e-003**	**5.1700e-003**	**3.0000e-005**	**0.0789**	**3.0000e-005**	**0.0789**	**7.9900e-003**	**3.0000e-005**	**8.0200e-003**	**0.0000**	**2.8812**	**2.8812**	**3.4000e-004**	**0.0000**	**2.8897**

3.8 Site Prep: Install wheel wash - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0107	0.1031	0.0544	1.0000e-004		5.1900e-003	5.1900e-003		4.8500e-003	4.8500e-003	0.0000	8.8835	8.8835	2.1900e-003	0.0000	8.9381
Total	**0.0107**	**0.1031**	**0.0544**	**1.0000e-004**	**0.0452**	**5.1900e-003**	**0.0504**	**0.0248**	**4.8500e-003**	**0.0297**	**0.0000**	**8.8835**	**8.8835**	**2.1900e-003**	**0.0000**	**8.9381**

3.8 Site Prep: Install wheel wash - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	1.4000e-004	0.0000	2.3900e-003	0.0000	2.4000e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0821	0.0821	1.0000e-005	0.0000	0.0824
Vendor	3.0000e-005	1.0400e-003	4.5000e-004	0.0000	8.7400e-003	0.0000	8.7500e-003	8.8000e-004	0.0000	8.9000e-004	0.0000	0.2617	0.2617	2.0000e-005	0.0000	0.2623
Worker	9.0000e-005	6.0000e-005	6.3000e-004	0.0000	0.0452	0.0000	0.0452	4.5500e-003	0.0000	4.5600e-003	0.0000	0.2213	0.2213	0.0000	0.0000	0.2214
Total	**1.3000e-004**	**1.4000e-003**	**1.2200e-003**	**0.0000**	**0.0563**	**0.0000**	**0.0564**	**5.6700e-003**	**0.0000**	**5.6900e-003**	**0.0000**	**0.5651**	**0.5651**	**3.0000e-005**	**0.0000**	**0.5660**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.1200e-003	0.0822	0.0559	1.0000e-004		4.0500e-003	4.0500e-003		3.8500e-003	3.8500e-003	0.0000	8.8835	8.8835	2.1900e-003	0.0000	8.9381
Total	**8.1200e-003**	**0.0822**	**0.0559**	**1.0000e-004**	**0.0203**	**4.0500e-003**	**0.0244**	**0.0112**	**3.8500e-003**	**0.0150**	**0.0000**	**8.8835**	**8.8835**	**2.1900e-003**	**0.0000**	**8.9381**

3.8 Site Prep: Install wheel wash - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	1.4000e-004	0.0000	1.4700e-003	0.0000	1.4700e-003	1.5000e-004	0.0000	1.5000e-004	0.0000	0.0821	0.0821	1.0000e-005	0.0000	0.0824
Vendor	3.0000e-005	1.0400e-003	4.5000e-004	0.0000	5.3800e-003	0.0000	5.3800e-003	5.5000e-004	0.0000	5.5000e-004	0.0000	0.2617	0.2617	2.0000e-005	0.0000	0.2623
Worker	9.0000e-005	6.0000e-005	6.3000e-004	0.0000	0.0278	0.0000	0.0278	2.8100e-003	0.0000	2.8100e-003	0.0000	0.2213	0.2213	0.0000	0.0000	0.2214
Total	**1.3000e-004**	**1.4000e-003**	**1.2200e-003**	**0.0000**	**0.0346**	**0.0000**	**0.0346**	**3.5100e-003**	**0.0000**	**3.5100e-003**	**0.0000**	**0.5651**	**0.5651**	**3.0000e-005**	**0.0000**	**0.5660**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

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	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

5.2 Energy by Land Use - NaturalGas

Mitigated

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**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	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Unmitigated	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					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	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	**0.0000**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					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	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	**0.0000**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

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

7.2 Water by Land Use

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	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			
User Defined Industrial	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			
User Defined Industrial	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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B-3:
Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

CEMEX Construction Materials Pacific, LLC.
Port of Redwood City Ready-Mix Concrete Plant Project
Air and Greenhouse Gas Emissions Study

APPENDIX B: PROPOSED PROJECT MODELS AND INPUTS
B-3. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

1. RMC PLANT - PM EMISSIONS

Description:

PM emissions from proposed ready-mix concrete plant. The ready-mix plant assumptions are based on a single concrete batch plant tower with two mixer truck loading bays capable of batching both wet and dry mixes. The plant would have a maximum production capacity of 350 cubic yards per hour (manufacturer specifications provided by CEMEX). The plant is assumed to operate at maximum capacity for 12 hours per day and 6 days per week (typical operating hours). Emission factors and material composition from BAAQMD Permit Handbook, derived from AP-42.

Production Assumptions:

Cubic yards per hour:	350	cubic yards (maximum capacity)
Cubic yards per day:	4,200	cubic yards (based on 12 hours per day)
Cubic yards per year:	250,000	cubic yards (max requested by Project)
Tons per hour:	704	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per day:	8,450	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per year:	503,000	tons (at 4,024 lbs per cubic yard per AP-42)
Stockpile Area (acres):	0.5	acres (estimate based on site plan review)

Material Composition:

Coarse Aggregate Percentage:	1,750	lbs per cy =	42.42%	percent
Sand Percentage:	1,402	lbs per cy =	33.99%	percent
Cement Percentage:	494	lbs per cy =	11.98%	percent
Cement Supplement Percentage:	212	lbs per cy =	5.14%	percent
Water Percentage:	267	based on 20 gallons =	6.47%	percent
Total:	**4,125**		100.00%	percent

Source: Marsat Mirpuri, CEMEX, VP/GM – Bay Area RMX, December 9, 2020.

PM10 EMISSIONS													
	Process Rate			Uncontrolled PM10					Controlled PM10				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	299	3,585	213,394	0.0033	0.99	11.83	704.20	0.35	0.00099	0.30	3.55	211.26	0.11
Sand Transfer	239	2,872	170,959	0.00099	0.24	2.84	169.25	0.08	0.000297	0.07	0.85	50.77	0.03
Cement Unloading	84	1,012	60,238	0.47	39.64	475.64	28,311.89	14.16	0.00034	0.03	0.34	20.48	0.01
Cement Supplement Unloading	36	434	25,851	1.1	39.81	477.73	28,436.27	14.22	0.0049	0.18	2.13	126.67	0.06
Weigh Hopper Loading	704	8,450	503,000	0.0028	1.97	23.66	1,408.40	0.70	0.00084	0.59	7.10	422.52	0.21
Mixer Loading	704	8,450	503,000	0.156	109.86	1,318.26	78,468.00	39.23	0.0055	3.87	46.48	2,766.50	1.38
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.7	0.04	0.85	310.25	0.16	0.51	0.01	0.26	93.08	0.05
			TOTALS:		**192.53**	**2,310.82**	**137,808.25**	**68.90**		**5.05**	**60.70**	**3,691.28**	**1.85**

Notes:

1. For PM-10 controlled, watering is used for dust control therefore a 70% abatement efficiency is applied.

2. Wind erosion factors per BAAQMD Permit Handbook, derived from AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

PM2.5 EMISSIONS													
	Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	299	3,585	213,394	0.0005	0.15	1.79	106.70	0.05	0.0005	0.15	1.79	106.70	0.05
Sand Transfer	239	2,872	170,959	0.00015	0.04	0.43	25.64	0.01	0.00015	0.04	0.43	25.64	0.01
Cement Unloading	84	1,012	60,238	0.07	5.90	70.84	4,216.66	2.11	0.00005	0.00	0.05	3.01	0.00
Cement Supplement Unloading	36	434	25,851	0.17	6.15	73.83	4,394.70	2.20	0.0007	0.03	0.30	18.10	0.01
Weigh Hopper Loading	704	8,450	503,000	0.0004	0.28	3.38	201.20	0.10	0.0004	0.28	3.38	201.20	0.10
Mixer Loading	704	8,450	503,000	0.023	16.20	194.36	11,569.00	5.78	0.0008	0.56	6.76	402.40	0.20
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.70	0.04	0.85	310.25	0.16	0.51	0.01	0.26	93.08	0.05
			TOTALS:		**28.75**	**345.48**	**20,824.15**	**10.41**		**1.07**	**12.97**	**850.12**	**0.43**

Notes:

1. For PM-2.5, where BAAQMD Permit Handbook (derived from AP-42) indicates No Data (ND) the corresponding uncontrolled PM-2.5 emission factor is used.

2a. Wind erosion factors per BAAQMD Permit Handbook, derived from AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

2b. For wind erosion, BAAQMD does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, BAAQMD's PM10 factor is applied.

APPENDIX B: PROPOSED PROJECT MODELS AND INPUTS

B-3. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

2. RMC PLANT - PM EMISSIONS FROM VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM10 emission factor for fugitive dust from vehicle travel on a dry paved road is equation 1 from AP-42, Chapter 13.2.1.3. A PM10 control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport). Vehicle traffic conservatively assumed to consist of heavy trucks for caclulating emissions factor.

Estimating Assumptions:

Tons per day:	8,450	tons per day
Tons per year:	503,000	tons
Tons per truck:	18.1	tons (at 9 cubic yards per truck and 4,024 lbs per cubic yard per AP-42)
Average distance traveled onsite:	1,800	feet (per review of site plan)
Active days per year:	299	days (6 days per week, 52 weeks per year, excluding 13 state/federal holidays)
Particle Size Multiplier - PM10 (k):	0.0022	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.00054	lb/VMT (based on the average PM2.5:PM10 ratio of test runs in AP-42 Reference 30)
Road Surface Silt Loading (sL):	12	g/m^2 (silt loading for concrete batching)
Average Weight of Vehicles (W):	24.0	tons (conservatively based on avg. of 15 ton empty, 33 ton loaded)
PM_{10} control efficiency:	70%	percent

Emission Factor:

E=k(sL)^0.91x(W)^1.02

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	0.54	0.13

VMT Estimates:

	Daily	Annual
RMC Mixer (Haul) Trucks	159	9,470

Emissions Estimate from Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	85.89	5,112.45	2.56	21.08	1,254.87	0.63
Abated	25.77	1,533.74	0.77	6.32	376.46	0.19

3. RMC PLANT - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at CEMEX's proposed ready mix concrete plant (including office and shop). Emissions estimate based on 0.50 kWh per cubic yard (plant, office, and shop). Estimate is based on scaling 2019 electricity use from PG&E meter and production at CEMEX's existing San Carlos ready-mix facility (off-site). Production and electricity use for the existing San Carlos facility provided by CEMEX (December 2020). PG&E meters: 1008846077/1010282476. Facility covered by Peninsula Clean Energy ECOplus program. Emissions factors per Peninsula Clean Energy.

		Emission Factor (lb/MWh)	Emissions (MT/yr)
kWh/year	**MWh/year**	**CO_2e**	**CO_2e**
125,000	125	102	5.78

Notes:
Emission factors from Peninsula Clean Energy, ECOplus, https://www.peninsulacleanenergy.com/power-mix/
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

APPENDIX B: PROPOSED PROJECT MODELS AND INPUTS
B-3. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

4. RMC PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria and GHG pollutant emissions from heavy equipment operation, including aggregate feed and stockpile management. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Front-end loader	1	Cat 980/982	2015	398	0.36	8
Skid-steer loader (bobcat)	1	Cat 246B (or equiv)	2015	74	0.37	4

Notes:
1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Front-end loader	0.42	5.02	0.19	0.17	2.33	0.01	506.37	0.15
Skid-steer loader (bobcat)	0.29	3.81	0.22	0.20	3.34	0.01	511.60	0.15
		TOTALS:						

Notes:
1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298
CO2e =	*1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Front-end loader	1.05	12.66	0.48	0.44	5.88	0.01	1276.93	0.38
Skid-steer loader (bobcat)	0.07	0.92	0.05	0.05	0.80	0.00	123.27	0.04
TOTALS:	**1.12**	**13.58**	**0.53**	**0.49**	**6.69**	**0.01**	**1400.20**	**0.42**

APPENDIX B: PROPOSED PROJECT MODELS AND INPUTS

B-3. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Front-end loader	0.16	1.89	0.07	0.07	0.88	0.00	173.15	0.05	174.90
Skid-steer loader (bobcat)	0.01	0.14	0.01	0.01	0.12	0.00	16.71	0.00	16.88
TOTALS:	**0.17**	**2.03**	**0.08**	**0.07**	**1.00**	**0.00**	**189.86**	**0.06**	**191.79**

5. RMC PLANT - VEHICLE IDLING

Description:

On-road vehicle emissions associated with vehicle idling, assuming idling times of up to 5 minutes per vehicle (truck). Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.1) Emission Rates (San Mateo County):
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/vehicle/day for emission rates

Region	Vehicle Category	Model Year	Speed	Fuel	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
San Mateo	LDA	Aggregated	Aggregated	GAS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	LDT1	Aggregated	Aggregated	GAS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	LDA/LDT1	Average	Average	GAS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	MDV	Aggregated	Aggregated	DSL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	T7 Tractor	Aggregated	Aggregated	DSL	3.257	40.566	47.577	0.081	8578.836	0.151	0.034	0.032	1.352

Notes:

LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.

LDA = Passenger cars

LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)

MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)

T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Production Assumptions:

Tons per truck - haul trucks:	25	tons
Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	8,450	tons
Annual Operating Days:	299	days (up to 6 days/week x 52 weeks)

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907
5-min per 8-hr day	0.010

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: PROPOSED PROJECT MODELS AND INPUTS

B-3. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

Annual Emissions Calculation:

								Greenhouse Gases			
On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Haul trucks (agg import) - @82%	T7 Tractor	277	0.00	0.05	0.04	0.00	0.00	7.40	0.00	0.00	7.76
Haul trucks (cement / fly ash) - @14%	T7 Tractor	47	0.00	0.01	0.01	0.00	0.00	1.26	0.00	0.00	1.32
Mixer trucks (finish product)	T7 Tractor	469	0.01	0.08	0.07	0.00	0.00	12.54	0.00	0.00	13.14
		TOTALS:	**0.01**	**0.13**	**0.11**	**0.00**	**0.00**	**21.21**	**0.00**	**0.00**	**22.22**

Daily Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Haul trucks (agg import) - @82%	T7 Tractor	277	0.02	0.30	0.26	0.00	0.00
Haul trucks (cement / fly ash) - @14%	T7 Tractor	47	0.00	0.05	0.04	0.00	0.00
Mixer trucks (finish product)	T7 Tractor	469	0.04	0.51	0.44	0.00	0.00
		TOTALS:	**0.06**	**0.87**	**0.74**	**0.00**	**0.00**

Appendix B-4:
On-Road Mobile Source Emissions

CEMEX Construction Materials Pacific, LLC.
Port of Redwood City Ready-Mix Concrete Plant Project
Air and Greenhouse Gas Emissions Study

COMPASS LAND GROUP

APPENDIX B: PROPOSED PROJECT MODELS AND INPUTS
B-2. On-Road Mobile Source Emissions

1. ON-ROAD MOBILE SOURCE EMISSIONS

Description:
On-road vehicle emissions associated with vehicle travel. Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.1) Emission Rates (San Mateo County):
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/mile for emission rates; miles for trip distance
Speed Selections: Average speed of 45 mph assumed for light-duty vehicle trips (gas) and 35 mph for truck trips (diesel).

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Trip Distance (one-way)	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
San Mateo	2020	LDA	Aggregated	45	GAS	6.5	0.011	0.853	0.058	0.003	263.340	0.003	0.001	0.001	0.005
San Mateo	2020	LDT1	Aggregated	45	GAS	6.1	0.032	1.710	0.165	0.003	310.096	0.007	0.002	0.002	0.011
San Mateo	2020	LDA/LDT1	Average	45	GAS	6.4	0.016	1.068	0.085	0.003	275.029	0.004	0.001	0.001	0.007
San Mateo	2020	MDV	Aggregated	35	DSL	7.0	0.014	0.215	0.061	0.004	402.463	0.001	0.006	0.006	0.063
San Mateo	2020	T7 Tractor	Aggregated	35	DSL	1 / 1 / 7.5	0.101	0.388	3.518	0.015	1631.157	0.005	0.028	0.027	0.257

Notes:
LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.
LDA = Passenger cars
LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)
MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)
T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck
Trip distance based on EMFAC reported VMT divided by trips, except for T7 Tractor trip distances adjusted for cement deliveries from Port of Redwood City (1 mi), aggregate deliveries from Port of Redwood City (1 mi), and ready-mix concrete finish product deliveries (7.5 mi)

APPENDIX B: PROPOSED PROJECT MODELS AND INPUTS
B-2. On-Road Mobile Source Emissions

Production Assumptions:

Annual Production - RMC Plant:	503,000	tons (based on ~2 tons per CY)	Tons per truck - haul trucks:	25	tons
Annual Operating Days:	299	days (up to 6 days/week x 52 weeks)	Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	8,450	tons (from Appendix B-1)	Maintenance / service visits:	2	per day average

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Annual Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/yr	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases: CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Ready Mix Concrete Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		19	72,717	0.00	0.01	0.09	0.00	0.00	20.00	0.00	0.00	20.15
Haul trucks (agg import) - @82%	T7 Tractor	1		32,997	0.00	0.13	0.01	0.00	0.00	53.81	0.00	0.01	56.34
Mixer trucks (finish product)	T7 Tractor	7.5		419,167	0.05	1.63	0.18	0.01	0.01	683.59	0.00	0.11	715.75
Haul trucks (cement / fly ash) - @14%	T7 Tractor	1		5,634	0.00	0.02	0.00	0.00	0.00	9.19	0.00	0.00	9.62
Maintenance / service vehicle	MDV			8,372	0.00	0.00	0.00	0.00	0.00	3.37	0.00	0.00	3.53
			TOTALS:	**538,886**	**0.05**	**1.78**	**0.28**	**0.01**	**0.01**	**769.95**	**0.00**	**0.12**	**805.39**

Notes:
Per BAAQMD Permit Handbook, cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.
Employee estimates based on personal communication with Erin Loza, Environmental Director, of CEMEX (November 2020), and includes:
2 plant/equipment operators, 2 mechanics and 15 drivers.
Employee commute and maintenance / service vehicle trips based on maximum potential annual operating days (6 days per week for 52 weeks per year, excluding 13 state/federal holidays).

Daily Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Ready Mix Concrete Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		19	243	0.01	0.05	0.57	0.00	0.00
Haul trucks (agg import) - @82%	T7 Tractor	1		554	0.12	4.30	0.47	0.03	0.03
Mixer trucks (finish product)	T7 Tractor	7.5		7,042	1.57	54.61	6.02	0.44	0.42
Haul trucks (cement / fly ash) - @14%	T7 Tractor	1		95	0.02	0.73	0.08	0.01	0.01
Maintenance / service vehicle	MDV			28	0.00	0.00	0.01	0.00	0.00
			TOTALS:	**7,962**	**1.73**	**59.70**	**7.16**	**0.48**	**0.46**

Notes:
Per BAAQMD Permit Handbook, cement and fly ash supplement accounts for approximately 14% of RMC mix.
Employee estimates based on personal communication with Erin Loza, Environmental Director, of CEMEX (November 2020), and includes:
2 plant/equipment operators, 2 mechanics and 15 drivers.
Employee commute and maintenance / service vehicle trips based on maximum potential annual operating days (6 days per week for 52 weeks per year, excluding 13 state/federal holidays).

Appendix C:
San Carlos Baseline Models and Inputs

Appendix C-1: Production History

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-1. Production History

Description:

For the existing CEMEX San Carlos ready-mix facility, Compass determined production to be used for modeling purposes by averaging the facility's annual concrete production for the 3-year period between 2017 and 2019, prior to the COVID-19 pandemic. The production was reported separately by CEMEX for both of the older and newer transit mix (dry batch) plants.

This 3-year averaging period is a reasonable baseline that reflects a fluctuating market demand prior to the COVID-19 pandemic. Annual production figures are considered proprietary; therefore, the period average is reported below. The 2017-2019 throughput reports can be confidentially supplied to the Port of Redwood City upon request.

3-Year Baseline: 81,723 cubic yards per year average

Source of Information: Saira Soriano, Environmental Manager, CEMEX, December 1, 2020.

Appendix C-2:
Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS
C-2. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

1. RMC PLANT - PM EMISSIONS

Description:

PM emissions from existing San Carlos ready-mix concrete plants. The ready-mix plant assumptions are based on the combined production from the Plant A and Plant B transit mix batch plants. Per the existing BAAQMD Permit to Operate, Plant A has a production limit of approximately 75 CY per hour (est. based on 150 ton per hour limit identified in the permit) and Plant B has a production limit of 180 CY per hour (as specifically identified in the permit) for a combined limit of 255 CY per hour. Emission factors and material composition from BAAQMD Permit Handbook, derived from AP-42.

Production Assumptions:

Cubic yards per hour:	255	cubic yards (maximum capacity)
Cubic yards per day:	3,060	cubic yards (based on 12 hours per day)
Cubic yards per year:	81,723	cubic yards (actual 3-year avg. for baseline)
Tons per hour:	513	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per day:	6,157	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per year:	164,427	tons (at 4,024 lbs per cubic yard per AP-42)
Stockpile Area (acres):	0.5	acres (estimate based on site plan review)

Material Composition:

Coarse Aggregate Percentage:	1,750	lbs per cy =	42.42%	percent
Sand Percentage:	1,402	lbs per cy =	33.99%	percent
Cement Percentage:	494	lbs per cy =	11.98%	percent
Cement Supplement Percentage:	212	lbs per cy =	5.14%	percent
Water Percentage:	267	lbs =	6.47%	percent
Total:	**4,125**		100.00%	percent

Source: Marsat Mirpuri, CEMEX, VP/GM – Bay Area RMX, December 9, 2020.

PM10 EMISSIONS														
	Process Rate			Uncontrolled PM10					Controlled PM10					
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	218	2,612	69,757	0.0033	0.72	8.62	230.20	0.12	0.00099	0.22	2.59	69.06	0.03
Sand Transfer	174	2,093	55,885	0.00099	0.17	2.07	55.33	0.03	0.000297	0.05	0.62	16.60	0.01
Cement Unloading	61	737	19,691	0.47	28.88	346.54	9,254.97	4.63	0.00034	0.02	0.25	6.70	0.00
Cement Supplement Unloading	26	316	8,451	1.1	29.00	348.06	9,295.63	4.65	0.0049	0.13	1.55	41.41	0.02
Weigh Hopper Loading	513	6,157	164,427	0.0028	1.44	17.24	460.40	0.23	0.00084	0.43	5.17	138.12	0.07
Mixer Loading	513	6,157	164,427	0.156	80.04	960.45	25,650.67	12.83	0.0055	2.82	33.86	904.35	0.45
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.7	0.04	0.85	310.25	0.16	0.51	0.01	0.26	93.08	0.05
			TOTALS:		**140.28**	**1,683.83**	**45,257.43**	**22.63**		**3.68**	**44.30**	**1,269.30**	**0.63**

Notes:

1. For PM-10 controlled, watering is used for dust control therefore a 70% abatement efficiency is applied.

2. Wind erosion factors per BAAQMD Permit Handbook, derived from AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-2. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

PM2.5 EMISSIONS													
	Process Rate			**Uncontrolled PM2.5**					**Controlled PM2.5**				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	218	2,612	69,757	0.0005	0.11	1.31	34.88	0.02	0.0005	0.11	1.31	34.88	0.02
Sand Transfer	174	2,093	55,885	0.00015	0.03	0.31	8.38	0.00	0.00015	0.03	0.31	8.38	0.00
Cement Unloading	61	737	19,691	0.07	4.30	51.61	1,378.40	0.69	0.00005	0.00	0.04	0.98	0.00
Cement Supplement Unloading	26	316	8,451	0.17	4.48	53.79	1,436.60	0.72	0.0007	0.02	0.22	5.92	0.00
Weigh Hopper Loading	513	6,157	164,427	0.0004	0.21	2.46	65.77	0.03	0.0004	0.21	2.46	65.77	0.03
Mixer Loading	513	6,157	164,427	0.023	11.80	141.60	3,781.83	1.89	0.0008	0.41	4.93	131.54	0.07
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.70	0.04	0.85	310.25	0.16	0.51	0.01	0.26	93.08	0.05
			TOTALS:		**20.96**	**251.94**	**7,016.11**	**3.51**		**0.78**	**9.52**	**340.55**	**0.17**

Notes:

1. For PM-2.5, where BAAQMD Permit Handbook (derived from AP-42) indicates No Data (ND) the corresponding uncontrolled PM-2.5 emission factor is used.

2a. Wind erosion factors per BAAQMD Permit Handbook, derived from AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

2b. For wind erosion, BAAQMD does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, BAAQMD's PM10 factor is applied.

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-2. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

2. RMC PLANT - PM EMISSIONS FROM VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM10 emission factor for fugitive dust from vehicle travel on a dry paved road is equation 1 from AP-42, Chapter 13.2.1.3. A PM10 control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport). Vehicle traffic conservatively assumed to consist of heavy trucks for caclulating emissions factor.

Estimating Assumptions:

Tons per day:	6,157	tons per day
Tons per year:	164,427	tons
Tons per truck:	18.1	tons (at 9 cubic yards per truck and 4,024 lbs per cubic yard per AP-42)
Average distance traveled onsite:	1,000	feet (per review of site plan)
Active days per year:	299	days (6 days per week, 52 weeks per year, excluding 13 state/federal holidays)
Particle Size Multiplier - PM10 (k):	0.0022	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.00054	lb/VMT (based on the average PM2.5:PM10 ratio of test runs in AP-42 Reference 30)
Road Surface Silt Loading (sL):	12	g/m^2 (silt loading for concrete batching)
Average Weight of Vehicles (W):	24.0	tons (conservatively based on avg. of 15 ton empty, 33 ton loaded)
PM_{10} control efficiency:	70%	percent

Emission Factor:

E=k(sL)^0.91x(W)^1.02

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	0.54	0.13

VMT Estimates:

	Daily	Annual
RMC Mixer (Haul) Trucks	64	1,720

Emissions Estimate from Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	34.76	928.46	0.46	8.53	227.89	0.11
Abated	10.43	278.54	0.14	2.56	68.37	0.03

3. RMC PLANT - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at CEMEX's existing San Carlos ready mix concrete plant and ancillary facilities. Emissions estimate based on 0.50 kWh per cubic yard (plant, office, shop), from actual 2019 electricity use from PG&E meter at the existing San Carlos readymix plants. Production and electricity use for the existing San Carlos plants were provided by CEMEX (December 2020). PG&E meters: 1008846077/1010282476. Facility covered by Peninsula Clean Energy ECOplus program. Emissions factors per Peninsula Clean Energy.

		Emission Factor (lb/MWh)	Emissions (MT/yr)
kWh/year	**MWh/year**	**CO_2e**	**CO_2e**
40,862	41	102	1.89

Notes:

Emission factors from Peninsula Clean Energy, ECOplus, https://www.peninsulacleanenergy.com/power-mix/

kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-2. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

4. RMC PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria and GHG pollutant emissions from heavy equipment operation, including aggregate feed and stockpile management. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Front-end loader	2	Cat 980/982	2015	398	0.36	8
Skid-steer loader (bobcat)	1	Cat 246B (or equiv)	2015	74	0.37	4

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Front-end loader	0.42	5.02	0.19	0.17	2.33	0.01	506.37	0.15
Skid-steer loader (bobcat)	0.29	3.81	0.22	0.20	3.34	0.01	511.60	0.15
		TOTALS:						

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2: 1

CH4: 34

N_2O: 298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*

GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Front-end loader	2.09	25.32	0.96	0.88	11.76	0.03	2553.87	0.76
Skid-steer loader (bobcat)	0.07	0.92	0.05	0.05	0.80	0.00	123.27	0.04
TOTALS:	**2.16**	**26.23**	**1.01**	**0.93**	**12.57**	**0.03**	**2677.13**	**0.80**

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-2. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Front-end loader	0.31	3.78	0.14	0.13	1.76	0.00	346.30	0.10	349.81
Skid-steer loader (bobcat)	0.01	0.14	0.01	0.01	0.12	0.00	16.71	0.00	16.88
TOTALS:	**0.32**	**3.92**	**0.15**	**0.14**	**1.88**	**0.00**	**363.01**	**0.11**	**366.69**

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-2. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

5. RMC PLANT - VEHICLE IDLING

Description:

On-road vehicle emissions associated with vehicle idling, assuming idling times of up to 5 minutes per vehicle (truck). Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.1) Emission Rates (San Mateo County):

Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/vehicle/day for emission rates

Region	Vehicle Category	Model Year	Speed	Fuel	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
San Mateo	LDA	Aggregated	Aggregated	GAS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	LDT1	Aggregated	Aggregated	GAS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	LDA/LDT1	Average	Average	GAS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	MDV	Aggregated	Aggregated	DSL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
San Mateo	T7 Tractor	Aggregated	Aggregated	DSL	3.257	40.566	47.577	0.081	8578.836	0.151	0.034	0.032	1.352

Notes:

LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.
LDA = Passenger cars
LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)
MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)
T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Production Assumptions:

Tons per truck - haul trucks:	25	tons
Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	6,157	tons
Annual Operating Days:	299	days (up to 6 days/week x 52 weeks)

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907
5-min per 8-hr day	0.010

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-2. Ready-Mix Concrete Plant and On-Site Mobile Source Emissions

Annual Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Haul trucks (agg import) - @82%	T7 Tractor	202	0.00	0.03	0.03	0.00	0.00	5.39	0.00	0.00	5.65
Haul trucks (cement / fly ash) - @14%	T7 Tractor	34	0.00	0.01	0.00	0.00	0.00	0.92	0.00	0.00	0.96
Mixer trucks (finish product)	T7 Tractor	342	0.00	0.06	0.05	0.00	0.00	9.14	0.00	0.00	9.57
		TOTALS:	**0.01**	**0.09**	**0.08**	**0.00**	**0.00**	**15.45**	**0.00**	**0.00**	**16.19**

Daily Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Haul trucks (agg import) - @82%	T7 Tractor	202	0.02	0.22	0.19	0.00	0.00
Haul trucks (cement / fly ash) - @14%	T7 Tractor	34	0.00	0.04	0.03	0.00	0.00
Mixer trucks (finish product)	T7 Tractor	342	0.03	0.37	0.32	0.00	0.00
		TOTALS:	**0.04**	**0.63**	**0.54**	**0.00**	**0.00**

Appendix C-3: On-Road Mobile Source Emissions

CEMEX Construction Materials Pacific, LLC.
Port of Redwood City Ready-Mix Concrete Plant Project
Air and Greenhouse Gas Emissions Study

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS
C-3. On-Road Mobile Source Emissions

1. ON-ROAD MOBILE SOURCE EMISSIONS

Description:
On-road vehicle emissions associated with vehicle travel. Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.1) Emission Rates (San Mateo County):
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/mile for emission rates; miles for trip distance
Speed Selections: Average speed of 45 mph assumed for light-duty vehicle trips (gas) and 35 mph for truck trips (diesel).

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Trip Distance (one-way)	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
San Mateo	2020	LDA	Aggregated	45	GAS	6.5	0.011	0.853	0.058	0.003	263.340	0.003	0.001	0.001	0.005
San Mateo	2020	LDT1	Aggregated	45	GAS	6.1	0.032	1.710	0.165	0.003	310.096	0.007	0.002	0.002	0.011
San Mateo	2020	LDA/LDT1	Average	45	GAS	6.4	0.016	1.068	0.085	0.003	275.029	0.004	0.001	0.001	0.007
San Mateo	2020	MDV	Aggregated	35	DSL	7.0	0.014	0.215	0.061	0.004	402.463	0.001	0.006	0.006	0.063
San Mateo	2020	T7 Tractor	Aggregated	35	DSL	5 / 5 / 7.5	0.101	0.388	3.518	0.015	1631.157	0.005	0.028	0.027	0.257

Notes:
LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.
LDA = Passenger cars
LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)
MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)
T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck
Trip distance based on EMFAC reported VMT divided by trips, except for T7 Tractor trip distances adjusted for cement deliveries from Port of Redwood City (5 mi), aggregate deliveries from Port of Redwood City (5 mi), and ready-mix concrete finish product deliveries (7.5 mi)

APPENDIX C: SAN CARLOS BASELINE MODELS AND INPUTS

C-3. On-Road Mobile Source Emissions

Production Assumptions:

Annual Production - RMC Plant:	164,427	tons (based on ~2 tons per CY)	Tons per truck - haul trucks:	25	tons
Annual Operating Days:	299	days (up to 6 days/week x 52 weeks)	Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	6,157	tons (from Appendix B-1)	Maintenance / service visits:	2	per day average

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*

GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Annual Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/yr	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases CO2 (MT/yr)	CH4 (MT/yr)	N_2O (MT/yr)	C02e (MT/yr)
Ready Mix Concrete Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		17	65,062	0.00	0.01	0.08	0.00	0.00	17.89	0.00	0.00	18.03
Haul trucks (agg import) - @82%	T7 Tractor	5		53,932	0.01	0.21	0.02	0.00	0.00	87.95	0.00	0.01	92.09
Mixer trucks (finish product)	T7 Tractor	7.5		137,023	0.02	0.53	0.06	0.00	0.00	223.46	0.00	0.04	233.97
Haul trucks (cement / fly ash) - @14%	T7 Tractor	5		9,208	0.00	0.04	0.00	0.00	0.00	15.02	0.00	0.00	15.72
Maintenance / service vehicle	MDV			8,372	0.00	0.00	0.00	0.00	0.00	3.37	0.00	0.00	3.53
			TOTALS:	**273,597**	**0.02**	**0.78**	**0.16**	**0.01**	**0.01**	**347.69**	**0.00**	**0.05**	**363.35**

Notes:

Per BAAQMD Permit Handbook, cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.

Employee estimates based on personal communication with Erin Loza, Environmental Director, of CEMEX (November 2020), and includes:

4 plant/equipment operators, 2 mechanics, 10 drivers, and 1 office assistant.

Employee commute and maintenance / service vehicle trips based on maximum potential annual operating days (6 days per week for 52 weeks per year, excluding 13 state/federal holidays).

Daily Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Ready Mix Concrete Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		17	218	0.01	0.04	0.51	0.00	0.00
Haul trucks (agg import) - @82%	T7 Tractor	5		2,019	0.45	15.66	1.73	0.13	0.12
Mixer trucks (finish product)	T7 Tractor	7.5		5,131	1.15	39.79	4.39	0.32	0.31
Haul trucks (cement / fly ash) - @14%	T7 Tractor	5		345	0.08	2.67	0.29	0.02	0.02
Maintenance / service vehicle	MDV			28	0.00	0.00	0.01	0.00	0.00
			TOTALS:	**7,740**	**1.68**	**58.17**	**6.93**	**0.47**	**0.45**

Notes:

Per BAAQMD Permit Handbook, cement and fly ash supplement accounts for approximately 14% of RMC mix.

Employee estimates based on personal communication with Erin Loza, Environmental Director, of CEMEX (November 2020), and includes:

4 plant/equipment operators, 2 mechanics, 10 drivers, and 1 office assistant.

Employee commute and maintenance / service vehicle trips based on maximum potential annual operating days (6 days per week for 52 weeks per year, excluding 13 state/federal holidays).

Appendix B

Biological Resources Analysis Report

BIOLOGICAL RESOURCES ANALYSIS

FOR THE

CEMEX PORT OF REDWOOD CITY READY-MIX CONCRETE PLANT PROJECT

SAN MATEO COUNTY, CALIFORNIA

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DECEMBER 2020
(REVISED AUGUST 4, 2021)

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ATTACHMENTS

SUMMARY

On 21 September 2020, Biological Resources Services LLC conducted a reconnaissance-level field survey of the Cemex Port of Redwood City Ready-Mix Concrete Plant Project property (Study Area) for the purpose of identifying sensitive plant and wildlife species, sensitive habitats, and potential biological constraints. The surveyed area for this report incorporates approximately 5 acres located at the end of the Seaport Boulevard peninsula east of Highway 101 in San Mateo County, California.

In summary, based on the reconnaissance survey, it was found that the site contains regulated waters (i.e., tidally-influenced drainage ditch and interface with the channel of Redwood Creek along the western boundary of the Study Area) of the United States and State of California. It is assumed that these features would be regulated by the US Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB) and California Department of Fish & Wildlife (CDFW). As such, permit applications would have to be prepared and submitted to these agencies seeking authorization for any fill or impact associated with these features, if any such fill or impact would occur.

A number of special-status plant and animal wildlife species have the potential to occur within the Study Area based on the presence of suitable habitat types evaluated during the September 2020 reconnaissance-level survey. The Study Area and adjacent lands also provide nesting and foraging habitat for raptors, including the American peregrine falcon (*Falco peregrinus anatum*), which has been previously observed in the vicinity of the Study Area.

1.0 INTRODUCTION

At the request of Cemex Construction Materials Pacific, LLC (Applicant), Biological Resources Services (BRS) conducted a biological resources analysis for the ±5-acre CEMEX Port of Redwood City Ready-Mix Concrete Plant Project located in San Mateo County, California (Study Area). The purpose of this analysis is to identify sensitive plant and wildlife species, sensitive habitats, and potential biological constraints, which will also support a review of the Project pursuant to the California Environmental Quality Act ("CEQA"). This biological resources analysis includes a review of pertinent literature on relevant background information and habitat characteristics of the site, including the California Natural Diversity Database (CNDDB 2020), the California Native Plant Society's (CNPS) Inventory of Rate and Endangered Vascular Plants of California, the United States Fish and Wildlife Service's (USFWS) IPaC query and a review of information related to species of plants and animals that could potentially utilize the described habitats. A general field reconnaissance investigation of the Study Area was conducted on 21 September 2020. This report documents the methods, results and conclusions for the reconnaissance-level surveys conducted for the Study Area.

2.0 LOCATION

The Study Area occurs on developed lands that were historically a tidally-influenced coastal saltmarsh habitat within the greater San Francisco Bay estuary. Undeveloped areas of this habitat type can be found in close proximity to the Study Area on Bair and Greco Islands. Both islands are separated by the channels of Redwood Creek and Westpoint Slough, which converge along the western and northern boundaries of, and in close proximity to, the Study Area.

As previously noted, the channel of Redwood Creek forms the western boundary, while a railroad spur and Frontage Road lie along the eastern boundary. The Study Area consists of portions of two parcels that occur within the larger CEMEX aggregate and cement facilities at the Port; the entirety of this property forms both the northern and southern boundaries. Attachment 1, Figure 1 depicts the regional location of the Study Area in San Mateo County. Figure 2 illustrates the vicinity of the Study Area in relationship to Redwood City and the surrounding San Francisco Bay. Figure 3 identifies the location of the Study Area on the USGS 7.5 Quadrangle Map for Redwood Point. Figure 4 provides an aerial photograph of the Study Area.

From San Francisco, access to the Study Area is attained by taking Highway 101 south towards Redwood City. Take the Woodside Road (Hwy 84)/Seaport Boulevard exit; proceed north on Seaport Boulevard, which transitions to Frontage Road. Look for the entrance to the CEMEX facility on the left side. Access to the Study Area is authorized by checking in at CEMEX's existing on-site aggregate facility office located at 775 Seaport Boulevard.

3.0 STUDY AREA DESCRIPTION

The 5-acre Study Area consists of and is adjacent to CEMEX's existing aggregate and cement marine terminals, where uses include aggregate processing and stockpiling, aggregate and cement material load-out and sales, construction materials recycling, and associated heavy truck traffic. Existing ancillary support structures include conveyors, crushers, storage silos, groundwater wells, rail lines, miscellaneous storage, offices, parking, and other associated infrastructure.

The topography is nearly level throughout, only broken by levees and berms bordering the channel of Redwood Creek and a single incised drainage ditch along the eastern boundary. Elevations throughout the Study Area range from approximately below mean sea level (i.e., -3' msl) to approximately 10' msl. Representative photographs of the Study Area can be viewed in Attachment 3.

4.0 REGULATORY SETTING

4.1 Federal Regulatory Setting

4.1.1 Plants and Wildlife

The federal Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq., as amended) prohibits federal agencies from authorizing, permitting, or funding any action that would result in biological jeopardy to a plant or animal species listed as Threatened or Endangered under the Act. Listed species are taxa for which proposed and final rules have been published in the Federal Register (U.S. Fish and Wildlife Service [USFWS], 2006a and 2006b). If a proposed project may jeopardize listed species, Section 7 of the ESA requires consideration of those species through formal consultations with the USFWS. Federal Proposed species (USFWS, 2006c) are species for which a proposed listing as Threatened or Endangered under ESA has been published in the Federal Register. If a proposed project may jeopardize proposed species, Section 7 of the ESA affords consideration of those species through informal conferences with USFWS. The USFWS defines federal Candidate species as "those taxa for which we have on file sufficient information on biological vulnerability and threats to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded by other higher priority listing actions" (USFWS, 2007c). Federal Candidate species are not afforded formal protection, although USFWS encourages other federal agencies to give consideration to Candidate species in environmental planning.

4.1.2 Wetlands/Waters

The federal government, acting through the U.S. Army Corps of Engineers (Corps) and the Environmental Protection Agency (EPA), has jurisdiction over all "waters of the United States" as authorized by §404 of the Clean Water Act (CWA) and §10 of the Rivers and Harbors Act of 1899 (33 CFR Parts 320-330). Projects that cause the discharge of dredged or fill material into waters of the United States require permitting by the Corps. Actions affecting small areas of jurisdictional waters of the United States may qualify for a Nationwide Permit (NWP), provided conditions of the permit are met, such as avoiding impacts to threatened or endangered species or to important cultural sites. Projects that affect larger areas or which do not meet the conditions of an NWP require an Individual Permit. The process for obtaining an Individual Permit requires a detailed alternatives analysis and development of a comprehensive mitigation and monitoring plan.

Waters of the United States are classified as wetlands, navigable waters, or other waters. Wetlands are transitional habitats between upland terrestrial areas and deeper aquatic habitats such as rivers and lakes. Under federal regulation, wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Part 328.3[b]). Swamps, marshes, bogs, fens and estuaries are all defined as wetlands, as are seasonally saturated or inundated areas such as vernal pools, alkali wetlands, seeps, and springs. In addition, portions of the riparian habitat along a river or stream may be a wetland where the riparian vegetation is at or below the ordinary high water mark and thus also meets the wetland hydrology and hydric soil criteria.

Navigable waters include all waters subject to the ebb and flow of the tides, including the open ocean, tidal bays, and tidal sloughs. Navigable waters also include some large, non-tidal rivers and lakes, which are important for transportation in commerce. The jurisdictional limit over navigable waters extends laterally to the entire water surface and bed of the waterbody landward to the limits of the mean high tide line. For non-tidal rivers or lakes, which have been designated (by the Corps) to be navigable waters, the limit of jurisdiction along the shoreline is defined by the ordinary high water mark. Other waters refer to waters of the United States other than wetlands or navigable waters. Other waters include streams and ponds, which are generally open water bodies and are not vegetated. Other waters can be perennial or intermittent water bodies and waterways. The Corps regulates other waters to the outward limit of the ordinary high water mark. Streams should exhibit a defined channel, bed and banks to be delineated as other waters.

The Corps does not generally consider "non-tidal drainage and irrigation ditches excavated on dry land" to be jurisdictional waters of the United States (and such ditches would therefore not be regulated by the Corps (33 CFR Parts 320-330, November 13, 1986). Other areas generally not considered jurisdictional waters include: 1) artificially irrigated areas that would revert to upland habitat if the irrigation ceased; 2) artificial lakes and ponds created by excavating and/or diking of dry land to collect and retain water, used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing; 3) waste treatment ponds; 4) ponds formed by construction activities including borrow pits until abandoned; and 5) ponds created for aesthetic reasons such as reflecting or ornamental ponds (33 CFR Part 328.3). However, the preamble also states that "the Corps reserves the right on a case-by-case basis to determine that a particular waterbody within these categories" can be regulated as a jurisdictional water. The EPA also has authority to determine jurisdictional waters of the U.S. on a case-by-case basis. Riparian habitat that is above the ordinary high water mark and does not meet the three-parameter criteria for a wetland, would not be regulated as jurisdictional waters of the United States.

4.1.3 Migratory Bird Treaty Act

Raptors are migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (varies by geographic area, but typically between (January) February 1 - August 15 (30), annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend is considered "take" and is potentially punishable by fines and/or imprisonment. Such taking would also violate federal law protecting migratory birds (e.g., MBTA).

4.2 State Regulatory Setting

4.2.1 Plants and Wildlife

Project permitting and approval requires compliance with the California Environmental Quality Act (CEQA), the 1984 California Endangered Species Act (CESA), and the 1977 Native Plant Protection Act (NPPA). The CESA and NPPA authorize the California Fish and Game Commission to designate Endangered, Threatened and Rare species and to regulate the taking of these species (§§2050-2098, Fish & Game Code). The California Code of Regulations (Title 14, §670.5) lists animal species considered Endangered or Threatened by the State.

California Endangered Species Act

The CESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of ESA, but also applies the take prohibitions to species proposed for listing (called "candidates" by the state). Section 2080 of the Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species or result in destruction or adverse modification of essential habitat.

Fully Protected Species

The State of California's list of fully protected species was initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the ESA or CESA. The regulations that implement the Fully

Protected Species Statute (California Fish and Game Code §4700 for mammals, §3511 for birds, §5050 for reptiles and amphibians, and §5515 for fish) provide that fully protected species may not be taken or possessed at any time. CDFW also prohibits any state agency from issuing incidental take permits for fully protected species. CDFW may issue licenses or permits for take of fully protected species for necessary scientific research or live capture and relocation pursuant to the permit.

Other CEQA Considerations

The CDFW maintains lists of designated Endangered, Threatened, and Rare plant and animal species (CDFG, 2008a and 2008b). Listed species either were designated under the NPPA or designated by the Fish and Game Commission. In addition to recognizing three levels of endangerment, the CDFW can afford interim protection to candidate species while they are being reviewed by the Fish and Game Commission.

The CDFW also maintains a list of animal species of special concern (CDFG, 2006), most of which are species whose breeding populations in California may face extirpation. Although these species have no legal status, the CDFW recommends considering them during analysis of proposed project impacts to protect declining populations and avoid the need to list them as endangered in the future.

Under the provisions of §15380(d) of the CEQA Guidelines, the project lead agency and CDFW, in making a determination of significance, must treat non-listed plant and animal species as equivalent to listed species if such species satisfy the minimum biological criteria for listing. In general, the CDFW considers plant species on List 1A (Plants Presumed Extinct in California), List 1B (Plants Rare, Threatened, or Endangered in California and elsewhere), or List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere) of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1994) as qualifying for legal protection under §15380(d). Species on CNPS List 3 or 4 may, but generally do not, qualify for protection under this provision.

Sensitive habitats include riparian corridors, wetlands, critical habitats for legally protected species and CDFW Species of Special Concern, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally restricted habitat types. Habitat types considered sensitive include those listed on the California Natural Diversity Data Base's (CNDDB) working list of "high priority" habitats (i.e., those habitats that are rare or endangered within the borders of California) (Holland 1986).

4.2.2 Wetlands/Waters

Water Quality Certification

The Regional Water Quality Control Board (RWQCB) regulates activities in wetlands and other waters through §401 of the Clean Water Act. Section 401 requires a state water quality certification for projects subject to 404 regulation. Requirements of the certification include mitigation for loss of wetland habitat. In the San Francisco Bay region, the RWQCB may take the lead over the Corps in determining wetland mitigation requirements.

Lake and Streambed Alteration Agreement

California Fish and Game Code §§1600-1607 require that the CDFW be notified of any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake. The CDFW defines streams as follows:

> *"... a body of water that flows at least periodically...through a bed or channel having banks and supporting fish and other aquatic life. This includes watercourses having a subsurface flow that supports or has supported riparian vegetation."*
> (Stream Bed Alteration Program, California Department of Fish and Wildlife).

CDFW requires a Lake and Streambed Alteration Agreement (LSAA) when it determines that the activity, as described in a notification, will substantially alter a river, stream, or lake, and may substantially adversely affect existing fish or wildlife resources. An LSAA is a type of permit that includes measures necessary to protect existing fish and wildlife resources. The final agreement between CDFW and the applicant, which includes protection measures, is the LSAA. Often, projects that require an SAA also require a permit from the Corps under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the LSAA may overlap.

In practice, CDFW authority is extended to any "blue line" stream shown on a USGS topographic map, as well as unmapped channels with a definable bank and bed. Wetlands, as defined by the Corps, need not be present for CDFW to exert authority.

4.2.3 Local Coastal Program Policies – Sensitive Habitats Component

There are a number of General Policies that may be applicable to future development of the Study Area, including impacts to *Sensitive Habitats* (Sections 7.1-7.5), *Wetlands* (Sections 7.14-7.18) and *Rare and Endangered Species* (Sections 7.32-7.35).

5.0 METHODS OF ANALYSIS FOR GENERAL BIOLOGICAL RESOURCES

A special-status plant and wildlife species database search and review was conducted using the CNDDB and other sources. Special-status species reports were accessed by searching the CNDDB database for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5-minute quadrangles, which surround the Study Area, and by examining those species that have been identified in the vicinity of the Study Area. The CNDDB report was used to focus special-status species analysis of the site prior to the reconnaissance survey.

Mr. Christopher Bronny, a BRS biologist (with expertise in botany and wetlands ecology) conducted a reconnaissance-level survey of the Study Area on 21 September 2020. Existing conditions, observed plants and wildlife, adjacent land use, soils, wetlands and "other waters" features and potential biological resource constraints were analyzed during the site survey. Plant and wildlife species observed within the Study Area are included in Attachment 2, Tables 1 and 2.

The objectives of the field survey were to determine the potential presence/absence of special-status species listed in the CNDDB database (CNDDB 2020) and to identify any wetland areas that could be potentially regulated by the Corps (Section 404) or state (Section 401). In addition, the BRS botanist/biologist looked for other potential sensitive species or habitats, which may not have been obvious from background database reports or research. Surveys conducted after the growing season or conducted outside of the specific flowering period for a special-status plant cannot conclusively determine the presence or absence of such plant species; therefore, site conditions and habitat type were used to determine potential for occurrence. When suitable habitat was observed to support a special-status plant or animal species it was noted in the discussion for that particular species. Regulatory agencies evaluate the possibility of occurrence based on habitats observed on-site and the degree of connectivity with other special-status animal habitats in the vicinity of the Study Area. These factors are discussed in each special-status plant or animal section. Potential for occurrence of each special-status or protected plant and animal species was evaluated using the following criteria.

- **Present**: The species has been recorded by CNDDB or other literature as occurring on the Study Area and/or was observed on the Study Area during the reconnaissance survey or protocol surveys.
- **May Occur**: The species has been recorded by CNDDB or other literature as occurring within five miles of the Study Area, and/or was observed within five miles of the Study Area, and/or suitable habitat for the species is present on the Study Area or its immediate vicinity.
- **Not Likely to Occur**: The species occurs within five miles of the Study Area but only marginally suitable habitat conditions are present. The Study Area is likely to be used only as incidental foraging habitat or as an occasional migratory corridor.
- **Presumed Absent**: The species will not occur on the Study Area due to the absence of suitable habitat conditions. Alternatively, if directed or protocol-level surveys were done during the proper occurrence period and the species was not found, it will be presumed absent.
- **ABSENT**: The requisite habitat requirements for a particular species are clearly not present.

Sources consulted for agency status information include USFWS (2008a, 2008b) and IPaC query and letter (Attachment 4) for federally listed species and CDFG (2008a) for State of California listed species. Based on information from the above sources, BRS developed a target list of special-status plants and animals with the potential to occur within or in the vicinity of the Study Area (Attachment 2, Table 3).

5.1 Soils Evaluation

The soils present within a Study Area may determine if habitat on the site is suitable for certain special-status plants and animals. The host plants of some special-status invertebrates may also require specific soil conditions. In the absence of suitable soil conditions, special-status plants or animals requiring those conditions would be presumed absent. Information regarding soil characteristics for the Study Area was obtained by viewing the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey report for the Study Area (NRCS 2020).

5.2 Plant Survey Methods

The purposes of the botanical component of the reconnaissance-level survey were (1) To characterize the habitat types (plant communities) of the Study Area; (2) to determine whether any suitable habitat for any special-status plant species, occurs within the Study Area; (3) to determine whether any sensitive habitat types (e.g., wetlands, coastal scrub) occur within the Study Area; and (4) to determine if any special-status plant species occur in the Study Area. Site conditions and plant habitat surveys are important tools in determining the potential occurrence of plants not recorded during surveys (e.g., special-status plants) because presence cannot conclusively be determined if field surveys are conducted after the growing season or conducted outside a specific flowering period.

5.2.1 Review of Literature and Data Sources

The BRS botanist conducted a query of literature and special-status species databases in order to identify special-status plant species and sensitive habitat types with potential to occur in the Study Area. Sources reviewed include: CNDDB occurrence records (CNDDB 2020) and standard flora (The Jepson Manual, 2nd Edition (TJM2, 2012) and the California Native Plant Society's (CNPS) *Inventory of Rare Plants*. From these sources, a list of special-status plant species with potential to occur in the Study Area vicinity was developed (Attachment 2, Table 3).

5.2.2 Field Survey

A BRS botanist conducted a reconnaissance-level survey to determine habitat types and the potential for special-status plants based on the observed habitat types on 21 September 2020. All vascular plant species that were identifiable at the time of the survey were recorded and identified using keys and descriptions in TJM2. The habitat types occurring within the Study Area were characterized according to pre-established categories. In classifying the habitat types on the site, the generalized plant community classification schemes of *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) were consulted. The final classification and characterization of the habitat types of the study area were based on field observations.

5.3 Wildlife Survey Methods

The purposes of the wildlife survey were to identify special-status wildlife species and/or potential special-status wildlife habitats that may be present within the Study Area.

5.3.1 Review of Literature and Data Sources

A query of literature and data sources was conducted in order to determine which special-status wildlife species had potential to occur in the vicinity of the Study Area. Current agency status information was obtained from USFWS (2008b) and IPaC report for species listed as Threatened or Endangered, as well as Proposed and Candidate species for listing under the federal ESA; and from CDFW (2008a, 2008b) for species listed as Threatened or Endangered by the state of California under the CESA, or listed as "species of special concern" by CDFW. From the above sources, a list of special-status wildlife species with potential to occur in the Study Area vicinity was developed (Attachment 2, Table 3).

5.3.2 Field Surveys

General Wildlife Survey – A BRS biologist conducted a survey of species habitats present within the Study Area, including areas adjacent to the Study Area that may provide potentially suitable habitat. The purpose of the habitat survey was to evaluate wildlife habitats and the potential for any listed species that may occur within, or adjacent to, the Study Area.

Reconnaissance-Level Raptor Survey – Based on the anecdotal reports of previous sightings of peregrine falcon in the general vicinity, a reconnaissance-level raptor survey was also conducted in, and adjacent to, the Study Area. This survey was conducted with the use of binoculars, and notes were taken for each species occurrence (if applicable). Trees outside of the delineated Study Area and CEMEX property infrastructure (e.g., storage silos, shoreline levees and berms, etc.), along with utility poles and perch sites in the vicinity of the Study Area were assessed.

5.4 Wetlands/Waters Evaluation

The single drainage ditch along the eastern boundary of the Study Area was investigated for its potential to be classified as an "other waters" of the U.S./state. The drainage ditch exhibits a distinct bed and bank, with an ordinary high-water mark. A combination of field observation and GIS desktop analysis was performed to map the drainage ditch, its OHWM and linear footage in the Study Area. Formal surveys can be performed in the future as needed to support permit applications for fill or impacts to this feature; however, based on communication with the applicant's representative no such impacts are expected.

Two railroad spurs are located in the middle between the boundary of the eastern and western portions of the Study Area; the terminal ends of these features were slightly sloped and exhibited some evidence of ponding during the rainy season. While no prevalence of hydrophytic species was found, evidence of surficial soil "flaking" was seen in one feature (see Photograph 10 in Attachment 3).

6.0 RESULTS FOR GENERAL BIOLOGICAL RESOURCES

The search and review of the CNDDB database reports revealed the occurrence of special-status plant and wildlife species that occur in tidally-influenced coastal salt marsh habitats (CNDDB 2020). The CNDDB database and background data were reviewed for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5

minute quadrangles. A map showing the locations of special-status plants and animals reported in the vicinity of the Study Area is included as Attachment 1, Figures 5 and 6, respectively; Figure 7 shows the locations of biological communities observed within the Study Area. Those animals listed in Attachment 2, Table 3 were reviewed for their potential to occur on the Study Area based on general habitat types.

6.1 Soil Evaluation Results

The NRCS mapped a single soil type within the Study Area: Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes. The following provides a brief description of the single mapped soil unit:

This well drained soil type occurs on tidal flats landforms on 0 to 2 percent slopes and consists of Urban Land components (65%), Orthents and similar soils (30%) and minor components (4%). It is moderately saline to strongly saline and is not listed as a hydric soil. Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anoxic conditions in the upper part.

6.2 Plant Survey Results

6.2.1 Floristic Inventory and Habitat Characterization

In classifying the habitat types in the Study Area, generalized plant community classification schemes were used (Sawyer and Keeler-Wolf 1995). The final classification and characterization of the habitat types of the Study Area were based on field observations.

The Study Area supports three habitat types: developed, ruderal (i.e.,where the natural vegetation has been disturbed) and pickleweed mats. These habitats are described in further detail below, along with a description of the plant species present within each habitat type. Dominant plant species are noted. A complete list of plant species observed on the Study Area can be found in Attachment 2, Table 1.

Developed

Approximately ±4.5 acres of developed areas were mapped within the Study Area. Areas mapped as developed include man-made structures, impervious surfaces, and other regularly maintained areas which are mostly or entirely devoid of vegetation. Developed areas occur throughout the Study Area.

Ruderal

Ruderal (i.e., disturbance) habitats are associated with areas that have undergone and/or continue to undergo some type of disturbance regime to the existing vegetative cover. Disturbance activities may be natural (e.g., flooding, fire, landslides) or anthropogenic (e.g., discing, mowing, grading, spraying).

Ruderal assemblages were common throughout the Study Area along the edges of roads, levees, berms, concrete pads and railroad spurs. These areas are often dominated by a high percentage of introduced, non-native grasses and broad-leaved plants. Commonly observed grasses included smilograss (*Stipa miliacea*), rip-gut brome (*Bromus diandrus*), wild oat (*Avena* sp.) and rattail fescue (*Festuca myuros*). Common broad-leaved plants observed included sweet fennel (*Foeniculum vulgare*), cut-leaf plantain (*Plantago coronopus*), common knotweed (*Polygonum aviculare* ssp. *depressum*), cheeseweed (*Malva parviflora*), short-pod mustard (*Hirschfeldia incana*), bird's-foot trefoil (*Lotus corniculatus*), sour clover (*Melilotus indicus*), spearscale (*Atriplex prostrata*), stinkweed (*Dittrichia graveolens*) and yellow star-thistle (*Centaurea solstitialis*).

While native grasses were largely absent, a handful of native forbs (i.e., wildflowers) were observed and included alkali heath (*Frankenia salina*), telegraphweed (*Heterotheca grandiflora*) and alkali mallow (*Malvella leprosa*); coyote brush (*Baccharis pilularis*) is a native shrub that was also present, but widely scattered throughout the Study Area

Pickleweed Mats

This habitat type is tidally-influenced and occurs within the channel of a drainage ditch along the eastern boundary; more discontinuous, patchy areas of this habitat type can be found along the western shoreline of the Study Area that interfaces with the channel of Redwood Creek. The dominant species is the subshrub pickleweed (*Sarcocornia pacifica*), which is associated with tidal flats and salt marsh habitats in the Bay Area.

Pickleweed is present with greater than 10% absolute cover with saltgrass (*Distichlis spicata*) as a co-dominant with less than 50% relative cover. Besides saltgrass, other native graminoids (i.e., grasses and grass-like plants) observed included chairmaker's rush (*Schoenoplectus americanus*); forbs (i.e., wildflowers) included spearscale, fleshy jaumea (*Jaumea carnosa*), alkali heath (*Frankenia salina*), annual saltmarsh aster (*Symphyotrichum subulatum* var. *parviflorum*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

6.2.2 Special-Status Plant Species

Special-status plant species include species listed as Rare, Threatened, or Endangered by the USFWS (2008a) or by the State of California (CDFG 2008a). Federal Proposed and Candidate species (USFWS, 2008b) are also special-status species. Special-status species also include species listed on List 1A, List 1B, or List 2 of the CNPS Inventory (Skinner and Pavlik, 1994; CNPS 2008). All species in the above categories fall under state regulatory authority under the provisions of CEQA, and may also fall under federal regulatory authority. Considered special-status species are species included on List 3 (Plants About Which We Need More Information—A Review List) or List 4 (Plants of Limited Distribution—A Watch List) of the CNPS *Inventory*. These species are considered to be of lower sensitivity and generally do not fall under specific state or federal regulatory authority. Specific mitigation considerations are not generally required for List 3 and List 4 species and are therefore no longer addressed in this report.

Attachment 2, Table 3 includes a list of special-status plants with their potential to occur within or in the immediate vicinity of the Study Area based on a review of the USGS 7.5 minute quadrangles for Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point. The special-status plant species identified by the CNDDB as potentially occurring on the Study Area are known to occur within specific habitat types. The specific habitats or "micro-climate" necessary for the majority of the List 1 and 2 plant species to occur are not found within the boundaries of the subject Study Area and are therefore not addressed further in this report.

6.3 Wildlife Survey Results

6.3.1 General Wildlife Species and Habitats

A complete list of wildlife species observed on the Study Area can be found in Attachment 2, Table 2. Due to the absence of continuous vegetative cover throughout most of the Study Area, wildlife habitat functions and values are largely marginal for most native species. Wildlife species observed within habitat types present on the Study Area are discussed below:

Mammal species observed (or their sign; e.g., scat, tracks, burrows) during the September 2020 surveys included coyote (*Canis latrans*; tracks and scat), raccoon (*Procyon lotor*; tracks) and black-tailed jackrabbit (*Lepus californicus*).

Bird species observed in transit over the Study Area included American crow (*Corvus brachyrhynchos*), Canada goose (*Branta canadensis*) and gull (*Larus* sp.). Passerines such as white-crowned sparrow (*Zonotrichia leucophrys*), black phoebe (*Sayornis nigricans*) and song sparrow (*Melospiza melodia*) were observed.

A single reptile – western fence lizard (*Sceloporus occidentalis*) – was observed.

6.3.2 Special-Status Wildlife Species

Attachment 2, Table 3 includes a list of special-status wildlife species with potential to occur in the Study Area area, along with their status, habitat requirements, and likelihood of presence/absence within the Study Area. Special-status wildlife species include species listed as Rare, Threatened, or Endangered by the USFWS (2008b & 2008c), as well as those species covered by the MBTA, or those species given special protection by the State of California (CDFG, 2008b).

The search and review of the CNDDB database and USFWS IPaC reports revealed that special-status species could potentially occur in the channels of Redwood Creek and Westpoint Slough and that there have been a number of CNDDB records of special-status species observed on Bair and Greco Islands (Attachment 1, Figure 6). In addition, some state-protected raptors could utilize the Study Area as periodic foraging habitat.

Based on the search and review of the CNDDB database and USFWS IPaC report, there are a number of listed plant and animal species that occur within the vicinity of the Study Area. However, the suitable coastal salt marsh (swamp), brackish and freshwater aquatic habitats required for these species within the Study Area is largely absent. The following section provides a discussion on those species that could potentially occur within the Study Area:

Fish

Based on the CNDDB database review, two special-status fish species were identified as having potential to occur in the Study Area, including Delta smelt (*Hypomesus transpacificus*) and Longfin smelt (*Spirinchus thaleichthys*). However, upon further analysis and after the site visit, the Delta smelt is considered absent from the Study Area due to the lack of suitable habitat. No further discussion of that species is provided within this assessment.

<u>Longfin smelt (*Spirinchus thaleichthys*)</u>
This species occurs in the San Francisco Estuary using a variety of habitats from nearshore waters, to estuaries and lower portions of freshwater streams. The channel of Redwood Creek and Westpoint Slough may provide suitable habitat to support this species. While there are no proposed activities associated with the project that could potentially encroach or impact the shoreline of Redwood Creek, implementation of a Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMP) would mitigate the potential for impacts in the event that indirect effects would occur. Potential indirect effects could be associated with contaminated runoff entering the Creek or Slough.

Birds

A total of twelve special-status bird species were identified as having the potential to occur within the Study Area based on the CNDDB database review. However, upon further analysis and after the site visit, one of these species was considered to be unlikely to occur on the site due to the lack of suitable breeding and/or foraging habitat. No further discussion of that species is provided in this analysis. A brief description of the remaining 11 species that have the potential to occur within the Study Area is presented in the following sections.

<u>Great blue heron (*Ardea herodias*)</u>
This species is not listed pursuant to either the federal or California ESAs, but is tracked by CDFW in the CNDDB, as are other colonial nesting water birds. Great blue herons nest colonially in trees, bushes, on the ground, and artificial structures, generally near water and in places protected from predators and disturbance, such as islands. The nesting colonies may be located within a variety of vegetation communities near water.

Based on the September 2020 survey, there was no evidence of rookeries in, or adjacent to the Study Area. While the species has low potential to occur onsite, the tidally-influenced drainage ditch may provide limited foraging opportunities for the species within the Study Area.

<u>Short-eared owl (*Asio flammeus*)</u>
This species is not listed pursuant to either the federal or California ESAs, but is tracked by CDFW in the CNDDB; there are CNDDB occurrences of this species from nearby Bair Island.

Based on the September 2020 survey, the absence of expansive grassy upland/wetland habitats for nesting and/or foraging opportunities makes it unlikely that this species would occur within the Study Area.

Western snowy plover (*Charadrius alexandrinus nivosus*)
This federally threatened species breeds above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Less common nesting habitat includes bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars. There are CNDDB occurrences of this species from nearby Bair Island.

While it is unlikely that this species would use the dredge spoil piles for breeding along the shoreline interface with Redwood Creek, limited foraging opportunities may occur within the Study Area.

Northern harrier (*Circus hudsonius*)
This species is not listed pursuant to either the federal or California ESAs, but are tracked by CDFW in the CNDDB; there are CNDDB occurrences of this species from nearby Bair Island.

Based on the September 2020 survey, the absence of expansive grassy upland/wetland habitats for nesting and/or foraging opportunities makes it unlikely that this species would occur within the Study Area.

White-tailed kite (*Elanus leucurus*)
This species is not listed pursuant to either the federal or California ESAs, but are tracked by CDFW in the CNDDB; there are CNDDB occurrences of this species from nearby Bair Island.

Based on the September 2020 survey, the absence of expansive grassy upland/wetland habitats for nesting and/or foraging opportunities makes it unlikely that this species would occur within the Study Area.

American peregrine falcon (*Falco peregrinus anatum*)
This species, while federally delisted, is fully protected by the State of California.

Based on observations from the September 2020 survey, this state fully protected species may utilize the existing tall cement silo infrastructure within the Study Area for nesting/perch sites. However, the existing use of the towers may preclude successful nesting by the peregrine falcon.

California black rail (*Laterallus jamaicensis coturniculus*)
There are CNDDB occurrences of this species from nearby Bair Island. While suitable habitat is somewhat limited in extent, this species may utilize the existing pickleweed habitat along the ditch and shoreline for foraging opportunities. On-going industrial uses associated with the CEMEX facility may also preclude the presence of this species within the Study Area.

Alameda song sparrow (*Melospiza melodia pusillula*)
This species is not listed pursuant to either the federal or California ESAs, but is tracked by CDFW in the CNDDB; there are CNDDB occurrences of this species from nearby Bair Island.

Based on the September 2020 survey, the absence of extensive brackish and freshwater aquatic habitats and vegetation likely precludes the presence of this species within the Study Area. On-going industrial uses associated with the CEMEX facility may also preclude the presence of this species within the Study Area.

Double-crested cormorant (*Phalacrocorax auritus*)
While this species is not listed pursuant to either the federal or California ESAs, the nearby sloughs and islands surrounding the Study Area likely provide potentially suitable foraging and/or nesting habitat for this species.

California's Ridgeway's rail (*Rallus obsoletus obsoletus*)
This federal and state endangered species inhabits saltwater and brackish marshes often crossed by tidal sloughs in the San Francisco Bay and is closely associated with pickleweed (*Sarcocornia pacifica*) habitat.

While there are CNDDB occurrences of this species from nearby Bair Island, the limited extent of pickleweed habitat present within the tidally-influenced drainage ditch likely precludes this species from the Study Area. On-going industrial uses associated with the CEMEX facility may also preclude the presence of this species within the Study Area.

California least term (*Sternula antilarum browni*)
This federal and state endangered migratory species nests in colonies on bare or sparsely vegetated flat substrates near the coast.

While there are CNDDB occurrences of this species from nearby Bair Island, the absence of undisturbed bare or sparsely vegetated flat substrates (e.g., strands, tidal flats) near the coast likely precludes this species from the Study Area. On-going industrial uses associated with the CEMEX facility may also preclude the presence of this species within the Study Area.

Mammals

Based on the CNDDB database review, a total of 6 special-status mammal species were identified as having the potential to occur within the Study Area. However, upon further analysis and after the site visit, four of these species were considered to be unlikely to occur on the site due to the lack of suitable habitat. No further discussion of those species is provided in this analysis.

Pallid Bat (*Antrozous pallidus*)
The pallid bat is not listed pursuant to either the federal or California ESAs; however, this species is considered a special-status species by the CDFW. Based on the September 2020

survey, the variety of existing CEMEX infrastructure may provide suitable roosting habitat for this species.

6.4 Wetlands/Waters Results

Although no soil test pits were taken, two small features observed at the terminus of two existing railroad spurs in the center of the Study Area had evidence of some ponding (it is assumed that this takes place during the rainy season and not due to facility discharges of some unknown cause). Both features lacked a prevalence of hydrophytic vegetation and would therefore not likely qualify as a wetland based on two of three parameters (i.e., exhibits a prevalence of hydrophytic vegetation, and exhibits a prevalence of primary and/or secondary hydrologic indicators).

The single drainage ditch along the eastern boundary of the Study Area is approximately 229 linear feet/0.028-acre and has an OHWM of approximately 4 feet along the upper reach and approximately 9 feet within the lower reach before exiting the Study Area. Based on the presence of a defined bed and bank, this feature would likely be classified as an “other waters” of the U.S./state.

7.0 CONCLUSIONS

7.1 Wetlands and “Other Waters”

Concurrent with the results of the biological assessment survey, a preliminary assessment of existing hydrologic conditions identified the presence of a single potentially jurisdictional “other waters” feature within the Study Area[1]. This feature is the single drainage ditch along the eastern boundary of the Study Area, which is tidally-influenced and hydrologically connected to San Francisco Bay.

7.2 Special-Status Plants

Based on the absence of suitable habitats and soil types, no special-status plant species have the potential to occur on the Study Area.

7.3 Special-Status Wildlife

Special-Status Invertebrates – No special-status invertebrates are likely present within the Study Area.

Special-Status Fish – The channels of Redwood Creek and Westpoint Slough may support the longfin smelt. Implementation of appropriate SWPPP and BMP measures would mitigate any indirect impacts that may occur to these features.

1 There are no proposed impacts to the shoreline or the channel of Redwood Creek associated with this project.

Special-Status Amphibians – No special-status amphibians are likely present within the Study Area.

Special-Status Reptiles – No special-status reptiles are likely present within the Study Area.

Special-Status Raptor Species – Limited foraging opportunities for the short-eared owl, northern harrier, and other raptors exists throughout the Study Area; nesting habitat may be somewhat limited due to the scarcity of suitable nesting structures and suitable vegetative cover for these species. Anecdotal observations indicate that the peregrine falcon may utilize the existing cement towers within the Study Area for nesting and/or perching opportunities while foraging in the vicinity of the project area. However, the existing use of the towers may preclude successful nesting by the peregrine falcon.

Special-Status Bird Species – While there are recorded CNDDB occurrences nearby (including Bair Island), limited foraging and/or nesting opportunities for special-status bird species likely precludes their presence within the Study Area; these species include western snowy plover, California black rail, Alameda song sparrow, double-crested cormorant, California Ridgway's rail and California least tern.

The drainage ditch provides likely foraging opportunities for species such as great blue heron (*Ardea herodius*). Various species of shorebirds would be expected to utilize the western shoreline along the interface with the channel of Redwood Creek. The tall storage silos, outbuildings and other infrastructure may provide nesting opportunities for some species during the nesting/breeding season, such as the peregrine falcon.

Special-Status Mammals – The Study Area may provide marginally suitable habitat for pallid bat.

Sensitive Natural Communities – Northern Coast Salt Marsh: The drainage ditch along the eastern boundary provides very limited wildlife habitat functions and values; no other sensitive natural communities are present within the Study Area

7.4 Local Coastal Program Policies – Sensitive Habitats Component

There are a number of General Policies that may be applicable to future development of the Study Area, including impacts to *Sensitive Habitats* (Sections 7.1-7.5), *Wetlands* (Sections 7.14-7.18) and *Rare and Endangered Species* (Sections 7.32-7.35).

8.0 RECOMMENDATIONS

- "Other waters" of the U.S. / state were mapped within the Study Area. Authorization pursuant to Section 404 of the CWA (Section 404 permit) would be required prior to discharging any dredged or fill materials into these waters. Mitigation measures would be developed as part of the Section 404 Permit to ensure no net loss of wetland function and values. Mitigation for impacts to waters of the U.S. would be negotiated through the permitting process. A Water Quality Certification or waiver pursuant to Section 401 of the CWA would be needed for Section 404 permit actions. In addition, notification would need to be made to CDFW for a Lake or Streambed Alteration Agreement prior to work being conducted in those areas.

- The project could expose soil to increased rates of erosion during project construction. During active operations, runoff could adversely affect aquatic wildlife resources within the various riverine and wetland habitats. Surface water runoff could mobilize sediment particles or exposed soils from the site. If water is present within any of these features, deposition of eroded material could increase turbidity, thereby endangering aquatic wildlife resources. Implementation of appropriate mitigation measures would ensure that impacts to aquatic organisms would be avoided or minimized. Mitigation measures may include preparation of a Storm Water Pollution Prevention Plan (SWPPP) with best management practices (BMP's) such as silt fencing and check-dams to prevent erosion and protect water quality.

- Project activities within the Study Area may result in limited vegetation removals that could directly destroy nests, eggs, and immature birds, and remove future nesting habitat for birds, including sensitive species such as migrating songbirds. If impacts to on-site habitats where nesting birds are detected cannot be avoided, then the removal of the shrub and/or herbaceous vegetative cover should occur outside the breeding season, which is typically between (January) 15 February and August 30 of each year. Alternatively, the applicant should conduct a pre-construction nesting bird survey of all suitable habitat on the project site in areas planned for disturbance within 14 days of the commencement of construction during the nesting season. If active nests are found, a no-disturbance buffer around the nest shall be established. The buffer distance shall be established by a biologist in consultation with CDFW or the CEQA lead agency. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest tree, to be determined by a qualified biologist. Once the young are independent of the nest, no further measures are necessary. Pre-construction nesting surveys are not required for construction activity outside the nesting season.

- If any active raptor nests are present within the Study Area in the future, then all development-related activity should maintain a buffer of at least 150 feet during the breeding season from March to August and the site protected until August 15 or until the young have fledged (typically 3 to 4 weeks). A nesting raptor survey 72 hours prior to the removal of vegetation and/or construction is recommended to determine presence/absence of nesting raptor species.

- Prior to ground disturbance within suitable habitat for roosting bats as determined by a qualified biologist (i.e., trees and manmade structures), a qualified biologist shall conduct pre-construction roosting bat surveys for all suitable roosting habitat prior to construction. If suitable roosting habitat is identified, the qualified biologist will conduct an evening bat emergence survey that may include acoustic monitoring to determine whether or not bats are present. If pallid bats are found, consultation with CDFW prior to initiation of construction activities will be required. No further measures will be necessary if bats are not found during the preconstruction surveys.

- The applicant must comply with the County of San Mateo's *Local Coastal Program Policies* during all phases of construction and operations.

9.0 LITERATURE CITED

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, AND D. H. Wilken, editors. 2012. The Jepson manual: vascular plants of California. 2nd edition. University of California Press, Berkeley, California, USA.

California Department of Fish and Wildlife Natural Diversity Data Base (CNDDB), computer listings and map locations of historic and current recorded occurrences of special-status species and natural communities of special concern for the USGS 7.5 minute topo quadrangle map for Redwood Point; Accessed September 2020.

California Department of Fish and Wildlife. Special Animals List; 2019 State of California, The Natural Resources Agency, Biogeographic Data Branch, Department of Fish and Wildlife, California Natural Diversity Database. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline Accessed September 2020.

_________. August 2019. State and federally listed Endangered, Threatened, and Rare Animals of California. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109405&inline

__________. 2008. State and federally listed Endangered and Threatened animals of California. Available online at: http://www.dfg.ca.gov/endangered/t_e_animal.pdf.

California Native Plant Society (CNPS). 2020. Inventory of Rare and Endangered Plants (on-line edition, v6-04d1). California Native Plant Society. Sacramento, CA. Accessed September 2020. Available online at http://www.cnps.org/inventory

Code of Federal Regulation. Title 33 Part 328 "Navigation and Navigable Waters." U.S. Government Printing Office, Washington, D.C.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Office of Biological Services. Washington, D.C. Publ. No. FWS/OBS-79/31. 107 pp.

DiTomaso, J.M. and E.A. Healy. 2007. Weeds of California and other western states. Vol. 1 and 2. University of California; Agriculture and Natural Resources Publication 3488. Oakland, CA.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U. S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. plus appendices.

Environmental Laboratory. 2006. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Technical Report 06-16. U.S. Army Engineers Research and Development Center, Vicksburg, Mississippi. 123 pp.

Federal Interagency Committee for Wetland Delineation. 1989. *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication. 76 pp. plus appendices.

Federal Register. 1980. 13 November. Regulatory Programs of the Corps of Engineers, Vol. 51, No. 219, pp. 41206-41250. U.S. Government Printing Office, Washington, D.C.

Holland, R.F. 1986. Preliminary Description of the Natural Communities of California. CDFG.

Lichvar, R. W., and S. M. McColley. 2008. A field guide to the identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the western United States. ERDC/CRREL TR-08-12. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. (http://www.crrel.usace.army.mil/library/technicalreports/ERDC-CRREL-TR-08-12.pdf).

Lichvar, R.W. 2012. The national wetland plant list. (ERDC/CRREL TR-12-11). U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, 72 Lyme Road, Hanover, NH 03755-1290.

Lichvar, R., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner 2012. Wetland plant list indicator rating definitions (ERDC/CRREL TN-12-1). U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, 72 Lyme Road, Hanover, NH 03755-1290.

Natural Resources Conservation Service (NRCS), United States Department of Agriculture. Web Soil Survey. Accessed September 2020. Available online at http://websoilsurvey.nrcs.usda.gov.

San Mateo County. 2013. Local Coastal Program Policies. Accessed September 2020. Available online at: https://planning.smcgov.org/sites/planning.smcgov.org/files/documents/files/SMC_Midcoast_LCP_2013.pdf

Sawyer and Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society.

Skinner, M. W. and B. M. Pavlik (eds.). 1994. Inventory of rare and endangered vascular plants of California. California Native Plant Society Special Publication No. 1 (5th edition). California Native Plant Society, Sacramento, CA. 338 pp.

Sibley, D.A. 2000. The Sibley Guide to Birds. Alfred Knopf, New York.

U.S. Army Corps of Engineers. August 1986. *Clarification of "Normal Circumstances" in the Wetland Definition*. Regulatory Guidance Letter No. 86-9. 33 CFR 323.2(c).

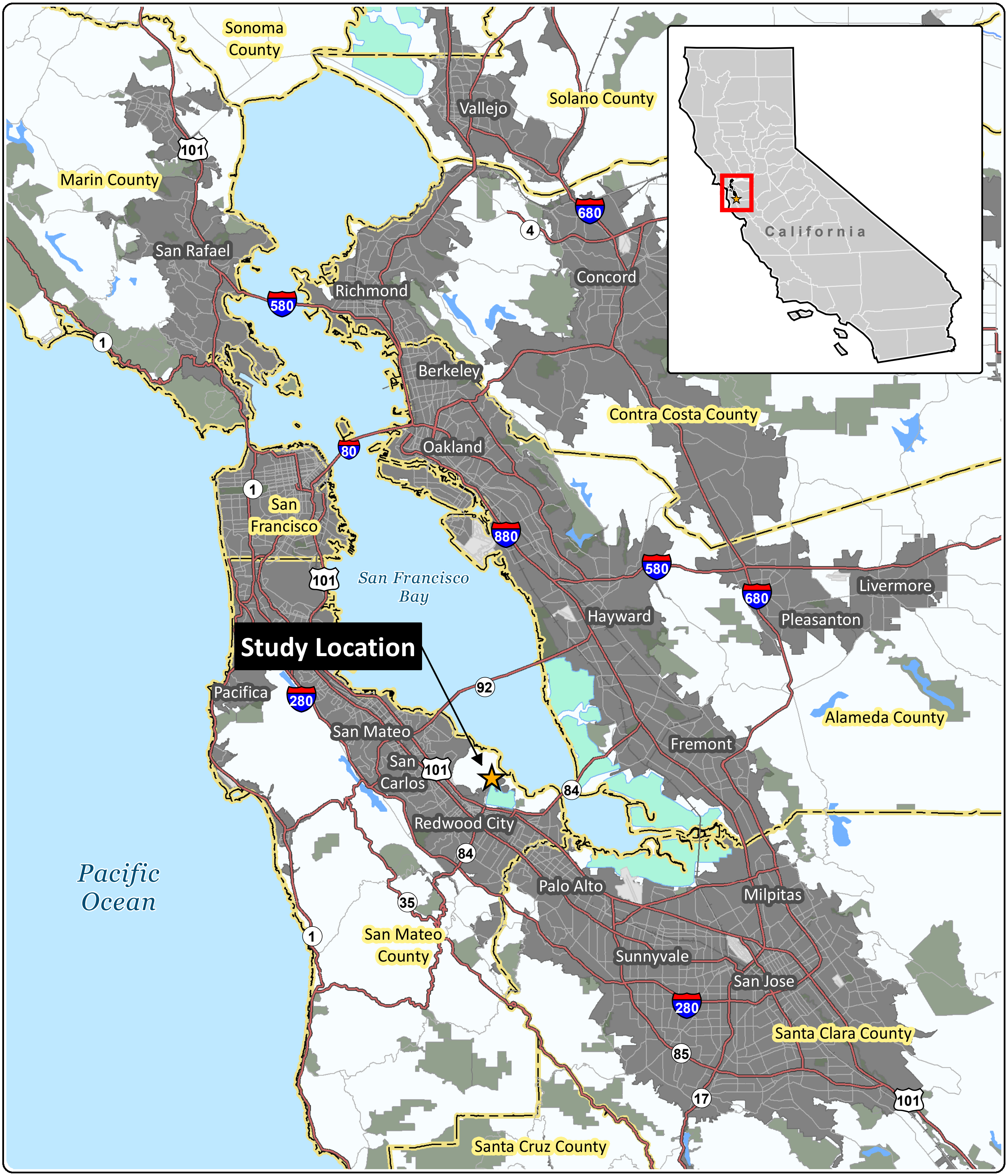
U.S. Army Corps of Engineers. June 2008. *Jurisdictional Determinations*. Regulatory Guidance Letter No. 08-02.

United States Fish and Wildlife Service. 2020. Listed species believed to or known to occur in California. Available online at: https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=CA&status=listed

U.S. Department of Agriculture, Natural Resources Conservation Service; California Hydric Soils List for San Mateo County electronic document: http://soils.usda.gov/use/hydric/lists/state.html.

ATTACHMENTS

ATTACHMENT 1
FIGURES



Legend:

★ Study Location

0 5 10 Miles

N

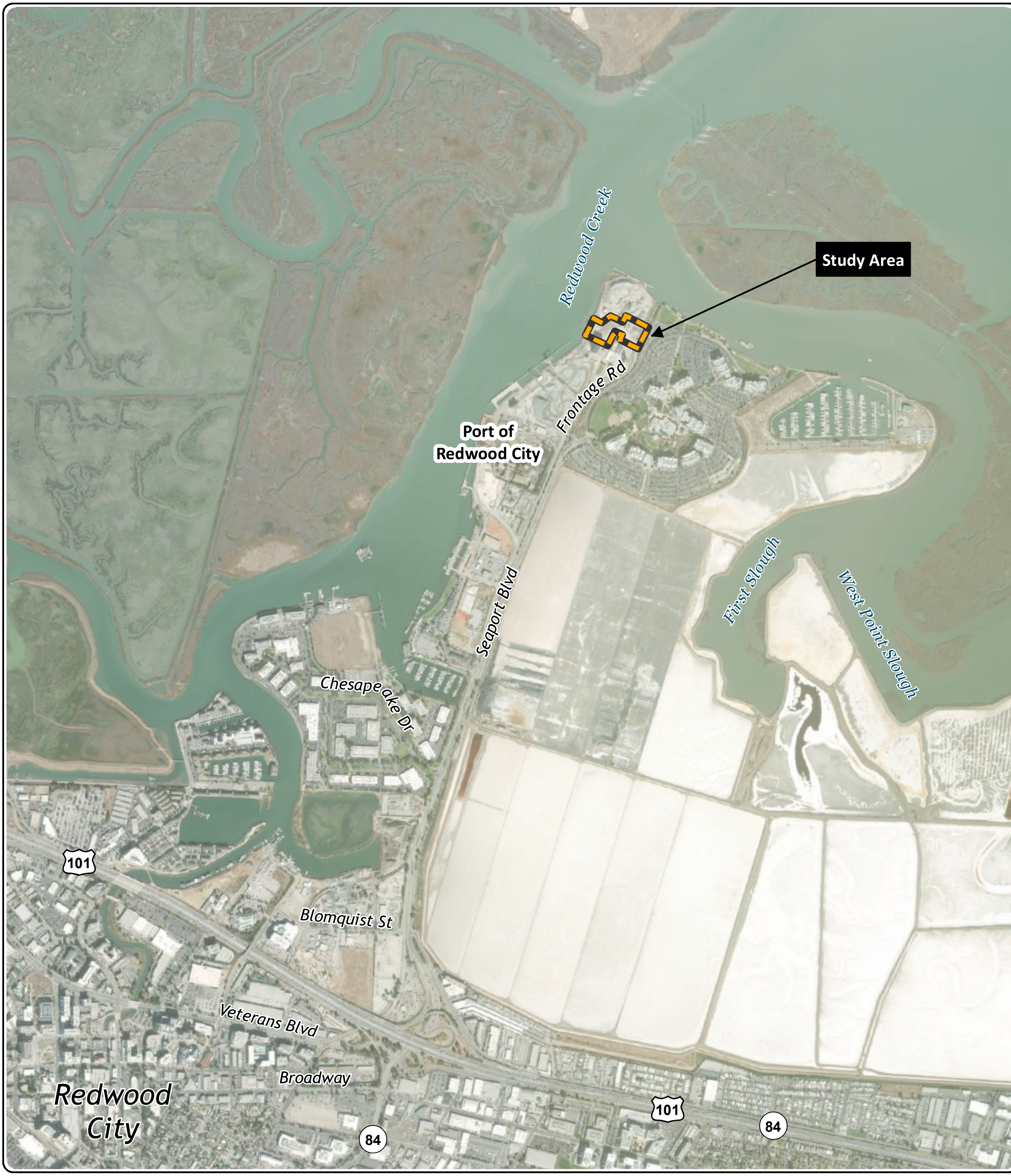
Regional Map
Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
San Mateo County, California

Figure 1

12/4/2020

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Biological Resources Services LLC
& mapping by Compass Land Group



Data: United State Geological Survey, Redwood Point and Palo Alto Quadrangles California 7.5'. 2018. Data Downloadable Online. Accessed [11/13/2020].

Legend: Study Area	Vicinity Map Port of Redwood City Cemex Construction Materials Pacific, LLC. San Mateo County, California	Figure 2	12/4/2020
0 0.25 0.5 Miles N		Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.	
		Biological Resources Services LLC & mapping by Compass Land Group	

Data: United State Geological Survey, Redwood Point and Palo Alto Quadrangles California 7.5'. 2018. Data Downloadable Online. Accessed [11/13/2020].

Legend:

Study Area

0 0.25 0.5 Miles N

USGS Topographic Map
Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
San Mateo County, California

Figure 3

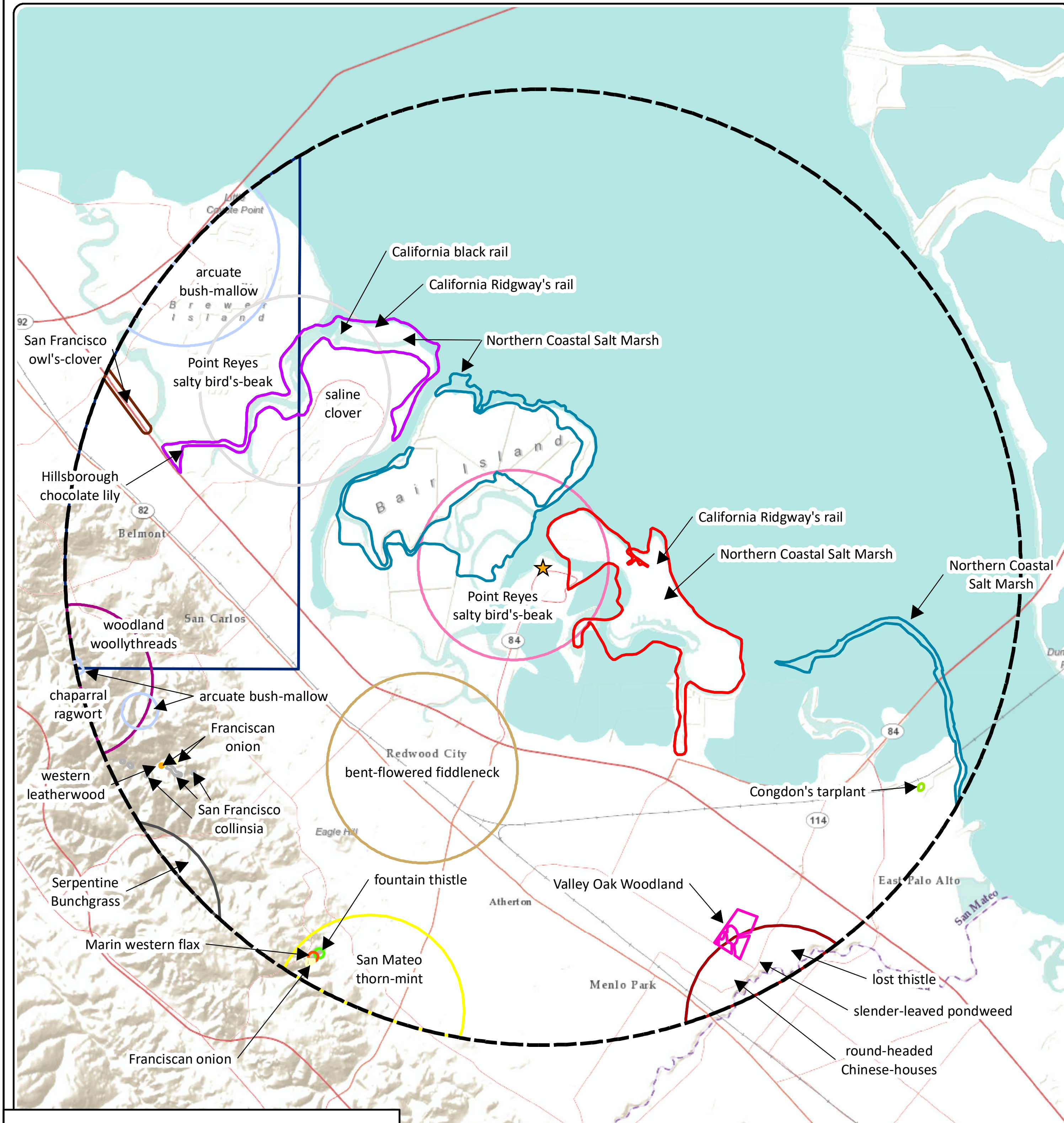
12/4/2020

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Biological Resources Services LLC
& mapping by Compass Land Group

Aerial photo adapted from Google Earth Maps Imagery Date 8-9-2018.

Legend: Study Area (4.9 Acres) 0 100 200 Feet	Aerial Photograph Port of Redwood City Cemex Construction Materials Pacific, LLC. San Mateo County, California	Figure 4 *Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.* Biological Resources Services LLC & mapping by Compass Land Group	12/4/2020



Legend:
★ Study Area   5-Mile Buffer

CNAME	
California Ridgway's rail	Serpentine Bunchgrass
California black rail	Valley Oak Woodland
Congdon's tarplant	arcuate bush-mallow
Franciscan onion	bent-flowered fiddleneck
Hillsborough chocolate lily	chaparral ragwort
Marin western flax	fountain thistle
Northern Coastal Salt Marsh	lost thistle
Point Reyes salty bird's-beak	round-headed Chinese-houses
San Francisco collinsia	saline clover
San Francisco owl's-clover	slender-leaved pondweed
San Mateo thorn-mint	western leatherwood
	woodland woollythreads

0 1 2 3 Miles
N

Sources: Esri, USGS, NOAA/Sources: Esri, Garmin, USGS, NPS
CNDDB Database updated 11-29-2020

Map of CNDDB Occurrences of Special-Status Plants Within a 5-Mile Radius Port of Redwood City San Mateo County, California

Figure 5

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

12/4/2020

Biological Resources Services LLC
& mapping by Compass Land Group

Legend:

★ Study Area 5-Mile Buffer

Animals

- Alameda song sparrow
- American badger
- American peregrine falcon
- California Ridgway's rail
- California black rail
- California least tern
- California tiger salamander
- San Francisco gartersnake
- Santa Cruz kangaroo rat
- double-crested cormorant
- great blue heron
- hoary bat
- longfin smelt
- northern harrier
- pallid bat
- salt-marsh harvest mouse
- Edgewood Park micro-blind harvestman
- salt-marsh wandering shrew
- short-eared owl
- western bumble bee
- western snowy plover
- white-tailed kite
- yellow rail

0 1 2 3 Miles

N

Sources: Esri, USGS, NOAA/Sources: Esri, Garmin, USGS, NPS
CNDDB Database updated 11-29-2020

Map of CNDDB Occurrences of Special-Status Animals Within a 5-Mile Radius
Port of Redwood City
San Mateo County, California

Figure 6

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

12/4/2020

Biological Resources Services LLC
& mapping by Compass Land Group

Aerial photo adapted from Google Earth Maps Imagery Date 8-9-2018.

Study Boundary (4.9 Acres)

Biological Communities

Developed (4.49 Acres)

Ruderal (0.29 Acres)

Pickleweed Mats (0.09 Acres)

0 100 200 Feet

Biological Communities
Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
San Mateo County, California

Figure 7

12/4/2020

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Biological Resources Services LLC
& mapping by Compass Land Group

ATTACHMENT 2
TABLES

Table 1
Plant Species Observed
Within the Survey Area

TABLE 1
PLANT SPECIES OBSERVED WITHIN THE SURVEY AREA

Wetland Indicator Status reflects updated 2012 National Wetland Plant List (NWPL) for Arid West (AW)
Nomenclature follows The Jepson Manual, 2nd Ed., 2012
*denotes naturalized species

Scientific Name	Common Name	Wetland Indicator Status
Section - Eudicots		
Aizoaceae		
*Carpobrotus edulis**	Hottentot fig	
Apiaceae		
*Foeniculum vulgare**	Sweet fennel	
Asteraceae		
Ambrosia psilostachya	Western ragweed	**FACU**
*Anthemis cotula**	Mayweed	**FACU**
Baccharis pilularis	Coyote brush	
*Carduus pycnocephalus**	Italian thistle	
*Centaurea melitensis**	Tocalote	
*Centaurea solstitialis**	Yellow star-thistle	
*Conyza bonariensis**	Asthmaweed	**FACU**
Crepsis vesicaria ssp. taraxacifolia	Hawksbeard	
*Dittrichia graveolens**	Stinkweed	
Grindelia stricta var. *angustifolia*	Marsh gumplant	
*Helminthotheca echioides**	Bristly ox-tongue	**FACU**
Heterotheca grandiflora	Telegraphweed	
Jaumea carnosa	Fleshy jaumea	**OBL**
*Pseudognaphalium luteoalbum**	Jersey Cudweed	**FAC**
Symphyotrichum subulatum var. *parviflorum*	Annual saltmarsh aster	**OBL**
Boraginaceae		
Heliotropium curassavicum var. oculatum	Seaside heliotrope	**FACU**
Brassicaceae		
*Cakile maritima**	Searocket	**FAC**
*Descurainia sophia**	Flixweed	
*Hirschfeldia incana**	Shortpod mustard	

Scientific Name	Common Name	Wetland Indicator Status
*Lepidium latifolium**	Perennial pepperweed	**FAC**
*Raphanus sativus**	Wild radish	
Chenopodiaceae		
*Atriplex prostrata**	Spearscale	**FACW**
Bassia (*hyssopifolia*)*	Fivehook bassia	**FAC**
*Chenopodium album**	Common lambsquarters	**FACU**
Sarcocornia pacifica	Pickleweed	**OBL**
*Salsola tragus**	Russianthistle	**FACU**
Fabaceae		
*Lotus corniculatus**	Bird's-foot trefoil	**FAC**
*Melilotus albus**	White sweet-clover	
*Melilotus indicus**	Sour clover	**FACU**
Frankeniaceae		
Frankenia salina	Alkali heath	**FACW**
Malvaceae		
*Malva parviflora**	Cheeseweed	
Malvella leprosa	Alkali mallow	**FACU**
Papaveraceae		
*Fumaria capreolata**	Fumitory	
Plantaginaceae		
*Plantago coronopus**	*Cut-leaf plantain*	
Polygonaceae		
Polygonum aviculare ssp. *depressum**	Common knotweed	**FACW**
Section - Monocots		
Arecaceae		
Washingtonia sp.*	Fan palm	
Cyperaceae		
Schoenoplectus americanus	Chairmaker's rush	**OBL**

Table 1 – Plant Species Observed Within the Survey Area

Scientific Name	Common Name	Wetland Indicator Status
Poaceae		
Avena sp.*	Wild oat	
*Bromus diandrus**	Rip-gut brome	
*Cortaderia jubata**	Pampas grass	**FACU**
Distichlis spicata	Salt grass	**FACW**
*Festuca myuros**	Rattail fescue	**FACU**
Festuca sp.*	Fescue	**Varies**
*Hordeum murinum ssp. leporinum**	Hare barley	**FACU**
*Stipa miliacea**	Smilo grass	
Wetland Plant Indicator Status Categories		
Indicator Category	**Symbol**	**Ecological Description**
Obligate Wetland Plant	OBL	Almost always occur in wetlands.
Facultative Wetland Plant	FACW	Usually occur in wetlands, but may occur
		in non-wetlands.
Facultative Plant	FAC	Occur in wetlands and non-wetlands.
Facultative Upland Plant	FACU	Usually occur in non-wetlands, but may
		occur in wetlands.
Upland Plant	UPL	Almost never occur in wetlands.
*Based upon revised information contained in Army Corps of Engineers 2012 The National Wetland Plant		
List Indicator Rating Definitions (ERDC/CRREL TR-12-11).		

Table 1 – Plant Species Observed Within the Survey Area

Table 2
Wildlife Species Observed
Within and Adjacent to the Survey Area

TABLE 2
WILDLIFE SPECIES OBSERVED WITHIN AND ADJACENT TO THE SURVEY AREA

Scientific Name	Common Name
Reptiles	
Sceloporus occidentalis	Western fence lizard
Birds	
Branta canadensis	Canada goose
Corvus brachyrhynchos	American crow
Larus sp.	Gull
Sayornis nigricans	Black phoebe
Melospiza melodia	Song sparrow
Zonotrichia leucophrys	White-crowned sparrow
Mammals	
Otospermophius beecheyi	California ground squirrel
Odocoileus hemionus columbianus	Columbia black-tailed deer
Procyon lotor	Raccoon (tracks)
Canis latrans	Coyote (tracks and scat)
Lepus californicus	Black-tailed jackrabbit

Table 2 – Wildlife Species Observed Within and Adjacent to the Survey Area

Table 3
Special-Status Species Occurring Within the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point
7.5 Minute Quadrangle Maps

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
PLANTS					
San Mateo thorn-mint (*Acanthomintha duttonii*)	FE/CE/1B.1	Apr – Jun	One historical occurrence has been extirpated (Edgewood Park in San Mateo County) leaving only two sites remaining; seriously threatened by development, non-native plants, vehicles, and vandalism. This annual herb occurs in chaparral and valley and foothill grassland habitats underlain with serpentinite soil substrates.	**ABSENT**	
Franciscan onion (*Allium peninsulare* var. *franciscanum*)	-/-/1B.2	(Apr) May – Jun	Perennial bulbiferous herb that inhabits cismontane woodland and valley and foothill grassland underlain with clay, serpentinite or volcanic soil substrates.	**ABSENT**	
Bent-flowered fiddleneck (*Amsinckia lunaris*)	-/-/1B.2	Mar - Jun	Annual herb that inhabits coastal bluff scrub, cismontane woodland and valley and foothill grassland.	**ABSENT**	
Congdon's tarplant *(Centromadia parryi* ssp. *congdonii*)	-/-/1B.1	May – Oct(Nov)	Occurs in valley and foothill grasslands with alkaline soil substrates.	**ABSENT**	

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
Point Reyes salty bird's-beak *(Chloropyron maritimum* ssp. *palustre)*	-/-/1B.2	Jun - Oct	Hemiparasitic herb that occurs in coastal salt marshes and swamps.	**Not Likely to Occur**	While there is a CNDDB occurrence for Redwood Point USGS topo quad, the drainage ditch does not likely provide suitable habitat to support this species
Crystal Springs fountain thistle *(Cirsium fontinale* var. *fontinale)*	FE/CE/1B.1	(Apr)May-Oct	Known only from the vicinity of Crystal Springs Reservoir; occurs in serpentine seeps in association with openings in chaparral, cismontane woodland, meadows and seeps and valley and foothill grassland habitats.	**ABSENT**	
Lost thistle *(Cirsium praeteriens)*	-/-/1A	Jun-Jul	Known from only two collections from Palo Alto (last in 1901). Perhaps represents a casual introduction from the Old World.	**Presumed Extinct**	
Round-headed Chinese houses *(Collinsia corymbosa)*	-/-/1B.2	Apr-Jun	Annual herb found in coastal dune habitat.	**ABSENT**	
San Francisco collinsia *(Collinsia multicolor)*	-/-/1B.2	Feb(Mar)-May	Annual herb that occurs in closed-cone coniferous forest and coastal scrub habitats, often in association with serpentinite soil substrates.	**ABSENT**	
Western leatherwood (*Dirca occidentalis*)	-/-/1B.2	Jan-Mar(Apr)	Perennial deciduous shrub that occurs in mesic (i.e., well-drained) chaparral, cismontane woodland, broadleafed upland forest, closed-cone coniferous forest, North Coast coniferous forest, riparian forest and riparian woodland.	**ABSENT**	

Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**
Hillsborough chocolate lily *(Fritillaria biflora* var. *ineziana)*	-/-/1B.1	Mar-Apr	Perennial bulbiferous herb that inhabits cismontane woodland and valley and foothill grassland underlain with serpentinite soil substrates.	**ABSENT**	
Marin western flax *(Hesperolinon congestum)*	FT/ST/1B.1	Apr-Jul	Annual herb that inhabits chaparral and valley and foothill grassland underlain with serpentinite soil substrates.	**ABSENT**	
Arcuate bush-mallow *(Malacothamnus arcuatus)*	-/-/1B.2	Apr-Sep	Perennial evergreen shrub that inhabits chaparral and cismontane woodland.	**ABSENT**	
Woodland woollythreads *(Monolopia gracilens)*	-/-/1B.2	(Feb)Mar-Jul	Annual herb that inhabits cismontane woodland, broadleafed upland forest (openings), chaparral (openings), North Coast coniferous forest (openings) and valley and foothill grassland underlain with serpentinite soil substrates.	**ABSENT**	
Chaparral ragwort *(Senecio aphanactis)*	-/-/2B.2	Jan-Apr(May)	Annual herb that inhabits chaparral, cismontane woodland coastal scrub habitats, often with alkaline soil substrates.	**ABSENT**	
Slender-leaved pondweed *(Stuckenia filiformis* ssp.*alpina)*	-/-/2B.2	May-July	Aquatic perennial rhizomatous herb that occurs in assorted freshwater marshes and swamps.	**ABSENT**	
Saline clover (*Trifolium hydrophyllum*)	-/-/1B.2	Apr-Jun	Annual herb that occurs in marshes and swamps, mesic (well-drained) valley and foothill grassland in alkaline soil substrates, and vernal pools.	**ABSENT**	
San Francisco owl's-clover *(Triphysaria floribunda)*	-/-/1B.2	Apr-Jun	Annual herb that inhabits coastal prairie, coastal scrub and valley and foothill grassland, usually underlain with serpentinite soil substrates.	**ABSENT**	
INVERTEBRATES					
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT/-/-	Resident	Endemic to vernal pools and swales of the Central Valley, central coast mountains and south coast mountains in small, clear water sandstone-depression pools and grassy swales, earth slump or basalt-flow depression rain-filled pools.	**Presumed Absent**	Study Area lacks suitable habitat to support this species

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
San Bruno elfin butterfly (*Callophrys mossii bayensis)*	FE/-/-	Resident	Species inhabits rocky outcrops and cliffs in coastal scrub on the San Francisco peninsula; host plant is stonecrop (*Sedum spathulifolium*).	**ABSENT**	Study Area lacks suitable habitat and preferred host plant to support this species
Edgewood Park micro-blind harvestman *(Microcina edgewoodensis)*	none/none/-	Resident	This species is a minute, spider-like creature with eight legs, pale orange body, yellowish-white legs, and lacks eyes found beneath serpentine rocks in grassland adjacent to scrub oaks.	**ABSENT**	Study Area lacks suitable habitat to support this species
FISH					
Delta smelt (*Hypomesus transpacificus*)	FT/SE/-	Resident	Native to deltaic and riverine systems of Sacramento Valley.	**Presumed Absent – On USFWS IPaC Letter as potentially occuring in the vicinity of the Study Area**	Study Area does not provide suitable aquatic habitat for this species.

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
Longfin smelt *(Spirinchus thaleichthys)*	FC/ST/-	Resident	Historically found in the San Francisco Estuary and the Sacramento/San Joaquin Delta (Bay-Delta), Humboldt Bay, and the estuaries of the Eel River and Klamath River; species uses a variety of habitats from nearshore waters, to estuaries and lower portions of freshwater streams	**May Occur**	While this species may be present within the aquatic habitats surrounding the Study Area, the Study Area does not touch the water (just short) and the project involves no work in the water.
AMPHIBIANS					
California Red-Legged Frog (*Rana draytonii*)	FT/SSC/-	Resident	Found mainly near ponds in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover. Most common in lowlands or foothills. Frequently found in woods adjacent to streams. Breeding habitat is in permanent or ephemeral water sources; lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps.	**Presumed Absent – On USFWS IPaC Letter as potentially occuring in the vicinity of the Study Area**	Presence of saline/brackish waters precludes the presence of this species within the Study Area.

Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**
California tiger salamander (*Ambystoma califoriense*)	FT/ST/-	Resident	Found primarily in grasslands, but also in valley-foothill hardwood woodlands. Breeding and egg-laying occur exclusively in vernal pools.	**ABSENT**	Study Area does not provide suitable aquatic and terrestrial habitat for this species.
REPTILES					
Alameda whipsnake *(Coluber (Masticophis) lateralis euryxanthus)*	FT/ST/-	Resident	Scrub and chaparral habitats in Alameda and Contra Costa counties but may occur in any inner Coast Range plant communities, including grasslands, open woodlands, rocky slopes, and along open streams and arroyos near scrub and chaparral.	**ABSENT**	Study Area does not provide suitable habitat for this species.
San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)	FE/SE/-	Resident	Utilizes a wide variety of habitats, preferring grasslands or wetlands near ponds, marshes and sloughs. May overwinter in upland areas away from water.	**Presumed Absent**	Study Area does not likely provide suitable aquatic and terrestrial habitat for this species.
BIRDS					
Great blue heron (*Ardea herodius*)	none/none/-	Resident	A colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, and wet meadows.	**May Occur**	Species may occasionally forage within the vicinity of the Study Area.

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
Short-eared owl (*Asio flammeus*)	none/SSC/-	Resident	Swamps, meadows, alfalfa fields	**May Occur**	Species may occasionally forage in immediate vicinity of Study Area; there are CNDDB occurrences from Bair Island
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT/SSC/-	Resident	The Pacific coast population of this species breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The population breeds above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries; less common nesting habitat includes bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars	**May Occur**	Species may occasionally forage in immediate vicinity of Study Area; there are CNDDB occurrences from Bair Island

Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**
Northern harrier (*Circus hudsonius*)	none/SC/-	Resident	Grasslands and open habitats; typically nests on the ground in dense vegetation.	**May Occur**	Species may occasionally forage in immediate vicinity of Study Area; there are CNDDB occurrences from Bair Island
Yellow rail (*Coturnicops noveboracensis*)	none/SC/-	Resident	Species still considered extremely rare in California, recent records indicate that small numbers winter regularly in a few coastal marshes and the Suisun Marsh region; breeding habitat consists of sedge marshes/meadows with moist soils/shallow inundation.	**Not Likely to Occur**	Study Area does not provide suitable breeding and/or foraging habitat for this species.
White-tailed kite (*Elanus leucurus*)	none/FP/-	Resident	Preferred habitat is marshes, grasslands and waste fields in the Central Valley and coastal plains of California.	**May Occur**	Species may occasionally forage in immediate vicinity of Study Area; there are CNDDB occurrences from Bair Island

Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**
American peregrine falcon (*Falco peregrinus anatum*)	Delisted/FP/-	Resident	Frequents bodies of water in open areas with cliffs and canyons nearby for cover and nesting.	**May Occur**	Species may nest on the existing cement towers within the Study Area; however, the existing use of the towers may preclude successful nesting by the peregrine falcon.
California Black Rail (*Laterallus jamaicensis coturniculus*)	-/ST/-	Resident	Occurs most commonly in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. In freshwater, usually found in bulrushes, cattails, and saltgrass.	**May Occur**	There are CNDDB occurrences from nearby Bair Island; while somewhat limited in extent, this species may utilize the existing pickleweed habitat along the ditch and shoreline for foraging opportunities.

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
Alameda song sparrow (*Melospiza melodia pusillula*)	-/SC/-	Resident	Inhabits brackish and freshwater aquatic habitats	**May Occur**	While there are CNDDB occurrences from nearby Bair Island, the amount of suitable nesting and/or foraging habitat is limited and may preclude the presence of this species within the Study Area.
Double-crested cormorant *(Phalacrocorax auritus)*	none/none/-	Resident	Highly adaptable species found along coasts, bays, lakes, and rivers in almost any aquatic habitat. Nests in trees near or over water, on sea cliffs, or on ground on islands.	**May Occur**	Nearby sloughs and islands surrounding the Study Area may provide potentially suitable foraging and/or nesting habitat for this species.

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
California Ridgway's rail (*Rallus obsoletus obsoletus*)	FE/SE/-	Resident	Saltwater and brackish marshes often crossed by tidal sloughs in the San Francisco Bay. Closely associated with pickleweed (*Sarcocornia pacifica*).	**May Occur**	While thereare CNDDB occurrences from nearby Bair Island, the amount of suitable nesting and/or foraging habitat is limited and may preclude the presence of this species within the Study Area.
California least tern (*Sternula antilarum browni*)	FE/SE/-	Resident	Migratory species that usually arrives in California in April and depart in August; nest in colonies on bare or sparsely vegetated flat substrates near the coast.	**May Occur**	While there are CNDDB occurrences from nearby Bair Island, the amount of suitable nesting and/or foraging habitat is limited and may preclude the presence of this species within the Study Area.

Table 3 Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]					
Common Name/ Scientific Name	**Status (Fed/State/ CNPS)[2]**	**Blooming or Survey Period**	**Habitats of Occurrence**	**Potential on Site**	**Status on Site****
MAMMALS					
Pallid bat (*Antrozous pallidus*)	-/SC/-	Resident	Daytime roosts in buildings and crevices; less often in caves, mines, and hollow trees. Nighttime roosts in buildings, caves, mines and cliff overhangs.	**May Occur**	Variety of Cemex infrastructure may provide suitable roosting habitat for this species.
Santa Cruz kangaroo rat *(Diplodomys venustus venustus)*	none/none/-	Resident	Species is restricted to sand chaparral communities around the Santa Cruz sandhills.	**ABSENT**	
Hoary bat (*Lasiurus cinereus*)	none/none/-	Resident	The most widespread North American bat. In California, generally roosts in dense foliage of medium to large trees.	**Not Likely to Occur**	While no large trees occur within the Study Area, nearby landscape tree plantings could provide potentially suitable roosting habitat.

Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**
Salt-marsh harvest mouse *(Reithrodontomys raviventris)*	FE/CE/-	Resident	Occurs only in saline emergent wetlands of San Francisco Bay and its tributaries, where pickleweed is predominant.	**Not Likely to Occur**	While there are recorded occurrences for this species within the Redwood Point USGS topo quad, pickleweed habitat within the Study Area is restricted to a single drainage ditch or small patchy occurrences along the northern shoreline of the Study Area. Also, the channels of Redwood Creek and Westpoint Slough may provide barriers to migration for this species.

Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**
Salt-marsh wandering shrew *(Sorex vagrans halicoetes)*	-/SC/-	Resident	This species inhabits a narrow band of pickleweed marsh which is inundated daily by tidal waters; currently restricted in distribution to only a few scattered, isolated remnants of tidal salt marsh around the southern arm of the San Francisco Bay.	**Not Likely to Occur**	There are CNDDB occurrences from nearby Bair Island; however, preferred habitat is limited to the single drainage ditch or small patchy occurrences along the northern shoreline of the Study Area. Also, the channels of Redwood Creek and Westpoint Slough may provide barriers to migration for this species.
American badger *(Taxidea taxus)*	-/SC/-	Resident	Occupies a diversity of habitats throughout the state; principal habitat requirements include sufficient prey base, friable soils, and relatively open, uncultivated ground.	**Presumed Absent**	Study Area does not provide suitable habitat for this species.

Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**
SPECIAL STATUS HABITATS					
Serpentine Bunchgrass			CDFW Sensitive Habitat	**ABSENT**	Sensitive habitat absent from Study Area
Northern Coastal Salt Marsh			CDFW Sensitive Habitat	**LIMITED**	A small linear remnant of this habitat type occurs along with the drainage ditch within the Study Area.
Valley Oak Woodland			CDFW Sensitive Habitat	**ABSENT**	Sensitive habitat absent from Study Area

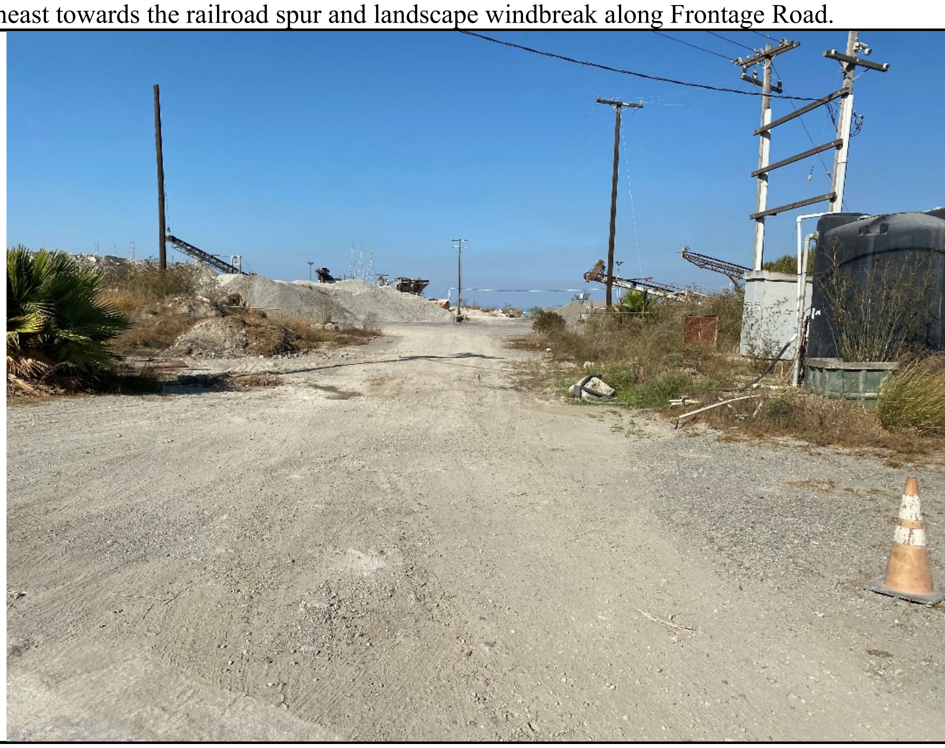
Table 3
Special-Status Species for the Redwood Point, San Leandro, Hayward, Newark, Mountain View, Palo Alto, Woodside and Hunter's Point 7.5 Minute Quadrangle Maps[1]

Common Name/ Scientific Name	Status (Fed/State/ CNPS)[2]	Blooming or Survey Period	Habitats of Occurrence	Potential on Site	Status on Site**

1. Special-status plants and animals as reported by the California Natural Diversity Data Base, California Native Plant Society, and other background research October 2020.
2. Order of Codes for Plants - Fed/State/CNPS
   Order of Codes for Animals - Fed/State/CDFG
   Codes:
   SOC - Federal Species of Concern
   SSC - California Species of Special Concern
   FE - Federally/State Listed as an Endangered Species
   FT - Federally/State Listed as a Threatened Species
   C - Species listed as a Candidate for Federal Threatened or Endangered Status
   CE-California Endangered
   CT-California Threatened
   CP- California protected
   FP - State Fully Protected
   SC - California Special Concern species (CDFW)
   1B - California Native Plant Society considers the plant Rare, Threatened, or Endangered in California and elsewhere.
   1A - CNPS Plants presumed extinct in California.
   2 - CNPS Plants Rare, Threatened or Endangered in California, but more common elsewhere.
   3 - CNPS Plants on a review list to find more information about a particular species.
   4 - CNPS Plants of limited distribution - a watch list.

ATTACHMENT 3
SITE PHOTOGRAPHS

1. Photograph shows existing conditions present within the eastern portion of the Study Area, facing east/northeast towards the railroad spur and landscape windbreak along Frontage Road.



2. Photograph shows view of northern boundary of eastern portion of the Study Area.

3. Photograph taken along the southern boundary of the Study Area, facing west/northwest.

4. Photograph shows representative example of highly disturbed upland vegetation found (were present) throughout the Study Area.

5. Photograph shows drainage ditch along eastern boundary of Study Area, facing south. This area is largely dominated by pickleweed and saltgrass.

6. Photograph shows existing conditions associated with western portion of Study Area, facing south.

Biological Resources Services
CEMEX Port of Redwood City

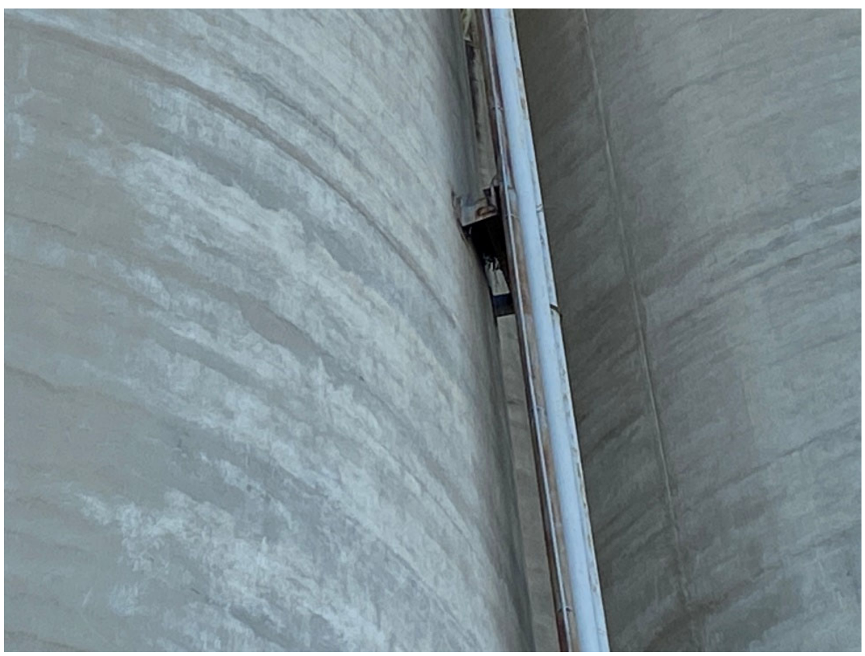
7. Photograph shows interface between western shoreline and Redwood Creek channel, facing south.

8. Photograph existing condition along western shoreline, facing north/northeast.

9. Photograph shows existing conditions of western portion of Study Area, facing northeast.

10. Photograph shows slight depressional area along railroad spur terminus where water appears to pond during the rainy season; despite soil “flaking,” note absence of hydrophytic vegetation.

9. Photograph shows existing condition of railroad spur in center of Study Area, facing north. Water tends to pond in this area during the rainy season; however, there is a lack of prevalence by hydrophytic vegetation and absence of hydrologic indicators.



10. Photograph shows platform nest along storage silo.

Biological Resources Services
CEMEX Port of Redwood City

9. Raccoon tracks in fine silts near storage silos.

ATTACHMENT 4
USFS IPAC LETTER

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
Phone: (916) 930-5603 Fax: (916) 930-5654
http://kim_squires@fws.gov

In Reply Refer To: October 10, 2020
Consultation Code: 08FBDT00-2021-SLI-0009
Event Code: 08FBDT00-2021-E-00022
Project Name: Cemex Materials Facility Study Area

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

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

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

Project Summary

Consultation Code: 08FBDT00-2021-SLI-0009

Event Code: 08FBDT00-2021-E-00022

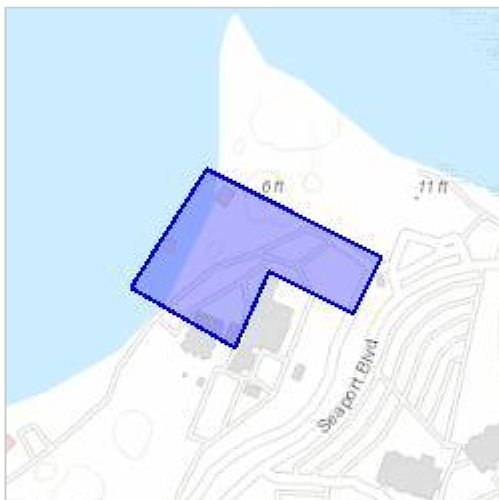
Project Name: Cemex Materials Facility Study Area

Project Type: SHORELINE USAGE FACILITIES / DEVELOPMENT

Project Description: Cemex proposes infrastructure upgrades within existing facilities on its property

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.515495834139855N122.2049312585101W



Counties: San Mateo, CA

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list.

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

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

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

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

Mammals

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

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened
San Francisco Garter Snake *Thamnophis sirtalis tetrataenia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
San Bruno Elfin Butterfly *Callophrys mossii bayensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Critical habitats

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

Appendix C

Energy Use Calculations

Equipment Energy Use Calculations

Proposed Project

Construction

		MTCO2 [1]	kg CO2 [2]	Gallons[2]
On-Road Trucks/Off-road Equipment	**Diesel**	255.00	254,996	24,975
On-road Worker Trips	**Gasoline**	10.15	10,147	1,156

[1] From Compass Land Group estimates (Annual CalEEMod outputs)
[2] Calculated

Operations

Activity	Fuel	MTCO2 [1]	kg CO2 [2]	Gallons[2]	Gal per Ton of Cement
Off-road Equipment	Diesel	189.86	189,860.00	18,595.49	0.04
On-road	Gasoline	20.00	20,000.00	2,277.90	0.00
On-road	Diesel	749.95	749,950.00	73,452.50	0.15
Total	**Diesel**	**939.81**	**939,810.00**	**92,047.99**	0.18
Total	**Gasoline**	**20.00**	**20,000.00**	**2,277.90**	0.00

[1] From Compass Land Group estimates (Appendices B-3, B-4)
[2] Calculated

		kWh/year	kWh/ton of cement
Plant Operations	**Electricity**	125,000.00	0.25

San Carlos Facility

Operations

Activity	Fuel	MTCO2 [1]	kg CO2 [2]	Gallons[2]	Gal per Ton of Cement
Off-road Equipment	Diesel	363.01	363,010.00	35,554.36	0.22
On-road	Gasoline	17.89	17,890.00	2,037.59	0.01
On-road	Diesel	329.80	329,800.00	32,301.67	0.20
Total	**Diesel**	**692.81**	**692,810.00**	**67,856.02**	**0.41**
Total	**Gasoline**	**17.89**	**17,890.00**	**2,037.59**	**0.01**

[1] From Compass Land Group estimates (Appendices C-2, C-3)
[2] Calculated

		kWh/year	kWh/ton of cement
Plant Operations	**Electricity**	40,862	0.25

Net Change in Operational Energy Use

Operations

Activity	Fuel	MTCO2 [2]	kg CO2 [2]	Gallons[2]	Gal per Ton of Cement
Off-road Equipment	Diesel	-173.15	-173,150.00	-16,958.86	-0.18
On-road	Gasoline	2.11	2,110.00	240.32	-0.01
On-road	Diesel	420.15	420,150.00	41,150.83	-0.05
Total	**Diesel**	**247.00**	**247,000.00**	**24,191.97**	**-0.23**
Total	**Gasoline**	**2.11**	**2,110.00**	**240.32**	**-0.01**

[2] Calculated

		kWh/year	kWh/ton of cement
Plant Operations	**Electricity**	84,138	0.00

Emission Factors per Fuel Unit

Gasoline	8.78	kg CO2/gal
Diesel (Distallate No. 2)	10.21	kg CO2/gal

Source: 2021 Default Emission Factors. Climate Registry.

Appendix D

Preliminary Geotechnical Evaluation Report

ATTACHMENT 5

U.S. ARMY CORPS OF ENGINEERS PRELIMINARRY JURISDICTIONAL DETERMINATION

FOR THE

CEMEX PORT OF REDWOOD CITY READY-MIX CONCRETE PLANT PROJECT

SAN MATEO COUNTY, CALIFORNIA

Prepared for:

COMPASS LAND GROUP
3140 Peacekeeper Way, Suite 102
McClellan, CA 95652
Attn: Yasha Saber

Prepared by:

BIOLOGICAL RESOURCES SERVICES LLC
2127 Owl Meadow St.
Folsom, California 95630

Phone: 925.330.7202
Email: chrisbronny@gmail.com
Contact: Chris Bronny

DECEMBER 2020

ATTACHMENT 5

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

1.1 Scope

At the request of Cemex Construction Materials Pacific, LLC (CEMEX), Biological Resources Services LLC (BRS) conducted an investigation of the geographic extent of areas potentially subject to U.S. Army Corps of Engineers (Corps) jurisdiction under Section 404 of the Clean Water Act (wetlands and other waters) and Section 10 of the Rivers and Harbors Act within the identified boundaries of the CEMEX Port of Redwood City Ready-Mix Concrete Plant Project (Study Area). The area surveyed consists of approximately 5 acres located in San Mateo County, California.

On 21 September 2020, a preliminary jurisdictional determination (PJD) was conducted for the purposes of identifying the extent of Corps jurisdiction within predetermined boundaries identifying the Study Area. The Study Area was investigated in order to make a technical evaluation as to the extent of Corps jurisdiction based on current and historic land use conditions. Visual observations as to the presence or absence of indicators of wetland soil, vegetation and hydrological conditions were made during the investigation of the Study Area. A combination of field observation and GIS desktop analysis was used to map the boundaries of all potential wetland/water features and their OHWM and linear footage in the Study Area.

The aquatic resource boundaries depicted in this report represent a calculated estimation of the jurisdictional area within the Study Area and are subject to modification following the Corps verification process. The purpose of this report is to provide adequate information to the Corp for the issuance of a Preliminary Jurisdictional Determination.

1.2 Location

The Study Area occurs on developed lands that were historically a tidally-influenced coastal saltmarsh habitat within the greater San Francisco Bay estuary. Undeveloped areas of this habitat type can be found in close proximity to the Study Area on Bair and Greco Islands. Both islands are separated by the channels of Redwood Creek and Westpoint Slough, which converge along the western and northern boundaries of, and in close proximity to, the Study Area.

As previously noted, the channel of Redwood Creek forms the western boundary, while a railroad spur and Frontage Road lie along the eastern boundary. The Study Area consists of portions of two parcels that occur within the larger CEMEX aggregate and cement facilities at the Port; the entirety of this property forms both the northern and southern boundaries. Attachment 1, Figure 1 depicts the regional location of the Study Area in San Mateo County. Figure 2 illustrates the vicinity of the Study Area in relationship to Redwood City and the surrounding San Francisco Bay. Figure 3 identifies the location of the Study Area on the USGS 7.5 Quadrangle Map for Redwood Point. Figure 4 provides an aerial photograph of the Study Area.

From San Francisco, access to the Study Area is attained by taking Highway 101 south towards Redwood City. Take the Woodside Road (Hwy 84)/Seaport Boulevard exit; proceed north on Seaport Boulevard, which transitions to Frontage Road. Look for the entrance to the CEMEX facility on the left side. Access to the Study Area is authorized by checking in at CEMEX's existing on-site aggregate facility office located at 775 Seaport Boulevard.

1.3 Study Area Description

The 5-acre Study Area consists of and is adjacent to CEMEX's existing aggregate and cement marine terminals, where uses include aggregate processing and stockpiling, aggregate and cement material load-out and sales, construction materials recycling, and associated heavy truck traffic. Existing ancillary support structures include conveyors, crushers, storage silos, groundwater wells, rail lines, miscellaneous storage, offices, parking, and other associated infrastructure.

The topography is nearly level throughout, the relief broken by various infrastructure buildings, aggregate stockpiles, levees and berms bordering the channel of Redwood Creek, along with a single incised drainage ditch along the eastern boundary. Elevations throughout the Study Area range from approximately below mean sea level (i.e., -3' msl) to approximately 10' msl. Representative photographs of the Study Area can be viewed in Attachment 2.

2.0 METHODOLOGY

2.1 Overview

BRS completed a field delineation of the Study Area on 21 September 2020. The existing landforms as well as associated vegetation, hydrology, and soil conditions were studied to identify areas that would likely contain wetland/waters and or aquatic habitats at the site. Potential jurisdictional areas were identified on field maps and compared to available aerial photography, previous jurisdictional delineations, and topographical maps.

Prior to completing the site surveys for this report, site maps, topographic maps and aerial photographs of the Study Area were obtained from several sources and reviewed. This information was used in association with detailed delineation surveys to determine the extent and boundaries of wetland features. Resource materials used for the site analysis were as follows:

- U. S. Geological Survey Quadrangle Map for Redwood Point, California;
- Current and historic Google Earth aerial imagery; and
- Soil map information contained in the *San Mateo County, Eastern Part, and San Francisco County, California* (May 1991).

If applicable, the extent or boundary of wetland habitats was further defined using the 1987 "Corps Wetlands Delineation Manual" (1987 Manual), the "Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region" (Arid West Supplement), routine on-site wetland determination protocol currently in use by the Corps, published Corps of Engineers regulatory guidance letters, and San Francisco District regulatory policy.

2.2 Corps Definition of Wetlands/Waters

Pursuant to the 1987 Manual, key criteria for determining the presence of wetlands are:

(a) the presence of inundated or saturated soil conditions resulting from permanent or periodic inundation by ground water or surface water; and

(b) a prevalence of vegetation typically adapted for life in saturated soil conditions (hydrophytic vegetation).

Explicit in the definition is the consideration of three environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. The assessment of all three parameters enhances the technical accuracy, consistency, and credibility of wetland determination and is required per the1987 Corps Manual.

Aquatic habitats, other than wetlands, that are considered to be waters of the United States were also investigated as part of this study. Their landward extent was defined following the definitions provided in the Corps of Engineers regulations [33 CFR §328.4(a)(b) and (c)]:

(a) *Territorial Seas*. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles.

(b) *Tidal Waters of the United States*. The landward limits of jurisdiction in tidal waters:

   (1) Extends to the high tide line, or

   (2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in (c) below.

(c) *Non-Tidal Waters of the United States*. The limits of jurisdiction in non-tidal waters:

   (1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or

   (2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.

   (3) When the water of the United States consists only of wetlands, the jurisdiction extends to the limit of the wetlands.

Tributary waters and their impoundments are under the regulatory jurisdiction of the Corps and extend to the ordinary high water (OHW) mark on opposing channel banks. Tributary waters include rivers, streams and seasonal drainage channels. The OHWM is typically indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in character of soil, destruction of vegetation, exposed roots on the bank, deposition of leaf litter and other debris materials or lower limit of moss growth on channel banks.

Areas meeting the regulatory definition of "Waters of the United States" (jurisdictional waters) are subject to the jurisdiction of the Corps. The Corps under provisions of Section 404 of the Clean Water Act (1972) has jurisdiction over "Waters of the U.S." These waters may include all waters used or potentially used for interstate commerce. This includes all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as "Waters of the U.S.," tributaries of waters otherwise defined as "Waters of the U.S.," the territorial seas, and wetlands adjacent to "Waters of the U.S." (33 CFR, Part 328, Section 328.3).

Areas not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water-filled depressions with no outlet for drainage (33 CFR, Part 328).

The Study Area was also reviewed to assess the potential for qualifying for Section 10 jurisdiction as a navigable water of the United States. Navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR 329, Section 329.4). Section 10 jurisdiction extends to the lateral extent of the OHW marks on opposing channel banks. Ultimately, the determination of navigability is made by the division engineer (33 CFR, Part 329, Section 329.14).

2.3 Data Collection for Potential Jurisdictional Wetlands/Waters

Data was collected for the determination of wetlands/waters on 21 September 2020, as outlined in the methods section. Specific data point information on vegetation, soils and hydrology was gathered by wetland scientist Mr. Christopher Bronny. The purpose of this investigation was to identify and delineate potential jurisdictional waters, including wetlands. The survey was conducted within and adjacent to the specified survey boundaries. The Study Area was examined for topographic features, drainages, alterations to site hydrology and areas of recent disturbance in the refined survey area. All vascular plant species that were identifiable at the time of the survey were recorded and identified using keys and descriptions in The Jepson Manual (2nd ed., 2012; Attachment 2).

The habitat types occurring on the Study Area were characterized according to pre-established categories. In classifying the habitat types on the site, the generalized plant community classification schemas of *A Manual of California Vegetation* (Sawyer, Keeler-Wolf and Evens 2009) were consulted. The final classification and characterization of the habitat types found on the Study Area were based on field observations.

Data was collected on vegetation, soils, and hydrology using wetland determination protocol as described in the 1987 Manual. If applicable, sample points were taken to delineate the ecotone between the upland and wetland boundaries of a potentially jurisdictional wetland feature. No soil test pits were taken within potential aquatic features that were confined to channels, thus conforming to the definition of "other waters" of the U.S. (i.e. exhibits a distinct bed and bank, with an ordinary high water mark (OHWM)). If applicable, measurements were taken within drainage features having a distinct bed and bank to record the OHWM[1]. Any GPS coordinates recorded in the field was by using the iPhone “GPS Tracks” application.

A total of three line segments were taken to measure the OHWM of a single drainage ditch; no other single or paired sample waypoints were taken, as no wetland features were present within the Study Area (Attachment 1, Figure 5).

Weather conditions at the time of the September 2020 field delineation were sunny and clear with late afternoon temperatures around 65 degrees Fahrenheit. Winds were light to moderate with occasional gusts.

3.0 TECHNICAL FINDINGS

The following discussion reports the vegetation, hydrology, and soil conditions observed at the Study Area during the course of the investigation.

3.1 Vegetation Conditions

The 1987 Manual states that the diagnostic environmental characteristics indicating wetland vegetation conditions are met when the prevalent vegetation (more than 50%) consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described above. In addition, hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Indicators of vegetation associated with wetlands include:

1. more than 50% of the dominant species are rated as Obligate (“OBL”), Facultative Wet (“FACW”) or Facultative (“FAC”) on lists of plant species that occur in wetlands;

2. visual observations of plant species growing in areas of prolonged inundation or soil saturation; and

3. reports in the technical literature indicating the prevalent vegetation is commonly found in saturated soils” (1987 Manual).

In addition, hydrophytic indicators are applied to plant communities using the Arid West Supplement (December 2006) in the following sequence:

1. Apply the dominance test – more than 50% of the dominant species are rated as OBL, FACW, or FAC on lists of plant species that occur in wetlands.

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[1] The single mapped tidally-influenced drainage ditch within the Study Area was exempt from conducting a protocol-level OHWM analysis, as this type of feature does not fall under any of the stream geomorphology classifications found in the 2008 Manual.

a. If the plant community passes the dominance test, then the vegetation is hydrophytic and no further vegetation analysis is required.

b. If the plant community fails the dominance test, but indicators of hydric soil and wetland hydrology are both present, proceed to step 2.

2. Apply the prevalence index – a weighted average wetland indicator status of all plant species (OBL=1, FACW=2, FAC=3, FACU=4, UPL=5). Weighting is by abundance (percent cover). A hydrophytic plant community will result in a prevalence index of 3.0 or less.

   a. If the plant community satisfies the prevalence index, then the vegetation is hydrophytic. No further vegetation analysis is required.

   b. If plant community fails prevalence index, proceed to step 3.

3. Apply morphological adaptations – morphological features which help plants survive prolonged inundation or saturation in the root zone, must occur on more than 50% of the FACU species living in an area where indicators of hydric soil and wetland hydrology are present.

Since 2006, the USACE has assumed administrative responsibility for the National Wetland Plant List (NWPL). The USACE initiated a national effort, led by a National Panel (NP) made up of representatives of the four agencies responsible for the NWPL, to update the NWPL indicator status categories, nomenclature, and geographic regions.[2] To more accurately reflect the existing information on plant frequencies, the NP dropped the 1988 numeric rating categories and revised the narrative definitions to be based on ecological descriptions; the plus (+) and minus (–) indicators were also eliminated. The following are the final refined wetland indicator definitions:

OBL (Obligate Wetland Plants) - Almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface.

These plants are of four types:

- Submerged (plants that conduct virtually all of their growth and reproductive activity under water);

- Floating (plants that most often grow with the leaves and other vegetative and reproductive organs floating on the water surface);

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[2] Lichvar, R., and P. Minkin. 2008. Concepts and Procedures for Updating the National Wetland Plant List. ERDC/CRREL TN-08-03. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. http://libweb.erdc.usace.army.mil/Archimages/2295.PDF.

- Floating-leaved (plants that are rooted in sediment but also have leaves that float on the water surface); and

- Emergent (herbaceous and woody plants that grow with their bases submerged and rooted in inundated sediment or seasonally saturated soil and their upper portions, including most of the vegetative and reproductive organs, growing above the water level).

FACW (Facultative Wetland Plants) - Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

FAC (Facultative Plants) - Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic[3], or xeric[4] habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.

FACU (Facultative Upland Plants) - Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

UPL (Upland Plants) - Almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

Table 1 provides a summary of the wetland plant indicator status categories used to determine if a particular plant species qualifies as a macrophyte which has adapted to areas having hydrologic and soil conditions.

It is important to note that, although there is a high probability that one would expect to find obligate, facultative wet and facultative plants growing in wetlands, there is also a significant possibility that the obligate, facultative wet, and facultative species will occur in areas that do not exhibit wetland soil and/or wetland hydrology conditions.

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[3] The mesic habitat description is essentially defined as occurring in a variety of habitats, typically with dense vegetation that shades “damp or moist” soils that are not hydric. In these settings, organic matter, which accumulates as plants decay, moderates soil temperatures and increases the soil’s water-holding capacity.

[4] Nationally, the habitat description “xeric” is based in two different concepts. The xeric habitats of the Arid West typically occur in areas of low rainfall and in what are referred to as desert conditions. The other concept of xeric occurs throughout the remainder of the country in habitats often, but not always, located on hilltops and ridges, on south- or west-facing slopes, or on flatlands with sandy, porous soils. Vegetative cover in xeric habitats is sparser than the vegetation associated with mesic soils. As such, more sunlight reaches the soil surface, creating warmer, drier conditions in the rooting zone. Surface runoff and wind often erode topsoil, maintaining a shallow, excessively well drained to dry soil profile with a low water- holding capacity.

Table 1
Wetland Plant Indicator Status Categories

Indicator Category	Symbol	Ecological Description
OBLIGATE WETLAND PLANTS	OBL	Almost always occur in wetlands
FACULTATIVE WETLAND PLANTS	FACW	Usually occur in wetlands, but may occur in non-wetlands.
FACULTATIVE PLANTS	FAC	Occur in wetlands and nonwetlands.
FACULTATIVE UPLAND PLANTS	FACU	Usually occur in non-wetlands, but may occur in wetlands.
UPLAND PLANTS	UPL	Almost never occur in wetlands.

*Based upon revised information contained in Army Corps of Engineers 2012 The National Wetland Plant List Indicator Rating Definitions (ERDC/CRREL TR-12-11)

3.2 Vegetation Analysis of the Study Area

The Study Area occurs within the *North Coast* subregion of the California Floristic Province (Baldwin, et al. 2012). The final classification and characterization of the habitat types of the Study Area were based on field observations made during the jurisdictional delineation data collection survey conducted on 21 September 2020.

The Study Area supports three (3) habitat types: developed, ruderal (i.e., where the natural vegetation has been disturbed) and pickleweed mats. These habitats are described in further detail below, along with a description of the plant species present within each habitat type. Dominant plant species are noted. The complete list of plant species observed within the Study Area can be found in Attachment 3.

3.2.1 Developed

Approximately ±4.5 acres of developed areas were mapped within the Study Area. Areas mapped as developed include man-made structures, impervious surfaces, and other regularly maintained areas which are mostly or entirely devoid of vegetation. Developed areas occur throughout the Study Area.

3.2.2 Ruderal

Ruderal (i.e., disturbance) habitats are associated with areas that have undergone and/or continue to undergo some type of disturbance regime to the existing vegetative cover. Disturbance activities may be natural (e.g., flooding, fire, landslides) or anthropogenic (e.g., discing, mowing, grading, spraying).

Ruderal assemblages were common throughout the Study Area along the edges of roads, levees, berms, concrete pads and railroad spurs. These areas are often dominated by a high percentage of introduced, non-native grasses and broad-leaved plants. Commonly observed grasses included smilograss (*Stipa miliacea*), rip-gut brome (*Bromus diandrus*), wild oat (*Avena* sp.) and rattail fescue (*Festuca myuros*). Common broad-leaved plants observed included sweet fennel (*Foeniculum vulgare*), cut-leaf plantain (*Plantago coronopus*), common knotweed (*Polygonum aviculare* ssp. *depressum*), cheeseweed (*Malva parviflora*), short-pod mustard (*Hirschfeldia incana*), bird's-foot trefoil (*Lotus corniculatus*), sour clover (*Melilotus indicus*), spearscale (*Atriplex prostrata*), stinkweed (*Dittrichia graveolens*) and yellow star-thistle (*Centaurea solstitialis*).

While native grasses were largely absent, a handful of native forbs (i.e., wildflowers) were observed and included alkali heath (*Frankenia salina*), telegraphweed (*Heterotheca grandiflora*) and alkali mallow (*Malvella leprosa*); coyote brush (*Baccharis pilularis*) is a native shrub that was also present, but widely scattered throughout the Study Area

3.2.3 Pickleweed Mats

This habitat type is tidally-influenced and occurs within the channel of a drainage ditch along the eastern boundary; more discontinuous, patchy areas of this habitat type can be found along the western shoreline of the Study Area that interfaces with the channel of Redwood Creek. The dominant species is the subshrub pickleweed (*Sarcocornia pacifica*), which is associated with tidal flats and salt marsh habitats in the Bay Area.

Pickleweed is present with greater than 10% absolute cover with saltgrass (*Distichlis spicata*) as a co-dominant with less than 50% relative cover. Besides saltgrass, other native graminoids (i.e., grasses and grass-like plants) observed included chairmaker's rush (*Schoenoplectus americanus*); forbs (i.e., wildflowers) included spearscale, fleshy jaumea (*Jaumea carnosa*), alkali heath (*Frankenia salina*), annual saltmarsh aster (*Symphyotrichum subulatum* var. *parviflorum*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

3.3 Hydrology Conditions

The 1987 Manual states that the diagnostic environmental characteristics indicative of wetland hydrology conditions are "the area is inundated either permanently or periodically at mean water depths less than or equal to 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation" (1987 Manual, p. 14). According to the Manual, indicators of hydrologic conditions that occur in wetlands may include features in Table 2.

Table 2 Hydrology Indicators	
Primary Indicators	**Secondary Indicators**
Inundation, Saturation	Oxidized Rhizospheres Associated with Living Roots
Watermarks	Water-Stained Leaves
Drift Lines	FAC-Neutral Test
Water-Borne Sediment Deposits	Local Soil Survey Data
Drainage Patterns Within Wetlands (With Caution)	

Department of the Army, U.S. Army Corps of Engineers, Washington, D.C., *Memorandum - Subject: Clarification and Interpretation of the 1987 Manual*, dated June 8, 1992 provides further clarification that:

> "Areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas wet between 5 percent and 12.5 percent of the growing season in most years (see Table 5, page 36 of the 1987 Manual) may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands. Wetland hydrology exists if field indicators are present as described herein and in the enclosed data sheet."

The presence of wetland hydrology using the Arid West Supplement (December 2006) is dependent on the presence of any one primary indicator or two or more secondary indicators included in Table 3.

Table 3
Arid West Region - Hydrology Indicators

Primary Indicators	Secondary Indicators
Surface Water	Water Marks (riverine)
High Water Table	Sediment Deposits (riverine)
Saturation	Drift Deposits (riverine)
Water Marks (nonriverine)	Drainage Patterns
Sediment Deposits (nonriverine)	Dry-Season Water Table
Drift Deposits (nonriverine)	Thin Muck Surface
Surface Soil Cracks	Crayfish Burrows
Inundation Visible on Aerial Imagery	Saturation Visible on Aerial Imagery
Water-Stained Leaves	Shallow Aquitard
Salt Crust	FAC-Neutral Test
Biotic Crust	
Aquatic Invertebrates	
Hydrogen Sulfide Odor	
Oxidized Rhizospheres along Living Roots	
Presence of Reduced Iron	
Recent Iron Reduction in Plowed Soils	

3.3.1 Hydrologic Analysis of the Study Area

The Study Area is part of the greater San Francisco Bay estuary. Prior to development, the Study Area consisted of tidally-influenced coastal saltmarsh habitat; fresh waters discharged by Redwood Creek would mix with salt water from the Pacific Ocean, resulting in brackish waters along the shoreline and within the single mapped drainage ditch. Other hydrologic inputs include direct precipitation. The channels of Redwood Creek and Westpoint Slough are maintained for navigation and periodically dredged by the Army Corps of Engineers and/or others.

3.4 Soils Conditions

The Corps' 1987 Manual states that the diagnostic environmental characteristics indicative of wetland soil conditions are met where "soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions" (1987 Manual, p. 14). According to the Manual, indicators of soils developed under reducing conditions may include:

1. Organic soils (Histosols);
2. Histic epipedons;
3. Sulfidic material;
4. Aquic or peraquic moisture regime;
5. Reducing soil conditions;
6. Soil colors (chroma of 2 or less);
7. Soil appearing on hydric soils list; and
8. Iron and manganese concretions.

According to the most recent version of the National Technical Committee for Hydric Soils, the criteria to be used by the Corps for what constitutes current hydric soil/wetland soil conditions for the soils found at the Study Area are:

1. Minimum Saturation at 12” to the surface: 14 consecutive days during the growing season.

2. Minimum Inundation (Flooded or Ponded): Soils that are frequently “ponded” for long duration (approximately 15 to 30 consecutive days) or very long duration (> 30 consecutive days) during the growing season, or soils that are frequently “flooded” for long duration or very long duration during the growing season.

According to the Arid West Supplement (December 2006), indicators for hydric soils are presented in three groups. Indicators for “all soils” (A) are used in any soil regardless of texture. Indicators for “sandy soils” (S) are used in soil layers with USDA textures of loamy fine sand or coarser. Indicators for “loamy or clayey soils” (F) are used with soil layers of loamy very fine sand and finer (2006 Arid West Supplement, p.32). Hydric soils can be identified by the following indicators:

1. Histosol (A)
2. Histic Epipedon (A)
3. Black Histic (A)
4. Hydrogen Sulfide (A)
5. Stratified Layers (A)
6. 1 cm Muck (A)
7. Depleted Below Dark Surface (A)
8. Thick Dark Surface (A)
9. Sandy Mucky Mineral (S)
10. Sandy Gleyed Matrix (S)
11. Sandy Redox (S)
12. Stripped Matrix (S)
13. Loamy Mucky Mineral (F)
14. Loamy Gleyed Matrix (F)
15. Depleted Matrix (F)
16. Redox Dark Surface (F)
17. Depleted Dark Surface (F)
18. Redox Depressions (F)
19. Vernal Pools (F)

Where possible, the top 12 inches of the soil profile is examined for hydric characteristics. Such characteristics include the presence of organic soils (Histisols), histic epipedons, aquic or peraquic moisture regime, presence of soil on hydric soil list, mottling indicated by the presence of gleyed or bright spots of color within the soil horizons observed. Mottling of soils usually indicates poor aeration and lack of good drainage. A Munsell soil color charts (Kollmorgen Instr. Corp. 1990) were reviewed to obtain the soil color matrix for each soil sample. The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with zero (0) for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix which are one (1) or less, or of two (2) or less when mottling is present, are typical of soils which have developed under anaerobic conditions.

In sandy soils, such as alluvial deposits in the bottom of drainage channels, hydric soil indicators include high organic matter content in the surface horizon and streaking of subsurface horizons by organic matter.

3.4.1 Soil Analysis of the Study Area

The USDA Natural Resources Conservation Service (formerly the Soil Conservation Service) mapped a single soil map unit within the Study Area: Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes.

A map of this soil type for the Study Area can be found in Attachment 1, Figure 6. The single mapped soil unit is described below.

Urban land-Orothents, reclaimed complex, 0 to 2 percent slopes:
This map unit is in areas that were once part of San Francisco Bay and adjacent tidal flats. Elevation is 0 to 50 feet. This unit is about 65 percent Urban land and 30 percent Orothents, reclaimed.

Urban land consists of areas covered by concrete, asphalt, buildings and other structures. The material covered by these structures consists of soils that are similar to the Orothents. The Orothents consists of soils that have been filled. These soils are very deep and are poorly drained. They vary greatly in texture. They are made up of soil material, gravel, broken cement and asphalt, bay mud, and solid waste material.

Included in this unit are small areas of Reyes clay, Novato clay, and Orothents, cut and fill. Included soils make up about 5 percent of the total acreage. The properties and characteristics of these soils are highly variable because of the differences in the kind and amount of fill material used. Some areas have a high water table at a depth of 30 to 60 inches because of the fluctuating tides. Runoff is slow, and the hazard of water erosion is low.

Urban land-Orothents, reclaimed complex, 0 top 2 percent slopes is not listed as a hydric soil in San Mateo County, California (NRCS). Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anoxic conditions in the upper part.

4.0 AREAS POTENTIALLY REGULATED BY THE CORPS OF ENGINEERS

4.1 Areas Potentially Subject to Regulation (Wetlands/Waters of the U.S.)

The EPA and Corps regulations define wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (40 C.F.R. §230.3(t); 33 C.F.R. §328.3(b)).

The term "waters of the United States" are defined in 40 C.F.R. §328.3(a) as:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

  (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

  (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

  (iii) Which are used or could be used for industrial purpose by industries in interstate commerce.

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs [1-4] of this section;

(6) The territorial sea; and

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs [1-6] of this section (40 CFR §230.3(s); 33 CFR §328.3(a)).

4.1.1 Potential Wetlands

Based on information obtained during the September 2020 field delineation, it was determined that no potentially jurisdictional wetlands are present within the boundaries of the Study Area. The small depressions found at the terminus of the two railroad spurs had evidence of ponding, but these features may be the result of CEMEX's on-going existing facility activities, such as dust-control practices. While no soil test pits were taken due to the presence of a hardpan near the surface, there was not a prevalence of hydrophytic vegetation present. Based on 33 CFR, Part 328, water-filled depressions with no outlet for drainage are not considered jurisdictional.

4.1.2 Potential Other Waters

Based on information obtained during the September 2020 field delineation, it was determined that a total of 0.028 acres/229 linear feet of potentially jurisdictional "other waters" occur within the boundaries of the Study Area (Attachment 1, Figure 5). Table 4 provides the "other waters" type and calculated acreage of the single mapped drainage ditch feature:

Table 4
Potentially Jurisdictional "Other Waters"

Type of Feature	Acreage	Linear Feet
Drainage ditch	0.028	229

4.1.3 Section 10 Navigable Waters

The channel of Redwood Creek would qualify as Section 10 Navigable Waters. However, there are no plans to impact the shoreline or channel of this feature by the proposed project.

4.2 Areas Potentially Excluded from Regulation under Section 404

4.2.1 Discretionary Exemptions

A number of exemptions from Section 404 Clean Water Act regulation exist for waters of the United States. These exemptions, as discussed below, fall into two basic categories: (1) discretionary[6] and (2) non-discretionary.

According to the preamble discussion of the Corps regulations in the November 13, 1986, *Federal Register*, certain areas which may meet the technical definition of a wetland are generally not regulated. Such areas include:

(a) Non-tidal drainage and irrigation ditches excavated on dryland.

(b) Artificially irrigated areas which would revert to upland if the irrigation ceased.

(c) Artificial lakes or ponds created by excavating and/or diking dryland to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.

(d) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dryland to retain water for primarily aesthetic reasons.

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[6] Fed. Reg. 41206, 41217 (Nov. 13, 1986). It should be noted that the Corps reserves the right on a case-by-case basis to determine that a particular waterbody within these categories of waters is a water of the United States. EPA also has the right, in those instances where it is the agency making the jurisdictional determination, to decide on a case-by-case basis if any of these waters are waters of the United States. However, the preamble discussion of EPA's regulations indicates that EPA, like the Corps, does not generally consider areas such as those described above to be waters of the United States. See 53 Fed. Reg. 20764, 20765 (June 6, 1988).

(e) Water filled depressions created in dryland incidental to construction activity and pits excavated in dryland for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).

This policy has been further clarified, and ratified, by:

1) a recent federal court opinion within the Ninth Circuit which highlighted the above-quoted section of the preamble to the Corps' regulations as a basis for the Court's affirmation that this sort of factual determination is precisely the sort of judgment call the Corps is entrusted to make;[7] and

2) a decision by the Ninth Circuit Court of Appeals, which ruled in agreement with the Corps' position that such areas are legitimately exempt from Corps jurisdiction.[8]

4.2.2 Application of Discretionary Exemptions

The depressional features located at the end of the railroad spur would likely fall under the category of "water filled depressions created in dryland incidental to construction activity" and likely qualify under the application of discretionary exemptions.

4.2.3 Isolated Waters

The U.S. Supreme Court has ruled that isolated, non-navigable wetlands and other waters are not subject to federal regulation even if they provide habitat for migratory birds and endangered species. Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (hereinafter SWANCC) (No. 99-1178). The Corps has attempted to define isolated as "not having hydrological connectivity to other jurisdictional features." Based on this determination, the Court has eliminated the need to secure fill permits from the Corps under Section 404 of the Clean Water Act when isolated wetlands are encountered. Nevertheless, the decision is by no means a blanket repeal of Section 404. Every landowner's on-the-ground situation is unique, and must be analyzed individually. In the aftermath of this decision, each landowner must still carefully assess their own individual situation to determine whether their Study Area contains features which qualify as "waters of the U.S." It is therefore recommended that a jurisdictional delineation be verified by the Corps rather than making an assumption regarding the potential regulation of a specific wetland/water feature.

The RWQCB has indicated that they intend to continue regulation of isolated wetlands under the Porter-Cologne Act (Water Code Section 13260). Their interpretation of the Court ruling indicates that the SWANCC decision has no bearing on the RWQCB's regulation of "waters of

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[7] See Golden Gate Audubon Society v. U.S. Army Corps of Engineers, 796 F.Supp. 1306, 1315 (N.D. Cal. 1992).

[8] See Leslie Salt Co. v. U.S., 896 F.2d 354, 359-60 (9th Cir. 1990).

the state" and as such they will continue to issue waste discharge requirements (WDRs) in lieu of a Section 401 Certification which is required when the Corps issues a Section 404 permit.

4.2.4 Application of Isolated Waters Exemptions

There are no mapped features throughout the Study Area that would likely qualify under an Isolated Waters Exemption, as the tidally-influenced drainage ditch is hydrologically connected to San Francisco Bay.

4.2.5 Significant Nexus

The geographic extent of jurisdiction under the Clean Water Act was further refined based on the U.S. Supreme Court's interpretation of the Act in Rapanos v. United States, 126 S. Ct. 2208 (2006) (Rapanos Case). In the EPA and Corps joint guidance of the Rapanos Case, issued in December of 2008, it was determined that the Corps generally will not assert jurisdiction over (1) swales or erosional features (e.g. gullies, small washes characterized by low volume, infrequent, or short duration flow) and (2) ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water. Non-navigable tributaries that are not relatively permanent and wetlands adjacent to such tributaries will be assessed on a case-by-case basis to determine whether they have a "significant nexus" to a traditional navigable water. A "significant-nexus" will be determined through assessment of the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters.

According to the guidance, the Corps will continue to assert jurisdiction over traditional navigable waters; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and wetlands that directly abut such tributaries.

4.2.6 Application of Significant Nexus

The single mapped drainage ditch within the Study Area exhibits a "Significant Nexus" to a "Traditional Navigable Water" (TNW).

5.0 CONCLUSIONS

Although no soil test pits were taken, two small features observed at the terminus of two existing railroad spurs in the center of the Study Area had evidence of some ponding (it is assumed that this takes place during the rainy season and not due to facility discharges of some unknown cause), both features lacked a prevalence of hydrophytic vegetation and would therefore not likely qualify as a wetland based on two of three parameters (i.e., lacks a prevalence of hydrophytic vegetation, and lacks a prevalence of primary and/or secondary hydrologic indicators).

The single drainage ditch along the eastern boundary of the Study Area is approximately 229 linear feet/0.028-acre in the Study Area and has an OHWM of approximately 4 feet along the upper (i.e., upstream) reach and approximately 9 feet within the lower (i.e., downstream) reach before disappearing underground for a short distance via a culvert and daylighting again before discharging into Westpoint Slough. Based on the presence of a defined bed and bank, this feature is presumed to be an “other waters” of the U.S./state. Also, the western shoreline of the Study Area forms an interface with the channel of Redwood Creek, which is also an “other waters.” Both features are tidally-influenced and exihibit hydrologic connectivity to the greater San Francisco Bay.

6.0 REFERENCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley.

Barbour, M.G., T. Keeler-Wolf, and A.A. Schoenherr. 2007. Terrestrial vegetation of California. University of California Press.

Beidleman, L. H. and E. N. Kozloff. 2003. Plants of the San Francisco Bay region. University of California Press, Berkeley and Los Angeles, California.

Code of Federal Regulation. Title 33 Part 328 "Navigation and Navigable Waters." U.S. Government Printing Office, Washington, D.C.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Office of Biological Services. Washington, D.C. Publ. No. FWS/OBS-79/31. 107 pp.

DiTomaso, J.M. and E.A. Healy. 2007. Weeds of California and other western states. Vol. 1 and 2. University of California; Agriculture and Natural Resources Publication 3488. Oakland, CA.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U. S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. plus appendices.

Environmental Laboratory. 2006. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Technical Report 06-16. U.S. Army Engineers Research and Development Center, Vicksburg, Mississippi. 123 pp.

Ertter, B. 1997. Annotated checklist of the East Bay flora. Special Publication #3; California Native Plant Society, East Bay Chapter.

Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication. 76 pp. plus appendices.

Federal Register. 1980. 13 November. Regulatory Programs of the Corps of Engineers, Vol. 51, No. 219, pp. 41206-41250. U.S. Government Printing Office, Washington, D.C.

Google Earth. 2020. Electronic historic imagery.

Holland, R. F., 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, Sacramento, CA. 156 pp.

Kollmorgen Instruments Corporation. 1975. Munsell soil color charts, revised edition (1990). Macbeth Division of Kollmorgan Instruments Corporation, Baltimore, Maryland.National Technical Committee for Hydric Soils [NTCHS]. 1991. Hydric Soils of the United States, USDA, Soil Conservation Service Misc. Publ. 1491.

Lichvar, R.W. 2012. The national wetland plant list. (ERDC/CRREL TR-12-11). U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, 72 Lyme Road, Hanover, NH 03755-1290.

Lichvar, R., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner 2012. Wetland plant list indicator rating definitions (ERDC/CRREL TN-12-1). U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, 72 Lyme Road, Hanover, NH 03755-1290.

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A manual of California vegetation. 2nd Ed. California Native Plant Society, Sacramento, CA.

U.S. Army Corps of Engineers. August 1986. Clarification of "Normal Circumstances" in the Wetland Definition. *Regulatory Guidance Letter No. 86-9. 33 CFR 323.2(c).*

U.S. Army Corps of Engineers. May 2007. U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), Web Soil Survey: San Mateo County, Eastern Part, and San Francisco County, California. May 1991. Accessed September 2020. Available on-line at http://websoilsurvey.nrcs.usda.gov.

U.S. Department of Agriculture, Natural Resources Conservation Service; California Hydric Soils List, San Mateo County electronic document: http://soils.usda.gov/use/hydric/lists/state.html .

ATTACHMENTS

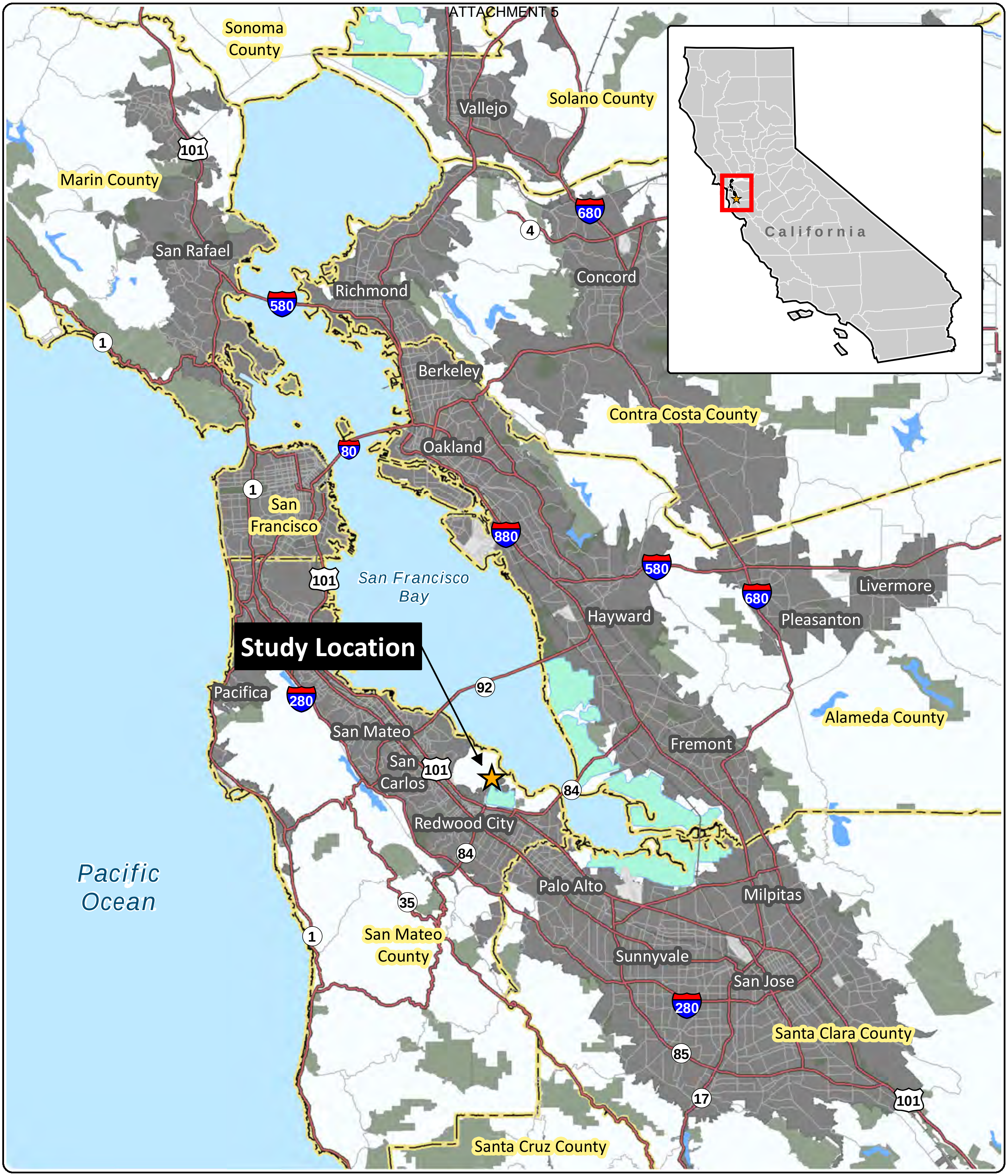
ATTACHMENT 5

ATTACHMENT 1

FIGURES

ATTACHMENT 5

ATTACHMENT 5



Legend:

★ Study Location

0 5 10 Miles

N

Regional Map
Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
San Mateo County, California

Figure 1

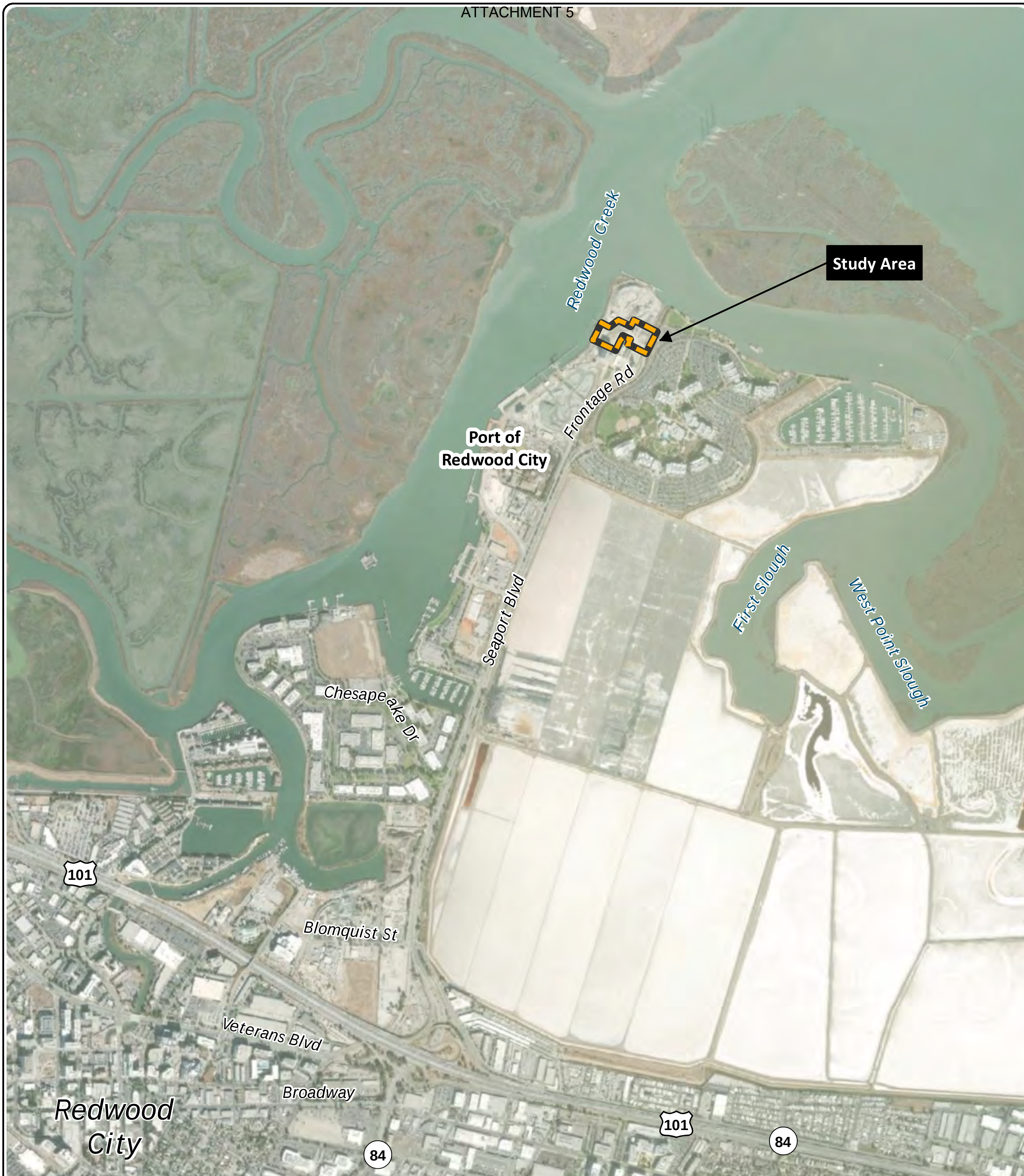
12/4/2020

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Biological Resources Services LLC
& mapping by Compass Land Group

ATTACHMENT 5

ATTACHMENT 5



Data: United State Geological Survey, Redwood Point and Palo Alto Quadrangles California 7.5'. 2018. Data Downloadable Online. Accessed [11/13/2020].

Legend:

Study Area

0 0.25 0.5 Miles N

Vicinity Map
Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
San Mateo County, California

Figure 2

12/4/2020

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

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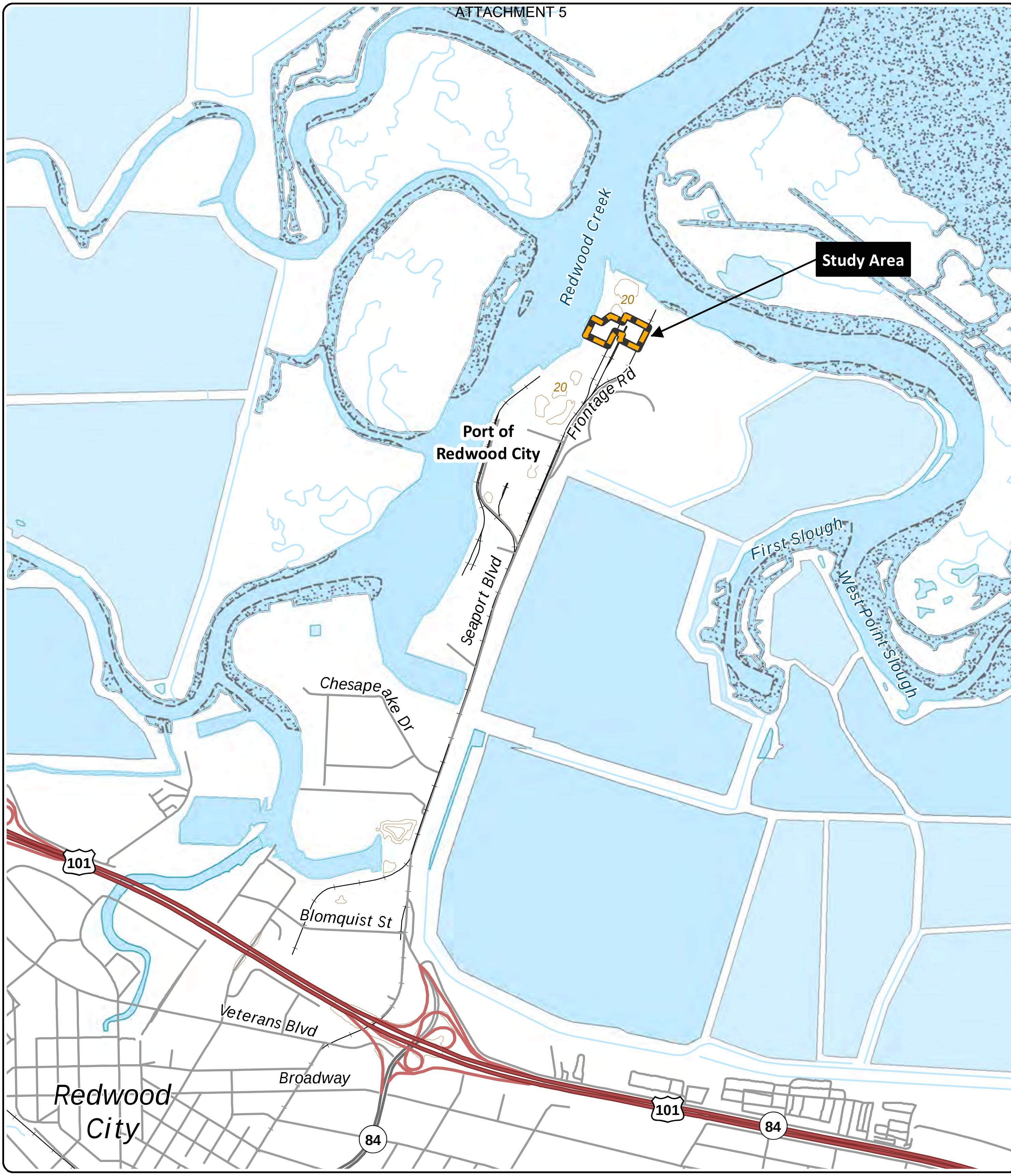
ATTACHMENT 5

ATTACHMENT 5



Data: United State Geological Survey, Redwood Point and Palo Alto Quadrangles California 7.5'. 2018. Data Downloadable Online. Accessed [11/13/2020].

Legend:

Study Area

0 0.25 0.5 Miles

N

USGS Topographic Map
Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
San Mateo County, California

Figure 3

12/4/2020

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

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Aerial photo adapted from Google Earth Maps Imagery Date 8-9-2018.

Legend: Study Area (4.9 Acres) 0 100 200 Feet	Aerial Photograph Port of Redwood City Cemex Construction Materials Pacific, LLC. San Mateo County, California	Figure 4	12/4/2020
		Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.	
		Biological Resources Services LLC & mapping by Compass Land Group	

ATTACHMENT 5

ATTACHMENT 5

Figure 5
Jurisdictional Delineation Map

Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
876 Seaport Blvd, Redwood City
San Mateo County, California

Legend:
- Study Area (4.9 Acres)
- Corner Coordinates
- Ordinary High Water Mark
- OHWM Cross-Section (CS)
- Other Water (0.028 Acres & 229 linear ft.)

Coordinate System:
California State Plane Zone III NAD83 (Feet)
Projection: Lambert_Conformal_Conic
Datum: North American 1983
USGS Topo Quad: Redwood Point, CA
PLSS: Unsectioned
Delineated By: Chris Bronny
Delineation Dates: 09/21/2020

12/4/2020

0 20 40 60 80 100 Feet

1 inch = 60 feet

Aerial photo adapted from Google Earth dated 8/9/2018.

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Prepared by: Sage Thurmond, Compass Land Group
3140 Peacekeeper Way #102, McClellan Park, CA 95652

Biological Resources Services LLC
& mapping by Compass Land Group

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Sources: Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) database for San Mateo County, Eastern Part and San Francisco County, California. Available online. 2020. Accessed [11/11/2020].
Aerial photo adapted from Google Earth Maps Imagery Date 8-9-2018.

Legend:

Study Area (4.9

NRCS Soils

134 - Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes

0 100 200 Feet

N

Soils Map
Port of Redwood City
Cemex Construction
Materials Pacific, LLC.
San Mateo County, California

Figure 6

12/4/2020

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

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& mapping by Compass Land Group

ATTACHMENT 5

ATTACHMENT 2

STUDY AREA PHOTOGRAPHS

ATTACHMENT 5

1. Photograph shows representative example of existing ruderal upland vegetation found throughout the Study Area.

2. Photograph shows existing conditions present within the eastern portion of the Study Area, facing east/northeast towards the railroad spur and landscape windbreak along Frontage Road; the single mapped drainage ditch is located below the line of boxcars in the distance.

Biological Resources Services
CEMEX Port of Redwood City

3. Photograph (facing upstream) shows location of OHWM 1 in drainage ditch located along eastern boundary of Study Area, facing south. This area is largely dominated by pickleweed and saltgrass; the OHWM in this section was 9’ wide.

4. Photograph (facing downstream) shows location of OHWM 3 in drainage ditch along eastern boundary of Study Area, facing north. The OHWM in this section was 4’ wide.

5. Photograph shows interface between western shoreline and Redwood Creek channel, facing south.

6. Photograph existing condition along western shoreline, facing north/northeast.

Biological Resources Services
CEMEX Port of Redwood City

7. Photograph shows existing conditions along shoreline, facing northeast.

8. Photograph shows slight depressional area along railroad spur terminus where water appears to pond during the rainy season; despite soil “flaking,” hydrophytic vegetation was absent in this area. This type of feature would likely be considered “water-filled depressions with no outlet for drainage” and therefore non-jurisdictional.

Biological Resources Services
CEMEX Port of Redwood City

9. Photograph shows existing condition of railroad spur in center of Study Area, facing north. Water appears to pond in this area during the rainy season; however, there is a lack of prevalence exhibited by hydrophytic vegetation and absence of hydrologic indicators. As with the feature in Photograph 8, this type of feature would likely be considered “water-filled depressions with no outlet for drainage” and therefore non-jurisdictional.

ATTACHMENT 5

ATTACHMENT 3

PLANT LIST

ATTACHMENT 5

TABLE 1
PLANT SPECIES OBSERVED WITHIN THE SURVEY AREA

Wetland Indicator Status reflects updated 2012 National Wetland Plant List (NWPL) for Arid West (AW)
Nomenclature follows The Jepson Manual, 2nd Ed., 2012
*denotes naturalized species

Scientific Name	Common Name	Wetland Indicator Status
Section - Eudicots		
Aizoaceae		
*Carpobrotus edulis**	Hottentot fig	
Apiaceae		
*Foeniculum vulgare**	Sweet fennel	
Asteraceae		
Ambrosia psilostachya	Western ragweed	**FACU**
*Anthemis cotula**	Mayweed	**FACU**
Baccharis pilularis	Coyote brush	
*Carduus pycnocephalus**	Italian thistle	
*Centaurea melitensis**	Tocalote	
*Centaurea solstitialis**	Yellow star-thistle	
*Conyza bonariensis**	Asthmaweed	**FACU**
Crepsis vesicaria ssp. taraxacifolia	Hawksbeard	
*Dittrichia graveolens**	Stinkweed	
Grindelia stricta var. *angustifolia*	Marsh gumplant	
*Helminthotheca echioides**	Bristly ox-tongue	**FACU**
Heterotheca grandiflora	Telegraphweed	
Jaumea carnosa	Fleshy jaumea	**OBL**
*Pseudognaphalium luteoalbum**	Jersey Cudweed	**FAC**
Symphyotrichum subulatum var. *parviflorum*	Annual saltmarsh aster	**OBL**
Boraginaceae		
Heliotropium curassavicum var. oculatum	Seaside heliotrope	**FACU**
Brassicaceae		
*Cakile maritima**	Searocket	**FAC**
*Descurainia sophia**	Flixweed	
*Hirschfeldia incana**	Shortpod mustard	

Scientific Name	Common Name	Wetland Indicator Status
*Lepidium latifolium**	Perennial pepperweed	**FAC**
*Raphanus sativus**	Wild radish	
Chenopodiaceae		
*Atriplex prostrata**	Spearscale	**FACW**
Bassia (*hyssopifolia*)*	Fivehook bassia	**FAC**
*Chenopodium album**	Common lambsquarters	**FACU**
Sarcocornia pacifica	Pickleweed	**OBL**
*Salsola tragus**	Russianthistle	**FACU**
Fabaceae		
*Lotus corniculatus**	Bird's-foot trefoil	**FAC**
*Melilotus albus**	White sweet-clover	
*Melilotus indicus**	Sour clover	**FACU**
Frankeniaceae		
Frankenia salina	Alkali heath	**FACW**
Malvaceae		
*Malva parviflora**	Cheeseweed	
Malvella leprosa	Alkali mallow	**FACU**
Papaveraceae		
*Fumaria capreolata**	Fumitory	
Plantaginaceae		
*Plantago coronopus**	*Cut-leaf plantain*	
Polygonaceae		
Polygonum aviculare ssp. *depressum**	Common knotweed	**FACW**
Section - Monocots		
Arecaceae		
Washingtonia sp.*	Fan palm	
Cyperaceae		
Schoenoplectus americanus	Chairmaker's rush	**OBL**

Table 1 – Plant Species Observed Within the Survey Area

Scientific Name	Common Name	Wetland Indicator Status
Poaceae		
Avena sp.*	Wild oat	
*Bromus diandrus**	Rip-gut brome	
*Cortaderia jubata**	Pampas grass	**FACU**
Distichlis spicata	Salt grass	**FACW**
*Festuca myuros**	Rattail fescue	**FACU**
Festuca sp.*	Fescue	**Varies**
*Hordeum murinum ssp. leporinum**	Hare barley	**FACU**
*Stipa miliacea**	Smilo grass	
Wetland Plant Indicator Status Categories		
Indicator Category	**Symbol**	**Ecological Description**
Obligate Wetland Plant	OBL	Almost always occur in wetlands.
Facultative Wetland Plant	FACW	Usually occur in wetlands, but may occur
		in non-wetlands.
Facultative Plant	FAC	Occur in wetlands and non-wetlands.
Facultative Upland Plant	FACU	Usually occur in non-wetlands, but may
		occur in wetlands.
Upland Plant	UPL	Almost never occur in wetlands.
*Based upon revised information contained in Army Corps of Engineers 2012 The National Wetland Plant		
List Indicator Rating Definitions (ERDC/CRREL TR-12-11).		

Table 1 – Plant Species Observed Within the Survey Area

Appendix E

Preliminary Jurisdictional Delineation

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. S2038-05-01
December 7, 2020

VIA ELECTRONIC MAIL

CEMEX
c/o Compass Land Group
Sacramento, California

Attn: Yasha Saber, Managing Partner

Subject: PRELIMINARY GEOTECHNICAL EVALUATION
CEMEX PORT OF REDWOOD CITY READY-MIX CONCRETE PLANT
REDWOOD CITY, CALIFORNIA

Mr. Saber:

In accordance with your request, we prepared this preliminary geotechnical evaluation to support planning and permitting of a proposed ready-mix concrete plant at the CEMEX facility located at the Port of Redwood City in San Mateo County, California. The approximate project location is shown on the Vicinity Map, Figure 1.

BACKGROUND, SITE DESCRIPTION, AND PURPOSE

CEMEX proposes to construct a ready-mix concrete plant at their existing Redwood City facility. The CEMEX facility is located at the Port of Redwood City on San Francisco Bay. The proposed ready-mix concrete plant will include batching equipment, a material conveyor, office/shop buildings, a truck wash area, and a truck parking area. The overall site configuration and approximate location of the proposed ready-mix concrete plant are shown on the Site Plan, Figure 2.

We performed a site reconnaissance on October 14, 2020. The proposed ready-mix concrete plant site is located within the northern portion of the Port of Redwood City property adjacent to San Francisco Bay (see Figure 2). The proposed ready-mix concrete plant site area is relatively flat and level and is located adjacent to existing bulk cement silos (Photo 1). An aggregate receiving terminal area including two conveyors and two wharves are located to the south (Photo 2). Aggregate and materials stockpile areas and construction materials recycling area are located to the north. Elevation at the site is approximately 6 to 10 feet above mean sea level (MSL).

The purpose of our services was to generally evaluate the subsurface conditions at the site and provide preliminary conclusions sufficient to address the California Environmental Quality Act (CEQA) Appendix G criteria for “Geology and Soils”.

SCOPE OF SERVICES

To prepare this report, we performed the following scope of services:

- Performed a limited geologic literature review to aid in evaluating the geologic conditions present at the site.
- Reviewed available existing geotechnical information from the site and vicinity.

- Reviewed pertinent proposed project information provided by CEMEX (e.g. proposed facility layout, structure type(s), etc.).
- Performed a site reconnaissance to review project limits and current site conditions.
- Prepared this summary letter report presenting our findings and preliminary conclusions addressing the following (at a minimum):
  - Potential for fault rupture,
  - Seismic shaking evaluation,
  - Potential for seismic-related ground failure including liquefaction,
  - Potential for landsliding and/or dynamic instability,
  - Erosion potential,
  - Expansive soil potential, and
  - Corrosive soil potential.

SUBSURFACE CONDITIONS

The following geologic and soil conditions are based on our review of previous geotechnical investigations performed for the Wharves 1 and 2 replacement at the adjacent Port of Redwood City (Treadwell & Rollo [T&R], 2012), the new aggregate conveyor at the site (Geocon, 2019), and our review of published geologic literature.

Soil and Geologic Conditions

Based on our review of the *Geologic Map of the Palo Alto and Part of the Redwood Point 7-1/2 Minute Quadrangles, San Mateo and Santa Clara Counties, California* (USGS, 1993), the site is underlain by artificial fill (map symbol Qf) over Bay Mud (map symbol Qm) and fine-grained alluvium (map symbol Qaf). Figure 3 is a portion of the geologic map including the site. Based on the geologic map, the elevation of the “basement” (Franciscan Complex bedrock) at and near the site ranges from approximately -375 feet to -413 feet. This corresponds to depths of approximately 381 feet to 419 feet.

Based on our review of the previous geotechnical reports, specific soil conditions at the site are described as follows:

Artificial Fill. Artificial fill extends from the ground surface to depths ranging from approximately 5 to 12 feet and generally consists of loose to medium dense (locally dense) sands with gravel. The fill is of variable consistency and may not provide reliable support under new loads (new fill, buildings, stockpiles, etc.).

Bay Mud. Below the fill are Bay Mud deposits which generally consists of organic-rich clay and silty clay extending to a depth of approximately 40 feet. Consistency of the native Bay Mud generally ranges from very soft to soft. The Bay Mud is characteristically weak and compressible under new loads (new fill, buildings, stockpiles, etc.).

Fine Grained Alluvium. Fine grained alluvium which generally consists of interbedded, relatively stiff to very stiff clay and silty clay extends from below the Bay Mud to the maximum depth explored of approximately 100 feet. This material is suitable for deep foundation support for most buildings and structures.

Groundwater

Estimated depth to groundwater encountered in the explorations presented in the previous geotechnical reports range from approximately 7 feet to 10 feet.

We reviewed the California State Water Resources Control Board GeoTracker water data library (https://geotracker.waterboards.ca.gov/) for groundwater elevation information for wells at the site. Ten monitoring wells (MW-1 and MW-2 and MW-19 through MW-26) were measured for depth to groundwater on January 4, 2018. Depth to groundwater was reported at approximate depths ranging from just below the ground surface to 8.5 feet.

We anticipate that the elevation of groundwater at the site will coincide with the water level in the shipping channel and Bay, and will likely fluctuate due to tidal variation, precipitation, and other factors.

GEOLOGIC HAZARDS

Mapped Geologic Hazard Zones

The site is located in a mapped liquefaction hazard zone (*Earthquake Zones of Required Investigation, Redwood Point Quadrangle, California Geological Survey*, January 11, 2018). Figure 4 is a portion of the official seismic hazard map including the site.

Surface Fault Rupture

The numerous faults in Northern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Division of Mines and Geology (CDMG, now California Geological Survey[CGS]) for the Alquist-Priolo Earthquake Fault Zone (APEFZ) Program (Hart, 1999). By definition, an active fault is one that has had surface displacement within the last 11,000 years. A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known movement within the past 11,000 years. Faults that have not moved in the last 1.6 million years are considered inactive.

Based on our research, analyses, and observations, the site is not located on any known "active" earthquake fault trace. In addition, the site is not located within an APEFZ. Therefore, we consider the potential for ground rupture due to onsite active faulting to be low.

The major active faults in the area are the San Andreas, San Gregorio, Hayward, and Calaveras Faults. The distance from the site and estimated mean characteristic Moment magnitude are summarized in Table 1.

TABLE 1
REGIONAL FAULTS AND SEISMICITY

Fault Segment	Approx. Distance from fault (km)	Direction from Site	Mean Characteristic Moment Magnitude
Monte Vista-Shannon	9.1	Southwest	6.5
North San Andreas	10.1	West	8.1
Hayward-Rodgers Creek	20	Northeast	7.3
San Gregorio	24	West	7.5
Calaveras	31	East	7.0
Hayward-Rodgers Creek	35	North	7.2
Calaveras	36	East	6.5
Mount Diablo Thrust	41	Northeast	6.7
Green Valley	47	Northeast	6.8
Greenville	50	Northeast	7.0

Seismic Shaking

The intensity scale of earthquake ground shaking currently used in the United States is the Modified Mercalli (MM) Intensity Scale. This scale, composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects. The lower numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above. Table 2 summarizes the MM Intensity Scale (USGS, public domain 1989):

TABLE 2
MODIFIED MERCALLI INTENSITY SCALE

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836, an earthquake with an estimated MM Intensity of VII occurred east of Monterey Bay on the San Andreas Fault. The estimated Moment magnitude, Mw, for this earthquake was about 6.25. In 1838, an earthquake occurred with an estimated MM Intensity of about VIII-IX and a corresponding to a Mw of about 7.5. The 1906 San Francisco Earthquake created a ground surface rupture along the San Andreas Fault approximately 300 miles long from Shelter Cove to San Juan Bautista. This earthquake had a MM Intensity of XI, a Mw of about 7.9, and was felt as far away as Oregon, Nevada, and Los Angeles. The most recent major earthquake to affect the Bay Area was the Loma Prieta Earthquake of 1989, centered in the Santa Cruz Mountains with a Mw of 6.9, approximately 37 miles from the site.

In 1868 an earthquake with an estimated MM Intensity of X and an estimated Mw of 7.0 occurred on the southern segment of the Hayward Fault between San Leandro and Fremont. In 1861, an earthquake of unknown magnitude (probably a Mw of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake (Mw = 6.2).

The USGS Third Uniform California Earthquake Rupture Forecast (UCERF3) provides estimates of the magnitude, location, and likelihood of earthquake fault rupture throughout California. Table 3 presents estimates of the likelihood of magnitude 6.7 or greater earthquakes in the next 30 years, from 2014, on the major faults near the site (UCERF3, 2015).

TABLE 3
EARTHQUAKE LIKLIHOOD IN THE NEXT 30 YEARS – SAN FRANCISCO AREA

Fault Segment	Earthquake Magnitude		
	$M \geq 6.7$	$M \geq 7.5$	$M \geq 8.0$
North San Andreas	6.4%	5.7%	2.1%
Hayward	14.3%	3.6%	<0.1%
Calaveras	7.4%	0.5%	0.1%

Liquefaction, Cyclic Softening, and Cyclic Densification

Strong shaking during an earthquake can result in ground failures such as those associated with soil liquefaction, cyclic softening, and cyclic densification.

Liquefaction is a phenomenon in which saturated cohesionless (sandy) soils are subject to a temporary loss of shear strength due to pore pressure buildup under the cyclic shear stresses associated with intense earthquakes. Cyclic softening is a term used to describe liquefaction-like behavior in certain low-plasticity clay and silt soils. Cyclic densification is a phenomenon in which non-saturated, cohesionless (sandy) soil is densified by earthquake vibrations, which can cause ground-surface settlement.

Liquefaction. As previously mentioned, the site is located in a mapped liquefaction hazard zone and the previous geotechnical studies at and near the site identified soil and groundwater conditions that are susceptible to seismic-induced liquefaction under the design-level seismic event. The T&R report for the Wharves 1 and 2 replacement project predicted liquefaction within relatively thin sandy zones between about 5 and 50 feet. The estimated post-liquefaction settlement of these layers ranged from 1 to 2 inches. The Geocon report for the new aggregate conveyor project at the existing CEMEX facility predicted liquefaction within relatively thin sandy zones between 10 and 15 feet. The estimated post-liquefaction settlement of these layers ranged from approximately ½ inch to 2½ inches. The T&R report predicted that ground loss due to liquefaction induced sand boils is possible if the peak ground acceleration (PGA) of the earthquake exceeds 0.3g. This liquefaction hazard may be reduced or mitigated by implementing appropriate engineering controls such as supporting buildings and structure on deep foundations that extend through and derive support in competent materials below the potentially liquefiable soils or using stiffened shallow foundations designed to withstand potential differential settlements caused by liquefaction.

Cyclic Softening. Pore pressure induced softening and strength loss of fine-grained soils is generally limited to soft soils with a Plasticity Index (PI) less than 12 and a natural water content (Wc) greater than 85% of the Liquid Limit (LL). Soils with 12 < PI < 18 and Wc/LL > 0.8 are systematically more resistant to cyclic softening. Soils with PI > 18 are generally not susceptible to cyclic softening. Based on the laboratory testing data presented in the T&R report, the PI of the Bay Mud deposits ranges from approximately 44 to 57 which is significantly higher than 18. Therefore, cyclic softening is not a significant hazard for the site.

Cyclic densification. Seismically-induced compaction or cyclic densification of unsaturated sand (i.e. sand above the groundwater table) resulting from earthquake vibrations may cause differential settlement. T&R calculated less than 2/3-inch of cyclic densification settlement of the loose to medium dense sandy fill above the groundwater table (generally above Elevation 0 feet). Because of the variability in the composition of the existing fill, the amount of cyclic densification will likely vary significantly across the site. This variability and resulting cyclic densification settlements may be reduced to less than significant levels by remedial grading in the form of partial removal and re-compaction of existing fill. Remedial grading depths on the order of 2 to 4 feet are likely.

Slope Stability / Dynamic Stability

The site is relatively flat and level with the exception of shoreline slopes near the northern edge of the site. As part of the nearby wharves replacement project, T&R evaluated the stability of the shoreline slopes near the wharves under static and seismic conditions. The results of their static slope stability analyses indicate that the existing shoreline slope has an acceptable factor of safety (greater than 1.5) against deep seated static slope failure for existing conditions and for the condition where up to 4.5 feet of fill is placed at the top of the slopes. Deep seated slope instability does not appear to be a significant hazard for the site.

T&R also evaluated the potential for permanent lateral displacement of the shoreline slopes under the design-level seismic event (dynamic instability). Their estimated permanent lateral displacements of the shoreline slope ranges from less than 4 inches for existing site conditions to approximately 17 inches when up to 4.5 feet of fill is placed on the site. These displacements are predicted to occur near the tops of the slopes. This hazard may be avoiding by maintaining appropriate building and structure setbacks from the top of the shoreline slopes. An appropriate setback distance is at least 1/3 of the slope height including the underwater portion (Ref. 2019 California Building Code 1808.7.2). If building and structures must be located in these areas, the effects of lateral spreading horizontal ground displacement may be reduced to less than significant by using appropriate foundation systems for structures and buildings. For example, conventional shallow foundations are typically appropriate for most structures and buildings on sites with estimated lateral displacement up to 18 inches. If lateral displacements exceed this, deep foundations are typically required. For this site, stiffened shallow foundations on lightly-loaded structures designed to withstand liquefaction settlements would also be appropriate given the degree of estimated lateral displacement.

Expansive Soil

As part of the nearby aggregate conveyor project, Geocon performed laboratory tests to evaluate expansion potential of near-surface soil. Laboratory test results are presented in Table 4.

TABLE 4
EXPANSION INDEX AND ATTERBERG LIMITS TEST SUMMARY

Sample Number	Depth (feet)	Liquid Limit (%)	Plasticity Index (%)	USCS Classification	Expansion Index	Expansion Potential Classification*
CPT/CPT2-Bulk	0-5	35	11	ML	64	Medium

**Expansion Potential Classification per ASTM D4829.*

Based on the test results and the predominant near-surface soil type at the site, we expect that the overall expansion potential is low to medium. Typical mitigation for low to medium expansion potential soil includes placing a layer of low-expansive material below buildings and concrete flatwork and using deepened footings.

Soil Corrosion Potential

As part of the nearby aggregate conveyor project, Geocon performed laboratory tests to evaluate corrosion potential (minimum resistivity, pH, chloride, and sulfate content) on one near-surface composite soil sample. Results are summarized in Table 5.

TABLE 5
SOIL CORROSION TEST SUMMARY

Sample ID (CPT No./ Sample Depth)	Minimum Resistivity (ohm-centimeters)	pH	Chloride Content (ppm)	Sulfate Content (ppm)
CPT1/CPT2-Bulk (0 to 5 feet)	250	6.5	42.4	170.2

Corrosion of a metal is an electro-chemical process and is accompanied by the flow of electric current. Resistivity is a measure of the ability of a soil to conduct an electric current and is, therefore, an important parameter in consideration of corrosion data. Soil resistivity is primarily dependent upon the chemical content and moisture content of the soil mass. Based on the measured minimum resistivity presented in Table 5, the soil is classified as “very corrosive” (Ellis 1978) with respect to corrosion of buried steel improvements. Mitigation may consist of cathodic protection or corrosion resistant coatings. The other corrosion parameters shown in Table 5 do not indicate a significant corrosive environment to concrete and other materials.

Compressible Soil

The site is underlain by approximately 40 feet of soft Bay Mud deposits. The Bay Mud is characteristically weak and compressible under new loads (new fill, buildings, stockpiles, etc.). Lightly-loaded structures and buildings (such as material storage containers and the shop) may be supported on shallow foundations. Heavier structures such as the plant, conveyor, and feed bin will likely require deep foundations such a steel piling that extend through the soft Bay Mud deposits and bear within the underlying alluvium.

REFERENCES

1. Bryant, W.A., and E.W. Hart, 2007, *Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps,* California Geological, Special Publication 42, Interim Revision 2007, 42 pp.
2. California Geological Survey, *Earthquake Zones of Required Investigation, Redwood Point Quadrangle*, January 11, 2018.
3. California Water Resources Control Board GeoTracker website: https://geotracker.waterboards.ca.gov/.
4. Compass Land Group, *Site Overview, Port of RWC, Proposed RMX Plant (Conceptual)*, December 1, 2020.
5. Ellis, William J., *Corrosion of Concrete Pipelines*, Western States Corrosion Seminar, 1978
6. Geocon Consultants, Inc., *Limited Geotechnical Investigation, Cemex Port of Redwood City Terminal Aggregate Conveyor, Redwood City, California,* Geocon Project No. S1565-05-01, February 2019.
7. Jennings, C.W. (compiler), *Fault Map of California*, California Division of Mines and Geology, 1982.
8. Treadwell & Rollo, *Geotechnical Investigation – Port of Redwood City, Wharves 1 & 2 Replacement Project, Redwood City, California,* Project No. 750600501, dated January 16, 2012.
9. United States Geological Survey, *Geologic Map of the Palo Alto and Part of the Redwood Point 7-1/2' Quadrangles, San Mateo and Santa Clara Counties, California,* Earl H. Pampeyan, 1993.
10. United States Geological Survey, *Third Uniform California Earthquake Rupture Forecast* (UCERF3), 2015
11. United States Geological Survey, *Modified Mercalli Intensity Scale*, 1989.
12. Unpublished reports, aerial photographs, and maps on file with Geocon.

CLOSURE

The preliminary conclusions contained herein are based on a limited field reconnaissance, review of available information, and our geotechnical experience in the project area. This report is intended for your project planning, due-diligence, and CEQA review purposes only. Additional geotechnical investigation and laboratory testing will be required for project design and construction. Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices used in this area at this time. We make no warranty, either express or implied.

Please contact us if you have any questions regarding this letter or if we may be of further service.

Respectfully Submitted,

GEOCON CONSULTANTS, INC.

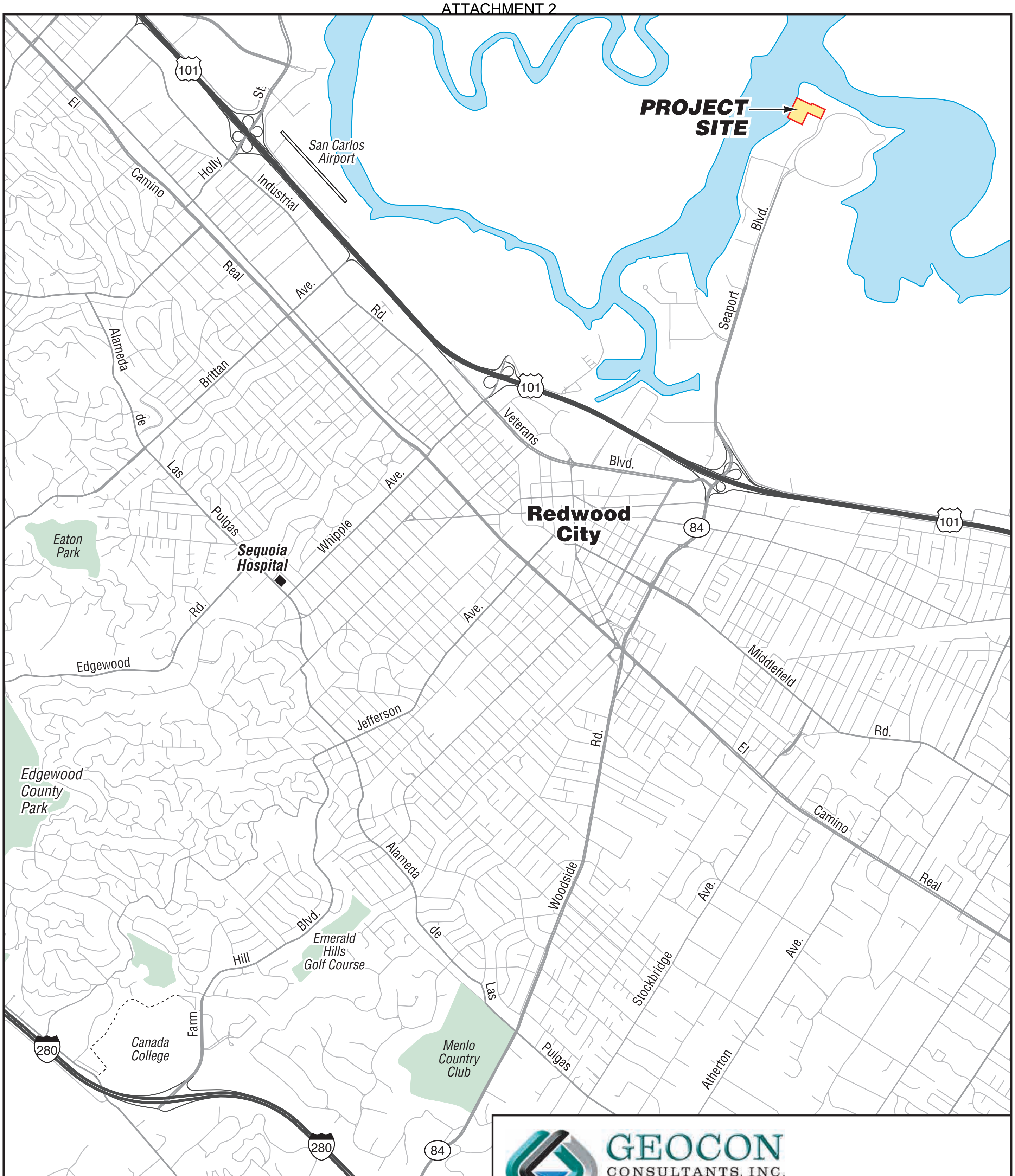
REGISTERED PROFESSIONAL ENGINEER
JEREMY J. ZORNE
No. 2636
GEOTECHNICAL
STATE OF CALIFORNIA

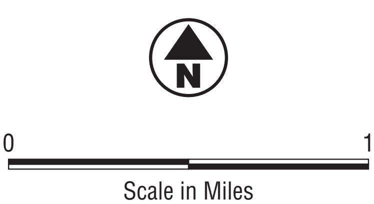
Jeremy J. Zorne, PE, GE
Senior Engineer

Ronald E. Loutzenhiser, PE, GE
Senior Engineer

Attachments: Figure 1, Vicinity Map
Figure 2, Site Plan
Figure 3, Geologic Map
Figure 4, Seismic Hazard Map
Photos 1 and 2

ATTACHMENT 2





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Cemex Port of Redwood City Ready-Mix Concrete Plant

Redwood City,
California

VICINITY MAP

S2038-05-01	December 2020	Figure 1

ATTACHMENT 2

Legend:
- Project Boundary (4.9 Acres)
- Map 2 / Map 3 Extent
- County Parcels
- Proposed Structure
- Proposed Parking
- Proposed Stockpile
- Proposed Pavement
- Truck Routing
- Rail Line

0 200
Scale in Feet

Ref: Compass Land Group, 11/30/2020

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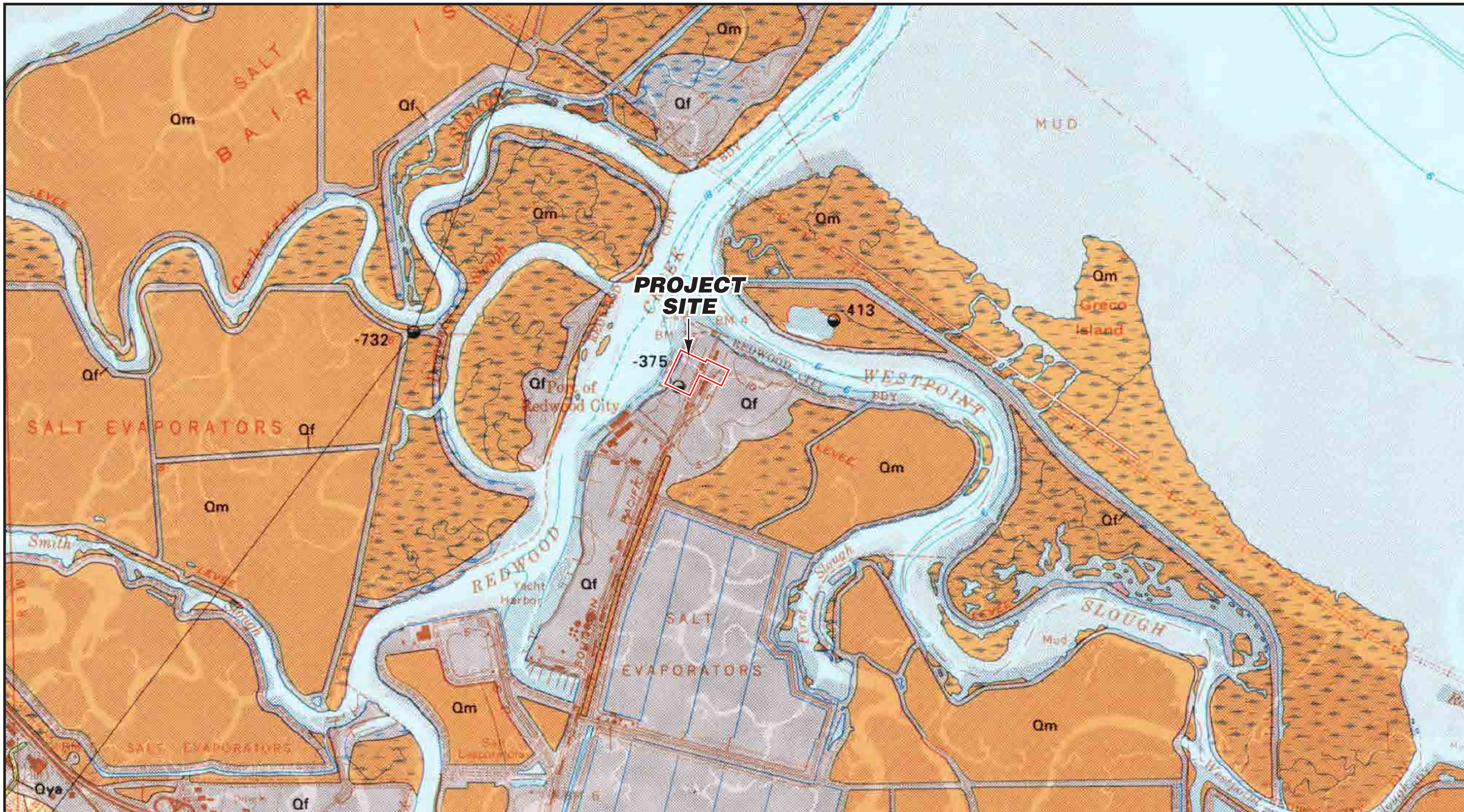
Cemex Port of Redwood City Ready-Mix Concrete Plant

Redwood City,
California

SITE PLAN

S2038-05-01	December 2020	Figure 2

ATTACHMENT 2



Ref: *Geologic Map of the Palo Alto and Part of the Redwood Point 7-1/2' Quadrangles, San Mateo and Santa Clara Counties, California by Earl H. Pampeyan, 1993*

LEGEND:

Qf Artificial Fill (Holocene)

Qm Bay Mud (Holocene)

N

0 1/2

Scale in Miles

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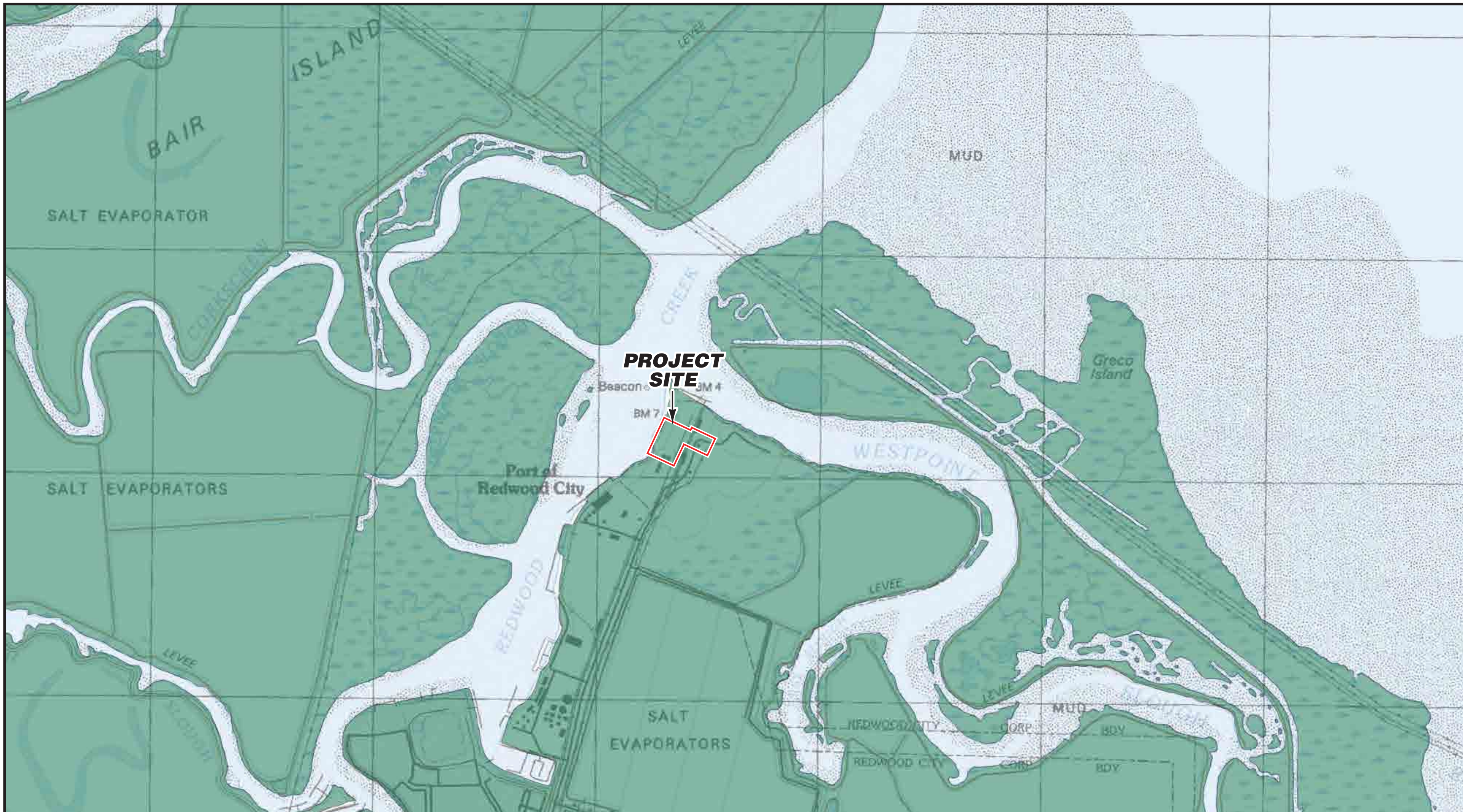
Cemex Port of Redwood City Ready-Mix Concrete Plant

Redwood City, California

GEOLOGIC MAP

S2038-05-01	December 2020	Figure 3

ATTACHMENT 2



Ref: *Earthquake Zones of Required Investigation, Redwood Point Quadrangle,* California Geological Survey, 1/11/2018

Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

N

0 1/2
Scale in Miles

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Cemex Port of Redwood City Ready-Mix Concrete Plant

Redwood City,
California

SEISMIC HAZARD MAP

S2038-05-01	December 2020	Figure 4

Photo No. 1 Proposed Ready-Mix Concrete Plant Location, Looking West

Photo No. 2 Existing Aggregate Processing Area South of Ready-mix concrete plant site. Aggregate Conveyors and Wharves in Background

PHOTOS NO. 1 & 2

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Cemex Port of Redwood City Ready-Mix Concrete Plant	
Redwood City, California	
GEOCON Project No. S2038-05-01	December 2020

Appendix F

Noise and Vibration Report

Environmental Noise & Vibration Assessment

CEMEX Port of Redwood City Ready-Mix Concrete Plant Project

Redwood City, California

BAC Job # 2020-159

Prepared For:

Compass Land Group

Mr. Yasha Saber
3140 Peacekeeper Way, Suite 102
McClellan, CA 95652

Prepared By:

Bollard Acoustical Consultants, Inc.

Paul Bollard, President

October 6, 2021

BOLLARD
Acoustical Consultants

Executive Summary

Bollard Acoustical Consultants, Inc. (BAC) has completed this noise and vibration impact assessment for the CEMEX Port of Redwood City Ready-Mix Concrete Plant Project (Project) located in Redwood City, California. The assessment includes an evaluation of existing (baseline) noise and vibration levels at the nearest potentially affected receptors to the project site, and the extent by which those baseline environments would change as a result of the project. The analysis also includes a comparison of project-generated noise and vibration levels at the nearest receptors against the applicable Redwood City criteria and CEQA guidelines.

The noise and vibration generation of the project was quantified using a combination of noise and vibration level measurements of existing operations at the existing CEMEX San Carlos ready mix facility, BAC file data for similar equipment, acoustical literature, and industry-accepted noise prediction and propagation methodologies.

The results of the vibration analysis concluded that the project's vibration generation would be well below thresholds for annoyance to persons working in the area and well below thresholds for damage to nearby structures. As a result, this analysis concludes that project-related vibration impacts would be less than significant.

The results of the noise analysis concluded that the project's on-site noise generation would be below the applicable noise thresholds at the nearest sensitive uses (office professional uses to the southeast). As a result, this analysis concludes that project-related noise impacts associated with on-site operations would be less than significant.

This analysis also concludes that project-generated heavy truck traffic will not result in a substantial increase in traffic noise levels at existing sensitive receptors located adjacent to Seaport Boulevard between the project site and Highway 101. As a result, this analysis concludes that project-generated off-site traffic noise impacts would be less than significant.

Table of Contents

Introduction

The acoustical consulting firm of Bollard Acoustical Consultants, Inc. (BAC) has been retained by Compass Land Group to assess noise and vibration impacts associated with the proposed CEMEX Port of Redwood City Ready-Mix Concrete Plant Project (Project) in Redwood City, California.

Under the Project, CEMEX Construction Materials Pacific, LLC (“CEMEX”) proposes to develop a ready-mix concrete batch plant on a ±4-acre portion of its existing aggregate and cement facilities at the Port of Redwood City. The Project site is located at 876 Seaport Boulevard on APNs 054-300-480 and would be accessible from the existing paved CEMEX cement terminal facility entrance on Frontage Road (see Figure 1, Vicinity Map, and Figure 2, Project Area). Existing uses at the site include aggregate and cement marine terminals, aggregate processing and stockpiling, aggregate and cement material load-out and sales, construction materials recycling, and associated heavy truck traffic.

The Project would include a compact, 100-foot-tall, ready-mix concrete batch plant tower with a two-lane drive-thru truck feed system that supports both wet and dry mixes. The plant would be fed from aggregate stockpiles using a front-end loader and conveyor system. Ancillary uses and accessory structures would include an employee office, maintenance shop building, wash rack with concrete-lined water containment, parking areas, and miscellaneous storage containers.

The Project proposes a concrete production limit of 7,000 cubic yards (“CY”) per day and 250,000 CY per year. Typical hours of operation would be Monday through Saturday from 6 a.m. to 6 p.m., with occasional operations outside these hours to meet customer and project demands.

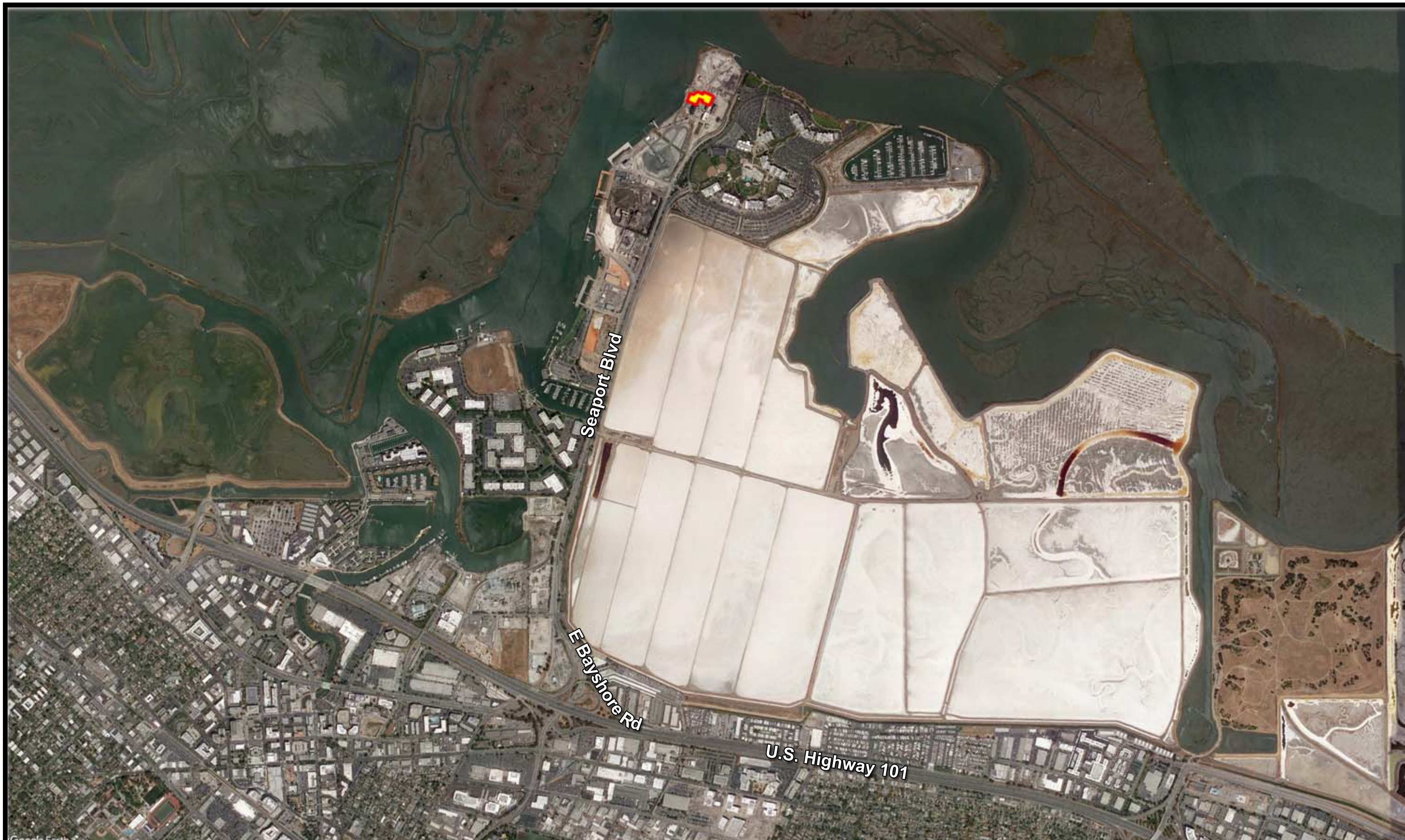
Upon Project approval, CEMEX would decommission its existing ready-mix concrete facility at 1026 Bransten Road in San Carlos, California (see Figure 3, Existing San Carlos Ready-Mix Facility). CEMEX operates two plants at the San Carlos facility, both of which would be replaced by the new, modernized plant at the Port of Redwood City (“Port”). The Project would eliminate the need to transport raw materials, including aggregates and cement, from the Port to the San Carlos facility for concrete production.

For definitions of acoustical terminology used in this report please refer to Appendix A. Appendix B shows the proposed Project site plans.

Analysis Objectives

The objectives of this analysis are as follows:

- To provide background information pertaining to the effects of noise and vibration.
- To identify existing sensitive land uses in the project vicinity.
- To provide information pertaining to the existing ambient noise and vibration environments at those nearest noise-sensitive land uses.
- To identify applicable thresholds of significance by using the California Environmental Quality Act (CEQA) Guidelines in concert with Redwood City noise standards.
- To predict project-related noise and vibration levels at the nearest sensitive areas, and to compare those levels against the applicable thresholds of significance.
- To recommend mitigation for any identified potentially significant noise and / or vibration impacts.
- To summarize the results of the analysis into this report for eventual use in the development of the project environmental documents.



Legend

Project Border (Approximate)

N

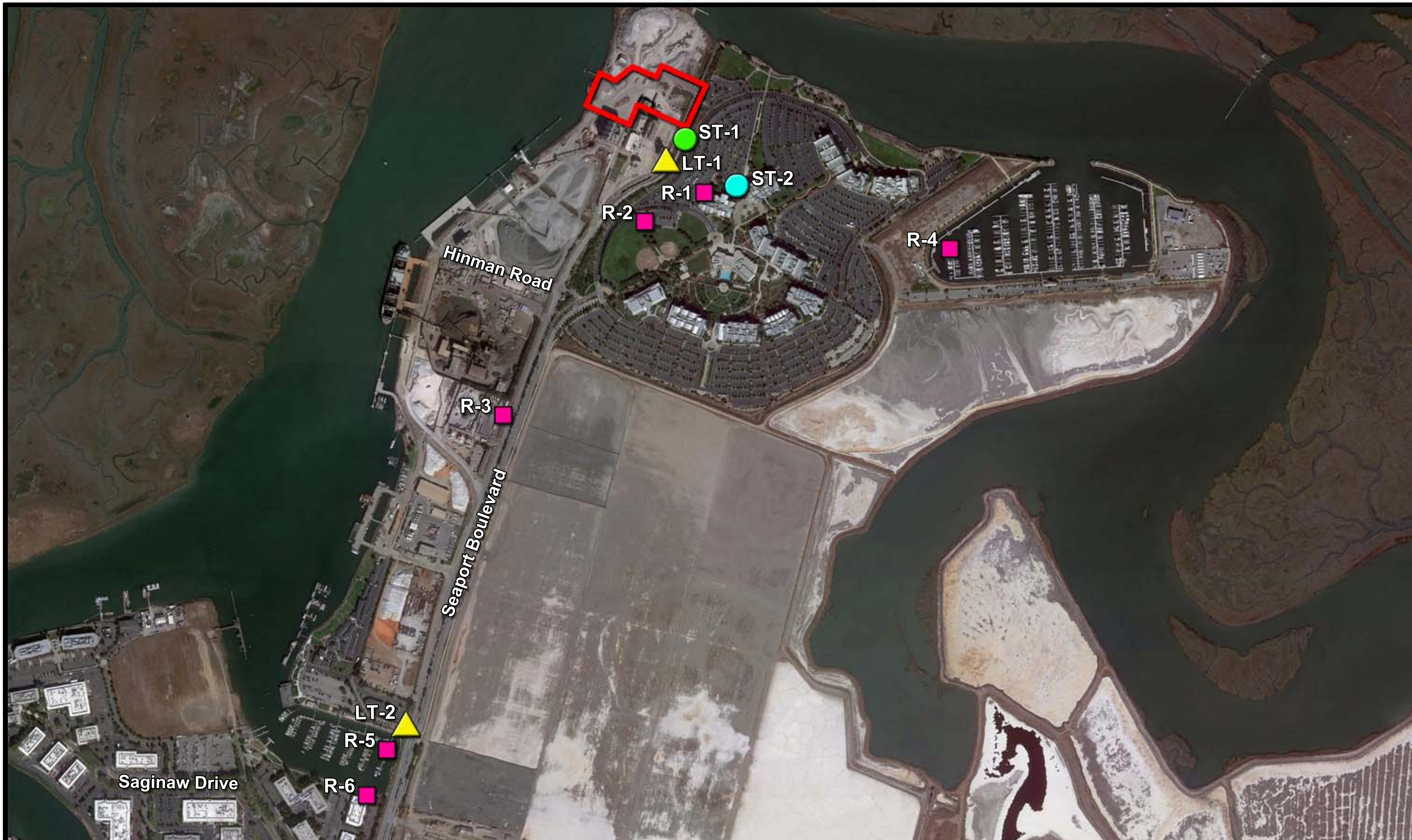
0 1000 2000

CEMEX RWC - Proposed RMX Plant
Redwood City, California

Vicinity Map

Figure 1

BOLLARD Acoustical



Legend

- Project Border (Approximate)
- Short-Term Vibration Measurement Locations
- Short-Term Noise Measurement Locations
- Long-Term Noise Measurement Location
- Receiver Location

N

Scale (feet)

0 500 1000

CEMEX RWC - Proposed RMX Plant
Redwood City, California

Project Area

Figure 2

BOLLARD Acoustical

Legend

- Reference Noise Measurement Location
- Reference Vibration Measurement Location

N

Scale (feet)

0 20 40

CEMEX RWC - Proposed RMX Plant
Redwood City, California

Reference Data Collection
San Carlos Plant

Figure 3

BOLLARD Acoustical

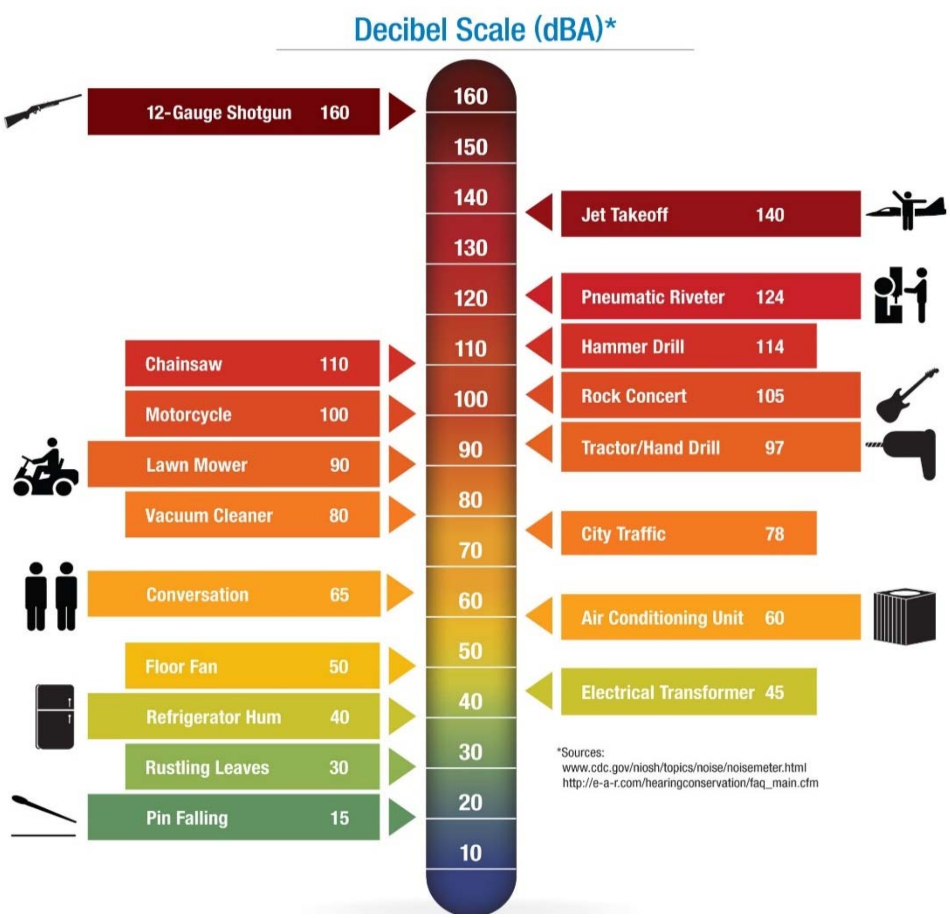
Background on Noise and Vibration

Noise/Sound

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that human hearing can detect. If the pressure variations occur frequently enough (i.e., at least 20 times per second) they can be identified as sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz). Please see Appendix A for definitions of terminology used in this report.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale utilizes the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers within a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Figure 4 illustrates common noise levels associated with various sources.

Figure 4
Typical A-Weighted Sound Levels of Common Noise Sources



The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighting the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. All noise levels reported in this section are A-weighted.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}) over a given time period (usually one hour). The L_{eq} is the foundation of the Day-Night Average Level noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The Day-Night Average Level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures.

Noise Attenuation with Distance

Sound generated by stationary "point" sources of noise, attenuates (decreases) at a rate of approximately 6 dBA per doubling of distance from the source, not accounting for environmental conditions (i.e., atmospheric conditions, noise barriers, ground type, vegetation, topography, etc.). Surface traffic (a "moving point" source), would typically attenuate at a lower rate, approximately 4.5 dBA per doubling distance from the source (also dependent upon environmental conditions).

Noise from on-site operations at the project site are treated as point sources whereas ready-mix trucks on Seaport Road are treated as moving point sources. As a result, attenuation of on-site and off-site noise sources would be 6 and 4.5 dBA per doubling of distance, respectively. Atmospheric absorption of sound varies depending on temperature and relative humidity, as well as the frequency content of the noise source. In general, "average day" atmospheric conditions result in attenuation at a rate of approximately 1.5 dB per thousand feet of distance in the 1,000 hertz frequency band (SAE ARP 866A, 1975).

Effects of Noise on People

The effects of noise on people can be divided into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the third category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

An important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment (or ambient noise) to which one has adapted. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans, 2013):

- It is widely accepted that the average healthy ear can barely perceive noise level changes of 3 dBA for similar noise sources;
- A change in level of 5 dBA is a readily perceptible increase in noise level; and
- A 10-dBA change is recognized as twice as loud as the original source.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. Noise levels are measured on a logarithmic scale, instead of a linear scale. On a logarithmic scale, the sum of two noise sources of equal loudness is 3 dBA greater than the noise generated by only one of the noise sources (e.g., a noise source of 60 dBA plus another noise source of 60 dBA generate a composite noise level of 63 dBA).

Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of peak particle velocities (inches/second) or rms velocities (VdB). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. The maximum rate, or velocity of particle movement, is the commonly accepted descriptor of the vibration "strength".

Vibration can be felt well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does the frequency of the event. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

Environmental Setting

Identification of Existing Sensitive Receivers

For this project, the assessment of potential impacts is limited to noise-sensitive areas of existing uses located within the area along Seaport Boulevard between the project site and Highway 101. This is because all project traffic would utilize Seaport Boulevard. Once project traffic accesses Highway 101, the noise generation of the project traffic would be diluted to inconsequential levels relative to Highway 101 traffic noise.

BAC utilized aerial imagery and site inspections to identify the nearest potentially affected sensitive receptors to the Project site as well as receptors along Seaport Boulevard between the project site Highway 101.

Existing land uses located in the immediate project vicinity consist of a business park to the southeast, a yacht club further east, and similar industrial uses to the immediate north and south. Existing land uses located along Seaport Boulevard consist of multiple industrial uses, recycling, ready mix, Port of Redwood City administrative offices, environmental services, office/professional uses, commercial uses, utilities, self-storage, and a yacht club.

The nearest identified sensitive receptor location to the project site is the Pacific Shores Center office/professional/commercial uses to the immediate south and east of the project site. The nearest office/professional building within this center is approximately 500+ feet from the project site entrance. The interior areas of these uses are considered noise-sensitive. These office/professional receptors are identified on Figure 2 as R-1.

The Pacific Shores Center also includes recreational facilities, with the nearest playing field (baseball diamond) also over 500 feet from the project site. These recreational facilities are also considered sensitive receptors for this evaluation and are identified as Receptor R-2 on Figure 2. The Westpoint Harbor is also considered a noise-sensitive receptor in this analysis and is identified at Receptor R-4 on Figure 2.

The nearest sensitive receptor locations located along Seaport Boulevard between the project site and Highway 101 are the interior office spaces associated with the Port of Redwood City Administration Building (50 feet from the frontage road centerline – identified as R-3 on Figure 2), and office spaces within the Britannia Seaport Centre (130 feet from the frontage road centerline – identified as R-6 on Figure 2). The outdoor dining/patio area of the Sequoia Yacht Club is located approximately 400 feet from the Seaport Boulevard centerline but the City has requested that the live-aboard boats within the Redwood City Marina be evaluated as residential uses in this analysis. While it is not clear which boats within the marina are being used as residences the distance from the nearest row of boats to the centerline of Seaport Boulevard is approximately 140 feet (identified at Receptor R-5 on Figure 2).

Existing Ambient Noise Environment in Project Vicinity

The existing ambient noise environment in the project vicinity is defined primarily by local traffic on Seaport Boulevard and existing industrial operations within the Port of Redwood City. To quantify existing ambient noise levels in the immediate project vicinity and at receptors located further south along Seaport Boulevard, both long- and short-term noise surveys were conducted.

The long-term noise surveys consisted of continuous monitoring of sound near the project site entrance (Site LT-1 on Figure 2) between noon on October 1st and 11 am on October 5th, 2020 (95 consecutive hours), and a location 70 feet from the centerline of Seaport Boulevard at the Redwood City Marina (Site LT-2 on Figure 2), between September 14-16, 2021 (72 consecutive hours).

In addition to the long-term noise surveys, short-term (15-minute) monitoring was conducted adjacent to the nearest office/professional buildings to the southeast during the 11 am hour of October 5, 2020. The short-term noise survey site is labelled ST-2 on Figure 2.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used by BAC to conduct the ambient noise level surveys. The meters were calibrated before use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4). Appendix C shows photographs of the noise monitoring locations.

The results of the continuous noise survey indicate that existing, pre-project, noise levels near the project entrance (Site LT-1) ranged from 55-63 dB L_{dn}, with the lower end of the measured levels occurring during the weekend period. At Site LT-2, the results of the continuous noise survey indicate that existing, pre-project, noise levels ranged from 69-70 dB $L_{dn.}$ The higher ambient noise levels measured at Site LT-2 were due to a much higher volume of trucks at this location due to the other industrial uses located between Sites LT-1 and LT-2. A complete listing of the ambient noise survey results are provided in tabular and graphic formats in Appendices D and E, respectively.

At the short-term noise survey location, very little activity was observed to be occurring during the noise survey, with very few cars parked in the office building parking lots. As a result, measured average and maximum ambient noise levels at this location were 48 dB L_{eq} and 56 dB L_{max}, respectively. These levels are considered to be atypically low given the low level of observed activity occurring within the office park.

Existing Ambient Vibration Environment in Project Vicinity

The existing ambient vibration environment in the project vicinity was subjectively evaluated by BAC staff as being imperceptible during the site visit despite operations occurring within the project area and heavy truck usage on Seaport Boulevard. To quantify baseline ambient vibration levels at the Project site, short-term vibration measurements were conducted at location ST-1 shown on Figure 2. Vibration measurement equipment consisted of a Larson Davis Laboratories (LDL) Model LxT meter equipped with PCB Electronics velocity transducers.

Measured vibration levels ranged from approximately 35 to 54 VdB at the measurement site. Appendix F shows a graph of the short-term ambient vibration measurement results.

Criteria for Acceptable Noise Exposure

The California Environmental Quality Act (CEQA) contains noise impact assessment guidelines. In addition, California cities and counties are required to adopt noise standards as part of their General Plan. The City of Redwood City noise standards which are applicable to this project are contained within the Public Safety Element of the City General Plan. Although the City has a Noise Ordinance (Chapter 24 of the Municipal Code), that ordinance does not contain specific noise standards which would be applicable to this project. The applicable CEQA Guidelines and Redwood City noise-level criteria are discussed below.

California Environmental Quality Act (CEQA) Guidelines

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

A. Generation of 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 other 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?

Note: Because the project area is not located within the vicinity of a private airstrip and because the San Carlos Airport is located beyond two miles from the project site, no analysis of aircraft noise pursuant to CEQA Appendix G Criteria "C" is required in this assessment.

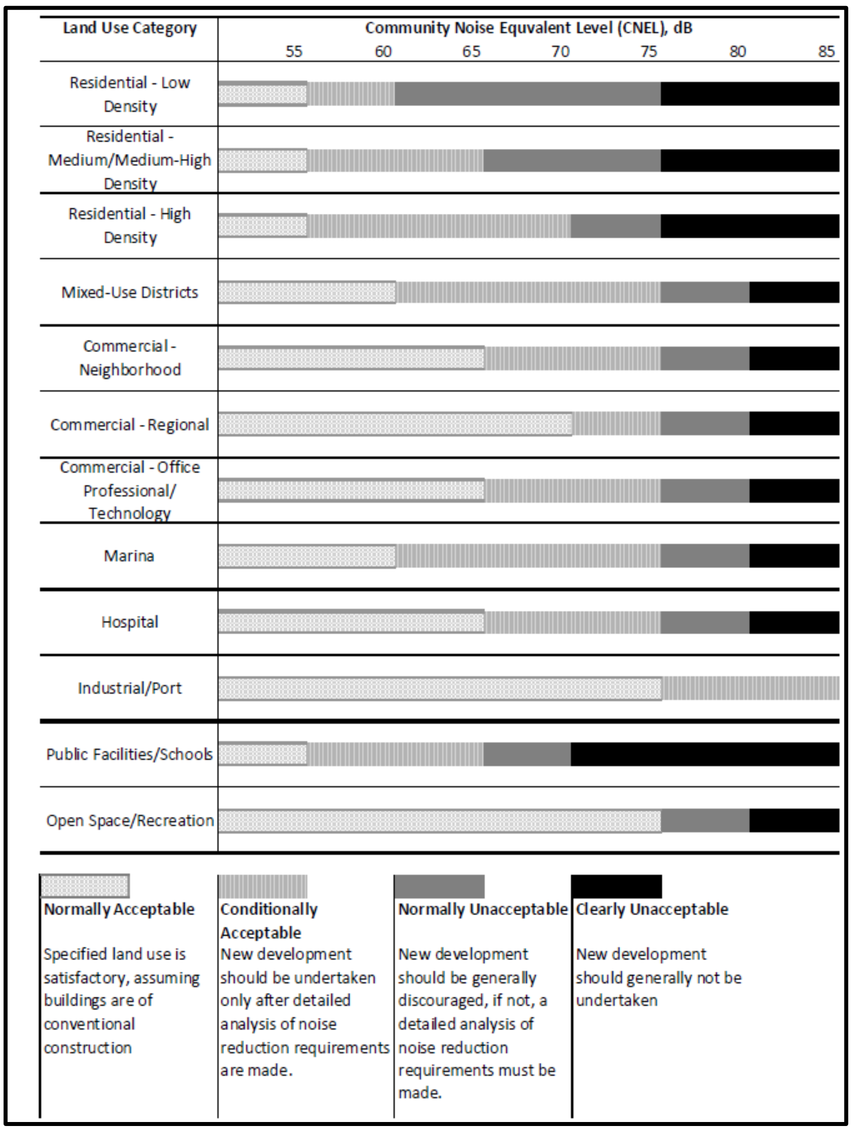
To summarize the CEQA noise guidelines, a project must both comply with the locally adopted noise standards and not result in a substantial increase in ambient noise levels at sensitive receptor locations in order to avoid the identification of a significant noise impact. As a result, the following sections present the City's adopted noise standards as well as recommended thresholds for evaluating the significance of project-related noise increases.

Redwood City General Plan Public Safety Element

Figure PS-72 of the Redwood City General Plan Public Safety Element contains the Redwood City exterior noise guidelines for Land Use Planning. That Table, which is reproduced below, indicates that the following noise environments are considered normally and conditionally acceptable for the indicated land uses types:

Land Use Type	Normally Acceptable	Conditionally Acceptable
• Regional Commercial Uses	70 dB Ldn	75 dB Ldn
• Office / Professional / Technology Uses	65 dB Ldn	75 dB Ldn
• Marina	60 dB Ldn	75 dB Ldn
• Industrial / Port	75 dB Ldn	85 dB Ldn
• Open Space / Recreation	75 dB Ldn	80 dB Ldn

Figure 5
Redwood City Noise Guidelines for Land Use Planning
(Figure PS-10 of Redwood City General Plan Public Safety Element)



Although Figure 5 shows exterior noise environments considered acceptable and unacceptable for a variety of land use designations, the only guidance provided in the General Plan Public Safety Element with respect to interior noise levels is the requirement that a 45 dBA CNEL interior noise standard is considered acceptable for residential uses. In addition, the Redwood City Municipal Code (Chapter 24 – Noise Regulation), does not contain any numeric noise level standards for interior spaces of noise-sensitive land uses. As a result, this analysis applies a 45 dBA Ldn interior noise level standard to the interior spaces of the office uses located in the project vicinity, similar to the interior noise standard applied by the City to residential land uses.

Criteria for Determining a Substantial Increase in Noise

As noted in the CEQA Criteria “A” cited previously in this report, a project would result in a significant noise impact if it would result in the generation of a *substantial* increase in ambient noise levels. The Redwood City General Plan Public Safety Element does not define what constitutes a “substantial” increase in noise.

It is generally recognized that an increase of at least 3 dB for similar noise sources is required before most people will perceive a change in noise levels, and an increase of 6 dB is required before the change will be clearly noticeable (*Egan, Architectural Acoustics, McGraw Hill*).

The Federal Interagency Commission on Noise (FICON) has developed a graduated scale for use in the assessment of project-related noise level increases. Table 1 was developed by FICON as a means of developing thresholds for impact identification for project-related noise level increases. The rationale for the graduated scale is that test subject’s reactions to increases in noise levels varied depending on the starting level of the noise. Specifically, with lower ambient noise environments, such as those below 60 dB L_{dn}, a larger increase in noise levels was required to achieve a negative reaction than was necessary in more elevated noise environments.

Table 1
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level (No Project), dB L_{dn}	Increase Required for Finding of Significance, dB
<60	+5 or more
60-65	+3 or more
>65	+1.5 or more

Source: Federal Interagency Committee on Noise (FICON)

Based on the FICON research, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB L_{dn}. Where pre-project ambient conditions are between 60 and 65 dB L_{dn}, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels – specifically pre-project noise levels in excess of 65 dB L_{dn} – a 1.5 dB increase is considered by FICON as the threshold of significance.

According to the FICON study, if screening analysis shows that noise-sensitive areas will be at or above DNL 65 dB and will have an increase of DNL 1.5 or more, further analysis should be conducted. The FICON study also reported the following: Every change in the noise environment does not necessarily impact public health and welfare. While CEQA requires that noise impacts be assessed relative to ambient noise levels that are present without the project, it should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project that added any audible amount of noise to the environment would be considered an adverse impact according to CEQA. Because every physical process creates noise the use of audibility alone as a significance criterion would be unworkable. CEQA therefore requires a *substantial* increase in noise levels before noise impacts are identified, not simply an *audible* change.

Noise Exposure Criteria Used for Impact Assessment in this Study

It is assumed that a project-related noise impact would occur if noise level increases from project-related traffic on the local area roadways would result in increases in ambient noise levels exceeding the FICON criteria identified in Table 1 at noise-sensitive areas of existing receptors. In addition, for noise generated by on-site equipment and processes, noise impacts are identified if the Redwood City noise standards shown in Figure 5 would be exceeded at sensitive receptor locations of nearby land uses.

Criteria for Acceptable Vibration Exposure

As noted previously, Criteria “B” of the CEQA Appendix G Guidelines pertains to excessive vibration. CEQA does not, however, provide specific numeric standards that indicate the levels of vibration which is to be considered “excessive” for purposes of impact identification.

The Redwood City Noise Element and Noise Ordinance do not contain criteria for acceptable vibration exposure which would be applicable to this project. However, the Federal Transit Administration (FTA) and the California Department of Transportation (Caltrans) provide such criteria. As a result, the FTA and Caltrans criteria are applied to this analysis of potential project-related vibration impacts. Those criteria are discussed in the sections that follow.

Federal Transit Authority Criteria for Acceptable Vibration Levels

Table 12-3 of the Federal Transit Administration (FTA) Noise and Vibration Manual provides vibration levels at which damage to structures could occur. These levels are reproduced in Table 2. As shown in Table 2, a vibration level of 90 VdB is the minimum at which the onset of damage to extremely susceptible buildings could occur. As a result, this level was considered to be a conservative benchmark against which project-generated vibration levels were evaluated in this analysis.

Table 2
FTA Criteria for Assessing Damage to Structures

Building Category	Level, VdB[1]
I. Reinforced-concrete, steel or timber (no plaster)	102
II. Engineered concrete and masonry (no plaster)	98
III. Non-engineered timber and masonry buildings	94
IV. Buildings extremely susceptible to vibration damage	90

1. RMS velocity in decibels (VdB) re 1 micro-inch/second

In addition to providing guidance with respect to vibration levels which would cause damage to structures, the FTA guidelines also provide criteria for assessing the potential for annoyance related to vibration. Table 8-1 of the FTA Noise and Vibration Manual provides vibration criteria for general assessment of impacts. These criteria are reproduced below in Table 3.

Table 3
Groundborne Vibration Impact Criteria for General Assessment

	Impact Levels (VdB)		
Land Use Category	**Frequent Events[a]**	**Occasional Events[b]**	**Infrequent Events[c]**
Category 1: Buildings where vibration would interfere with interior ops.	65[d]	65[d]	65[d]
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

Source: Federal Transit Administration, Transit Noise Impact and Vibration Assessment, May 2006.
Vibration levels are measured in or near the vibration-sensitive use.
a. "Frequent Events" is defined as more than 70 vibration events of the same source per day.
b. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
c. "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.
d. This criterion limit is based on levels that are acceptable for most moderately-sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

According to the Table 3 data, the general assessment impact level for frequent events applicable at Category 3 Land Uses is 75 VdB. Where vibration levels exceed this threshold, a detailed vibration assessment is recommended. Because the project could generate more than 90 truck trips during busy days, the FTA criteria applicable to "Frequent Events" is applied to this analysis of potential annoyance resulting from project operations.

Noise Impacts of the Proposed Project

The noise-generating components of the proposed project consist of the following:

- **Off-Site Traffic Noise Sources:** The project will receive the majority of the raw materials required to manufacture ready mix concrete by barge. As a result, the primary off-site noise source related to the project would be ready mix trucks on Seaport Boulevard.

- **On-Site Equipment Noise Sources:** The project would develop a new ready mix plant at the project site. The noise generation of that plant would be the primary on-site noise source associated with the project.

- **Project Construction:** Site preparation and construction of project facilities would require earthmoving equipment (backhoe, compactor, dozer, excavator, loader, grader, scraper, water truck, crane, etc.), as well as pile driving.

Off-Site Traffic Noise Levels Resulting from the Project

Currently, CEMEX operations at the project site generate an average of 41 daily heavy truck trips associated with the delivery of coarse aggregates, sand, cement, and cement supplements from the site. The proposed project would result in the generation of 186 daily heavy truck trips associated with the proposed production of ready-mix concrete at the project site.

To predict the noise generation of the additional heavy truck trips which would result from the project, BAC utilized the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108). Specifically, BAC modelled the heavy truck traffic noise levels at each of the 6 noise-sensitive receptor locations identified on Figure 2. Table 4 shows the predicted, project-generated, traffic noise levels noise levels at each receptor. Table 4 also shows the noise standard applied in this analysis to the noise-sensitive areas of the representative receptors evaluated in this analysis and the state of compliance with that standard. The complete listing of FHWA Model inputs and results is provided in Appendix H.

Table 4
Predicted Project Traffic Noise Levels at Noise-Sensitive Receptor Locations

Receptor	Receptor Description	Project Ldn, dBA	Noise Standard	Standard Exceeded?
R-1	Interior of business park office building	26	45	No
R-2	Center of business park playing fields	51	75	No
R-3	Interior of Port of RWC office building	34	45	No
R-4	Westpoint Harbor Yacht Club (nearest boats)	38	55	No
R-5	Redwood City Marina (nearest boats)	55	55	No
R-6	Interior of Seaport Center office buildings	29	45	No

Source: Bollard Acoustical Consultants, Inc. (BAC) with FHWA-RD-77-108 (see Appendix H).

The Table 4 data indicate that project noise exposure, by itself, is not predicted to exceed the applicable Redwood City General Plan noise standards at the noise-sensitive areas of the nearest receptors to the project site and project access road.

Appendices C and D indicate that the baseline ambient noise conditions in the project vicinity ranged from 55-63 dB Ldn at the nearest receptors to the project site and from 69-70 dB Ldn at the nearest sensitive receptors to the project heavy truck route. Relative to these baseline levels the predicted noise levels cited in Table 4 would be insignificant (less than a 1 dB increase).

Because project-generated, off-site, heavy truck traffic noise levels would be below the City General Plan noise standards at the nearest sensitive receptors to the project site and haul route, and because the project-related increases in ambient noise conditions at those same receptors would be below 1 dB Ldn, impacts associated with project-generated, off-site, heavy truck traffic would be ***less-than-significant***.

Noise Generation of the Plant Site at the Nearest Receptors

As noted above, activities at the existing ready mix facility in San Carlos will be transferred to the Project site. As a result, noise will be generated at the site by the ready mix production equipment (plant operations and on-site truck circulation). The proposed project site plans, which illustrate the locations of the on-site operations, are provided in Appendix B.

To quantify the noise generation of the proposed ready mix operations, reference noise level data were collected at the existing CEMEX Ready Mix plant site located at 1025 Branston Road in San Carlos on October 1, 2020. The San Carlos facility was operating normally (manufacturing Portland Cement Concrete) during the ambient noise survey and there were no extraneous noise sources present which interfered with the noise survey.

A Larson Davis Laboratories (LDL) Model 831 precision integrating sound level meter was used by BAC to conduct the reference ready mix operations noise survey. The meter was calibrated before use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4). Appendix C-2 shows photographs of the noise monitoring location at the San Carlos ready mix location.

The results of the ready mix facility noise survey indicate that average and maximum noise levels of 75 dBA L_{eq} and 85 dBA L_{max} can be expected at a reference distance of 100 feet from the main noise source of the project (batch plant). Based on continuous operation of the batch plant during the proposed typical hours of operation (6 am – 6 pm), the average noise level of 75 dB L_{eq} computes to a Day/Night Average Level (L_{dn}) also equal to 75 dB L_{dn}. If the plant were to operate continuously for a 24-hour period, the computed level would be 81 dB L_{dn} at a reference distance of 100 feet.

BAC utilized aerial imagery to scale the distance from the proposed batch plant location shown in Appendix B-2 to the nearest sensitive receptors. The reference sound levels described above were then projected to those nearest receptors assuming standard spherical spreading of sound

(6 decibel decrease per doubling of distance from the source) and standard day atmospheric absorption (1.5 dB per thousand feet). In addition, the plant site will be substantially shielded in the direction of the nearest receptors by existing structures. That shielding is predicted to reduce plant noise levels by a minimum of 10 dB at those receptors. The predicted project noise levels at the nearest receptors resulting from on-site activities are provided in Table 5.

Table 5
Predicted Plant Site Noise Levels at Nearest Receptors - L_{dn}, dB
CEMEX Port of Redwood City Ready-Mix Plant Project

Receptor	Description	Distance (ft)	6 am – 6 pm Operations	24-hour Operations	Noise Standard
1	Office Buildings to Southeast	800	45	51	65
2	Playing Fields to South	800	45	51	75
3	Office Buildings to South	2,500	36	42	60
4	Yacht Club to East	2,500	36	42	55
5	Yacht Club to the South	4,000+	30	36	55

Source: Bollard Acoustical Consultants, Inc. (BAC), 2020

The Table 5 data indicate that the noise generation at the proposed CEMEX Ready Mix facility at the Port of Redwood City will be within compliance with the City's normally acceptable noise exposure standards with a considerable margin of safety. In addition, the predicted levels are at or below measured ambient noise levels in the project vicinity. As a result, noise impacts related to on-site activities at the Project site are considered to be ***less-than-significant***.

Construction Noise Generation

During the construction phase of the project, noise from construction activities would typically generate maximum noise levels, as indicated in Table 6, ranging from 76 to 101 dB at a distance of 50 feet for continual usage throughout an hour. Because construction activity related to individual equipment types would not likely occur continuously for a full hour, average construction noise levels would be lower than those indicated in Table 6.

Project construction activities would occur at distances ranging from 800 to 2,500 feet from the nearest sensitive receptors. At those distances, project construction noise generation would range from 24 to 34 dB lower than the reference sound levels indicated in Table 5. Resulting maximum noise levels would range from 42 to 77 dB Lmax at the nearest receptors. As indicated in Appendix E, baseline maximum ambient noise levels routinely exceeded 70 dBA in the immediate project vicinity during the hours in which project construction activities would occur (i.e., daytime hours). As a result, noise generated by project construction activities are not anticipated to substantially exceed baseline ambient conditions at the nearest sensitive receptors. In addition, construction activities would be short-term in nature and limited to daytime hours. As a result, noise impacts related to project construction activities at the Project site are considered to be ***less-than-significant***.

Table 6
Typical Construction Equipment Noise

Equipment Description	Typical Noise Level at 50 feet, dBA
Air Compressor	80
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85
Pile-driver (Impact)	101
Pile-driver (Sonic)	95
Pneumatic Tool	85
Pump	77
Rail Saw	90
Rock Drill	95
Roller	85
Saw	76
Scarifier	83
Scraper	85
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Truck	84

Source: Federal Transit Administration 2018.

Vibration Generation of the Proposed Project

Operational Vibration

To quantify the vibration generation of the proposed ready mix operations, reference vibration level data were collected at the existing CEMEX Ready Mix plant site located at 1025 Branston Road in San Carlos on October 1, 2020. The San Carlos facility was operating normally (manufacturing Portland Cement Concrete) during the ambient vibration survey and there were no extraneous vibration sources present which interfered with the vibration survey.

A Larson Davis Laboratories (LDL) Model 831 precision integrating sound level meter fitted with a PCB Electronics vibration transducer was used by BAC to conduct the reference ready mix operations vibration survey. The equipment was calibrated before use with a PCB Electronics vibration calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for precision vibration monitoring systems. Appendix C-2 shows a photograph of the vibration monitoring location at the San Carlos ready mix location.

The results of the ready mix facility vibration survey, which are shown in Appendix G, indicate that vibration levels ranged from 40 to 58 VdB at the measurement site, which was located 35 feet from the concrete batch plant operations. As indicated in Table 4, the nearest sensitive receptor is located approximately 800 feet from the proposed batch plant at the Project site. At that distance, vibration levels would be considerably lower than the levels measured at the 35 foot reference distance. Because even the reference levels measured at 35 feet did not exceed the 75 VdB threshold identified in Table 3, vibration levels at 800 feet would be well below that threshold. As a result, vibration impacts of the project are expected to be ***less-than-significant***.

Construction Vibration

During construction of the project, heavy equipment could generate localized vibration in the immediate vicinity of the construction. The range of vibration source levels for construction equipment commonly used in similar projects are shown in Table 7. The vibration levels depicted in Table 7 are representative of measurements at a distance of 25 feet from the equipment source.

Table 7
Vibration Source Levels for Construction Equipment

Equipment	Approximate RMS VdB[1] at 25 feet
Pile Driver (Impact)	104
Pile Driver (Sonic)	93
Vibratory Roller	94
Large bulldozer	87
Loaded trucks	86
Jackhammer	79

Notes:

[1] RMS velocity in decibels (VdB) re 1 micro-inch/second

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)

Project construction activities would occur at distances ranging from 800 to 2,500 feet from the nearest sensitive receptors. At those distances, project construction vibration generation would range from 45 to 60 VdB lower than the reference vibration levels indicated in Table 7. Resulting vibration levels would range from 19 to 59 VdB at the nearest receptors.

Because vibration levels generated by the type of construction equipment which will be required for this project dissipate very rapidly with distance, and because predicted construction vibration levels would be well below the 72 VdB impact threshold shown in Table 3, vibration impacts related to construction activities at the project site are considered to be ***less-than-significant***.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Port of RWC
Proposed Ready-Mix
Plant (Conceptual)

Site Overview

Figure 4 - Map 1

Cemex Construction
Materials Pacific, LLC.

Legend:
- Project Boundary (4.2 Acres)
- Map 2 / Map 3 Extent
- County Parcels
- Proposed Structure
- Proposed Parking
- Proposed Stockpile
- Proposed Pavement
- Proposed Truck Routing
- Rail Line

8/16/2021

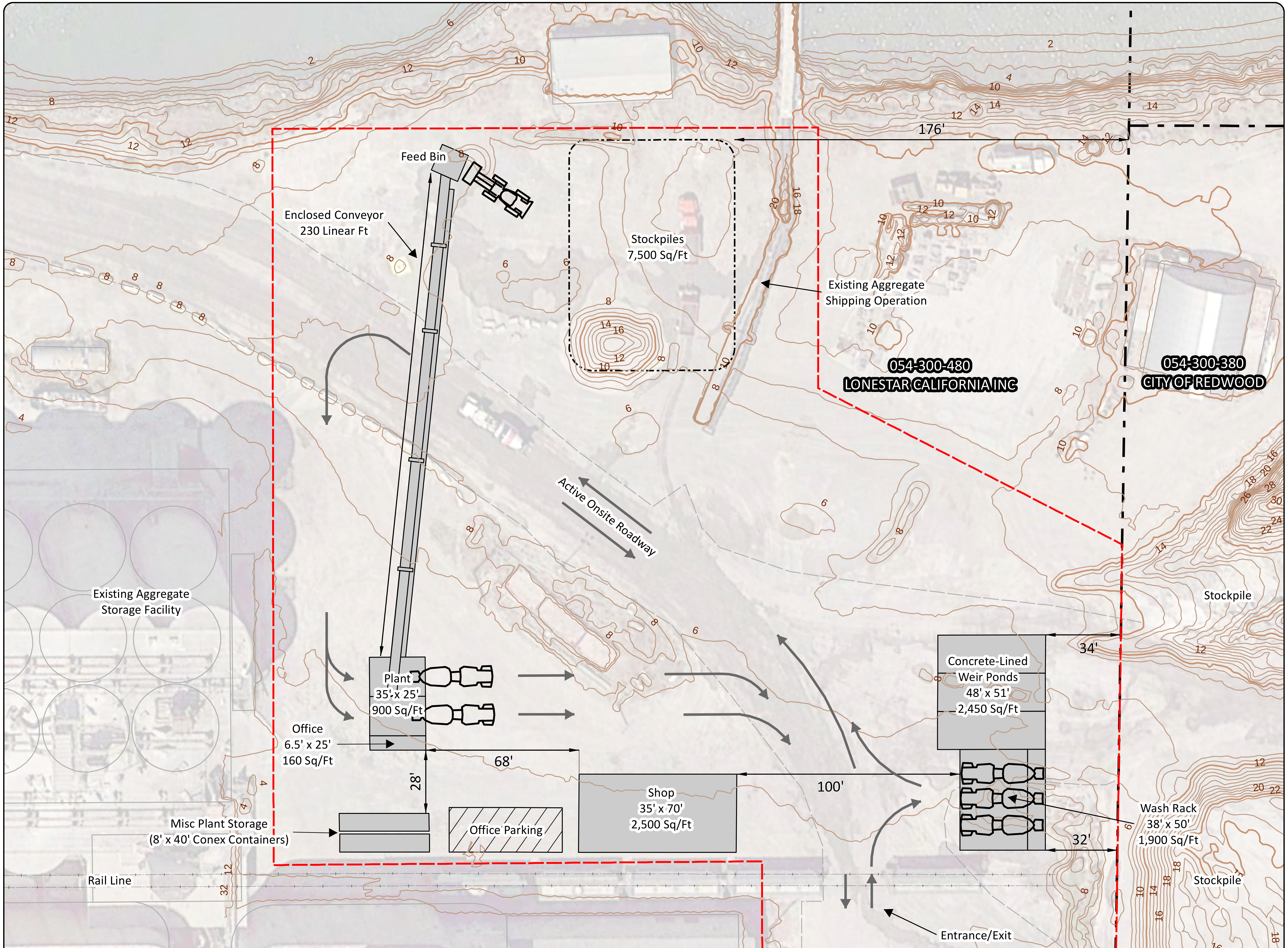
0 75 150 300 Feet

1:2,200

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Prepared by: Sage Thurmond, Compass Land Group
3140 Peacekeeper Way #102, McClellan Park, CA 95652

COMPASS LAND GROUP



Port of RWC
Proposed Ready-Mix Plant (Conceptual)
Site Plan
Figure 4 - Map 2

Address: 876 Seaport Blvd,
Redwood City, CA 94063
APN: 054-300-480
Owner: LONESTAR CALIFORNIA INC
Lot Size: 17.436 Acres
APN: 054-300-271, -272
Owner: LONESTAR CALIFORNIA INC
Lot Size: 1.962 Acres

Legend:
- Project Boundary (4.2 Acres)
- Parcel Boundary

Existing Features
- Existing Fence
- Existing Rail
- Existing Road Edge
- Existing Structure

Proposed Features
- Proposed Structure
- Proposed Parking
- Proposed Stockpile
- Proposed Truck Routing

Note:
1) Ancillary features such as aggregate stockpiles, bins, tanks, and storage container areas are shown in approximate location and may change throughout the life of the operation.
2) Existing structures, trees, and fencing shown are approximate and based on aerial photo dated 8-9-2018. Proposed Plant structures based upon existing facilities at Cemex San Carlos.
3) Topo Contours based on Kespry systems flight on 7/13/2020.

8/16/2021

0 20 40 60 80 Feet

1:500

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

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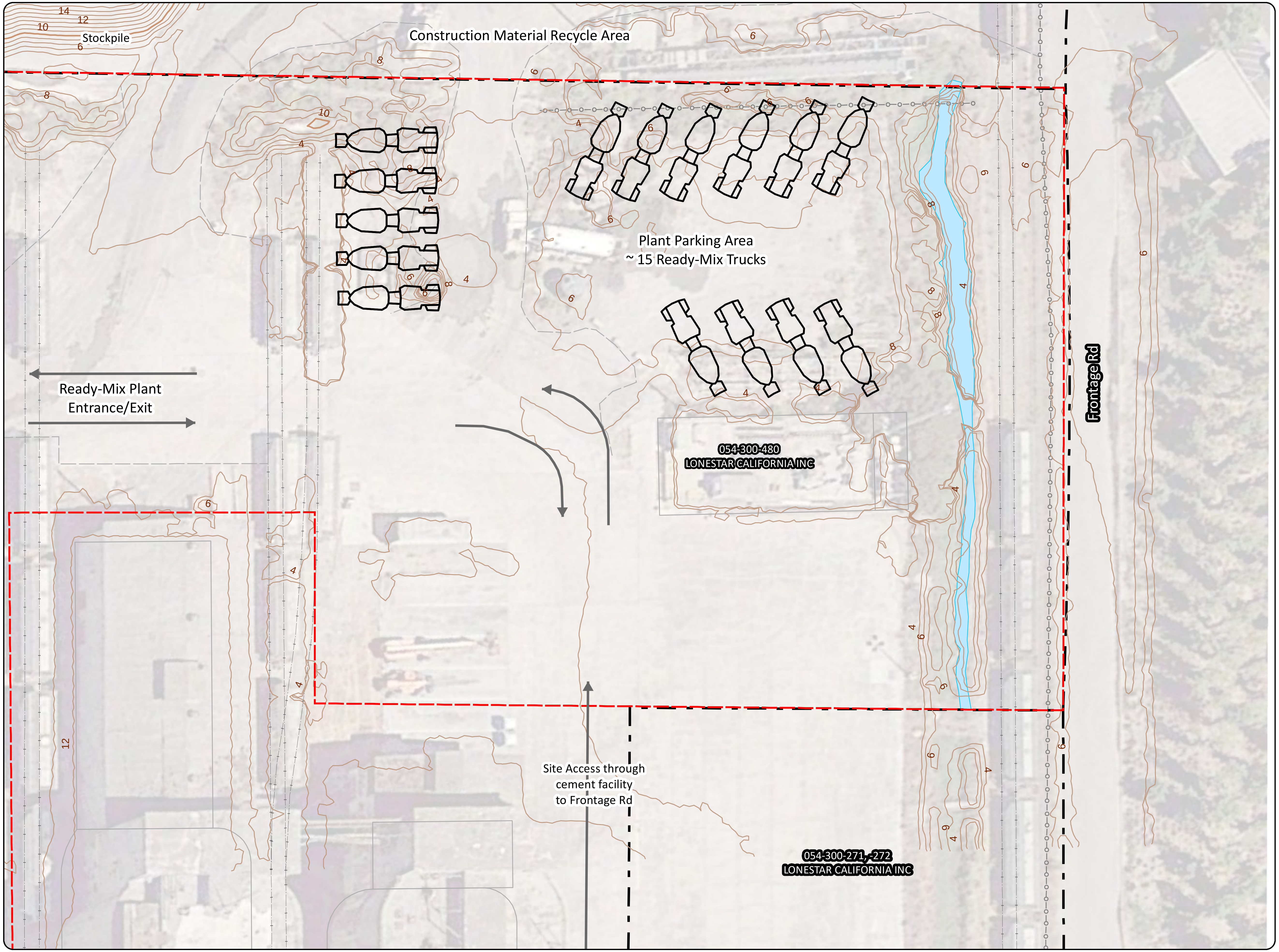
COMPASS LAND GROUP



Port of RWC Proposed Ready-Mix Plant (Conceptual)

Site Plan

Figure 4 - Map 3

Address: 876 Seaport Blvd,
Redwood City, CA 94063
APN: 054-300-480
Owner: LONESTAR CALIFORNIA INC
Lot Size: 17.436 Acres
APN: 054-300-271, -272
Owner: LONESTAR CALIFORNIA INC
Lot Size: 1.962 Acres

Legend:

- Project Boundary (4.2 Acres)
- Parcel Boundary

Existing Features

- Existing Fence
- Existing Rail
- Existing Road Edge
- Existing Structure
- Drainage Ditch
- Proposed Truck Routing

Note:
1) Ancillary features such as aggregate stockpiles, bins, tanks, and storage container areas are shown in approximate location and may change throughout the life of the operation.
2) Existing structures, trees, and fencing shown are approximate and based on aerial photo dated 8-9-2018. Proposed Plant structures based upon existing facilities at Cemex San Carlos.
3) Topo Contours based on Kespry systems flight on 7/13/2020.

8/16/2021

0 10 20 30 40 50 Feet

1:400

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Prepared by: Sage Thurmond, Compass Land Group
3140 Peacekeeper Way #102, McClellan Park, CA 95652

COMPASS LAND GROUP

Legend

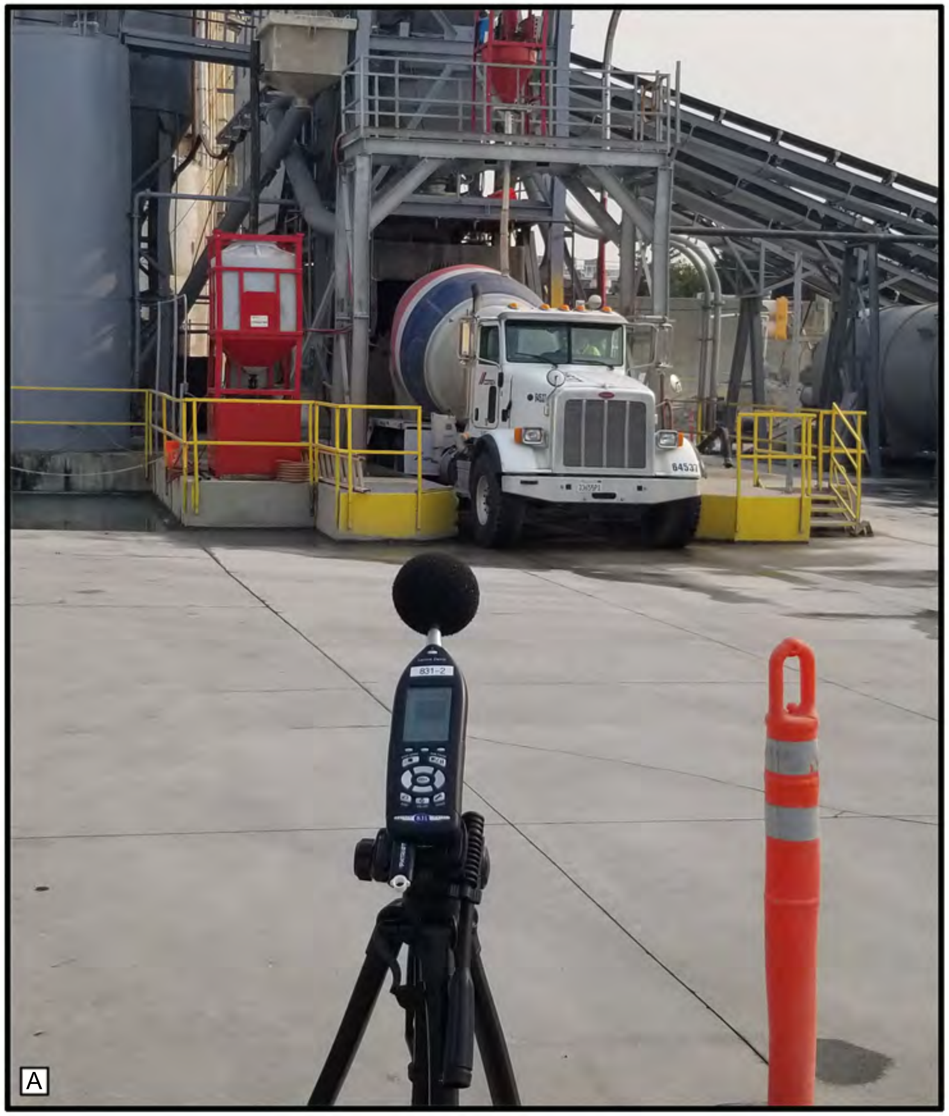
- A Long-term Noise Measurement Site Facing South
- B Long-term Noise Measurement Site Facing West
- C Short-term Vibration Measurement Location
- D Short-term Noise Measurement Location

CEMEX RWC - Proposed RMX Plant
Redwood City, California

Photographs of Survey Locations

Appendix C-1

BOLLARD Acoustical



A

B

Legend

A Existing San Carlos Plant Noise Measurement Location

B Existing San Carlos Plant Vibration Measurement Location

CEMEX RWC - Proposed RMX Plant
Redwood City, California

Reference Data Collection Photographs
San Carlos Plant

Appendix C-2

BOLLARD Acoustical

Legend

A Receiver Location 5 Facing West

B LT-1 Noise Measurement Site Facing West

C Noise Measurement Equipment

Location of noise measurement equipment

CEMEX RWC - Proposed RMX Plant
Redwood City, California

Photographs of Survey Locations

Appendix C-3

BOLLARD Acoustical

Appendix D-1
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Thursday, October 1, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM				
1:00 AM				
2:00 AM				
3:00 AM				
4:00 AM				
5:00 AM				
6:00 AM				
7:00 AM				
8:00 AM				
9:00 AM				
10:00 AM				
11:00 AM				
12:00 PM	58	70	57	55
1:00 PM	59	74	57	55
2:00 PM	58	72	57	56
3:00 PM	58	71	57	52
4:00 PM	56	66	55	54
5:00 PM	55	73	54	46
6:00 PM	52	73	48	46
7:00 PM	50	69	48	47
8:00 PM	52	70	49	45
9:00 PM	53	61	52	51
10:00 PM	49	63	49	47
11:00 PM	55	61	55	48

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	59	50	54	55	49	46
Lmax (Maximum)	74	61	70	63	61	62
L50 (Median)	57	48	53	55	49	52
L90 (Background)	56	45	51	48	47	47

Computed DNL, dB	55
% Daytime Energy	91%
% Nighttime Energy	9%

GPS Coordinates	37°30'51.61"N 122°12'14.10"W

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Appendix D-2
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Friday, October 2, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	45	57	45	43
1:00 AM	48	61	47	44
2:00 AM	47	57	47	45
3:00 AM	51	60	50	47
4:00 AM	59	77	58	56
5:00 AM	60	70	59	57
6:00 AM	61	72	59	57
7:00 AM	61	75	59	58
8:00 AM	60	72	59	57
9:00 AM	58	77	57	56
10:00 AM	60	75	58	56
11:00 AM	59	69	58	56
12:00 PM	62	82	57	54
1:00 PM	56	71	55	53
2:00 PM	58	70	56	53
3:00 PM	56	70	54	52
4:00 PM	55	74	54	53
5:00 PM	56	68	55	54
6:00 PM	53	75	48	46
7:00 PM	52	78	48	46
8:00 PM	52	71	49	47
9:00 PM	52	62	52	50
10:00 PM	51	64	49	45
11:00 PM	53	72	51	48

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	62	52	58	61	45	56
Lmax (Maximum)	82	62	73	77	57	66
L50 (Median)	59	48	55	59	45	52
L90 (Background)	58	46	53	57	43	49

Computed DNL, dB	63
% Daytime Energy	73%
% Nighttime Energy	27%

GPS Coordinates	37°30'51.61"N
	122°12'14.10"W

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Appendix D-3
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Saturday, October 3, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	52	60	51	47
1:00 AM	47	59	46	45
2:00 AM	45	52	45	44
3:00 AM	45	55	45	43
4:00 AM	45	57	44	43
5:00 AM	47	55	46	44
6:00 AM	50	63	49	47
7:00 AM	50	64	49	47
8:00 AM	70	79	68	52
9:00 AM	60	70	51	46
10:00 AM	50	71	47	45
11:00 AM	51	70	46	45
12:00 PM	51	72	46	44
1:00 PM	51	70	46	44
2:00 PM	56	72	45	43
3:00 PM	49	62	46	44
4:00 PM	51	73	49	46
5:00 PM	51	71	49	47
6:00 PM	52	75	49	47
7:00 PM	51	74	48	47
8:00 PM	49	63	47	45
9:00 PM	49	63	47	45
10:00 PM	48	60	46	44
11:00 PM	45	59	45	43

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	70	49	59	52	45	48
Lmax (Maximum)	79	62	70	63	52	58
L50 (Median)	68	45	49	51	44	46
L90 (Background)	52	43	46	47	43	44

Computed DNL, dB	59
% Daytime Energy	96%
% Nighttime Energy	4%

GPS Coordinates	37°30'51.61"N 122°12'14.10"W

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Appendix D-4
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Sunday, October 4, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	44	61	43	42
1:00 AM	43	50	42	41
2:00 AM	42	51	41	40
3:00 AM	40	45	40	39
4:00 AM	41	54	41	39
5:00 AM	46	61	42	40
6:00 AM	45	61	44	42
7:00 AM	47	62	46	44
8:00 AM	48	62	45	43
9:00 AM	49	63	45	43
10:00 AM	51	71	46	44
11:00 AM	50	65	47	44
12:00 PM	52	77	48	46
1:00 PM	51	71	46	44
2:00 PM	52	66	50	47
3:00 PM	55	77	51	49
4:00 PM	56	76	51	48
5:00 PM	54	69	52	50
6:00 PM	56	78	53	51
7:00 PM	53	75	51	49
8:00 PM	50	69	49	48
9:00 PM	50	61	49	48
10:00 PM	50	58	48	45
11:00 PM	53	57	52	51

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	56	47	52	53	40	47
Lmax (Maximum)	78	61	69	61	45	55
L50 (Median)	53	45	49	52	40	44
L90 (Background)	51	43	47	51	39	42

Computed DNL, dB	55
% Daytime Energy	86%
% Nighttime Energy	14%

GPS Coordinates	37°30'51.61"N 122°12'14.10"W

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Appendix D-5
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Monday, October 5, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	53	58	53	51
1:00 AM	53	64	53	46
2:00 AM	52	57	52	50
3:00 AM	53	58	53	51
4:00 AM	57	70	56	54
5:00 AM	59	66	58	55
6:00 AM	57	67	57	55
7:00 AM	56	68	55	54
8:00 AM	58	68	57	55
9:00 AM	57	74	56	54
10:00 AM	57	77	56	54
11:00 AM				
12:00 PM				
1:00 PM				
2:00 PM				
3:00 PM				
4:00 PM				
5:00 PM				
6:00 PM				
7:00 PM				
8:00 PM				
9:00 PM				
10:00 PM				
11:00 PM				

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	58	56	51	59	52	54
Lmax (Maximum)	77	68	72	70	57	63
L50 (Median)	57	55	56	58	52	55
L90 (Background)	55	54	54	55	46	52

Computed DNL, dB	60
% Daytime Energy	45%
% Nighttime Energy	55%

GPS Coordinates	37°30'51.61"N 122°12'14.10"W

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Appendix D-6
Ambient Noise Monitoring Results: Site LT-2
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Tuesday, September 14, 2021

Hour	Leq	Lmax	L50	L90
12:00 AM	53	76	43	42
1:00 AM	52	76	43	41
2:00 AM	56	79	45	42
3:00 AM	59	81	47	45
4:00 AM	64	81	54	46
5:00 AM	66	84	59	51
6:00 AM	67	88	59	50
7:00 AM	67	84	62	57
8:00 AM	66	80	60	50
9:00 AM	69	86	64	54
10:00 AM	69	87	62	52
11:00 AM	68	83	62	52
12:00 PM	67	82	61	50
1:00 PM	68	84	60	51
2:00 PM	68	97	58	50
3:00 PM	65	84	57	50
4:00 PM	64	79	57	50
5:00 PM	69	98	57	51
6:00 PM	62	79	56	50
7:00 PM	61	78	54	48
8:00 PM	57	77	48	45
9:00 PM	55	76	45	43
10:00 PM	54	77	44	42
11:00 PM	53	75	44	42

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	69	55	66	67	52	62
Lmax (Maximum)	98	76	83	88	75	80
L50 (Median)	64	45	57	59	43	49
L90 (Background)	57	43	50	51	41	45

Computed Ldn, dB	69
% Daytime Energy	82%
% Nighttime Energy	18%

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Appendix D-7
Ambient Noise Monitoring Results: Site LT-2
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Wednesday, September 15, 2021

Hour	Leq	Lmax	L50	L90
12:00 AM	53	75	44	42
1:00 AM	54	78	41	40
2:00 AM	57	79	41	39
3:00 AM	62	83	47	43
4:00 AM	67	94	52	43
5:00 AM	66	84	58	46
6:00 AM	68	81	61	49
7:00 AM	67	86	59	48
8:00 AM	68	84	63	52
9:00 AM	69	90	63	51
10:00 AM	73	105	62	50
11:00 AM	69	98	62	50
12:00 PM	66	80	58	50
1:00 PM	66	86	58	50
2:00 PM	66	85	58	51
3:00 PM	63	78	57	50
4:00 PM	67	87	58	51
5:00 PM	64	82	58	51
6:00 PM	65	84	57	49
7:00 PM	62	86	54	47
8:00 PM	59	85	48	44
9:00 PM	56	76	48	45
10:00 PM	55	75	47	45
11:00 PM	56	76	48	46

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	73	56	67	68	53	63
Lmax (Maximum)	105	76	86	94	75	80
L50 (Median)	63	48	57	61	41	49
L90 (Background)	52	44	49	49	39	44

Computed Ldn, dB	70
% Daytime Energy	79%
% Nighttime Energy	21%

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Appendix D-8
Ambient Noise Monitoring Results: Site LT-2
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Thursday, September 16, 2021

Hour	Leq	Lmax	L50	L90
12:00 AM	56	76	48	46
1:00 AM	55	76	42	40
2:00 AM	52	75	42	40
3:00 AM	59	78	46	43
4:00 AM	64	82	51	46
5:00 AM	66	82	58	49
6:00 AM	66	83	58	47
7:00 AM	67	84	59	49
8:00 AM	67	80	62	52
9:00 AM	67	83	62	50
10:00 AM	68	90	62	52
11:00 AM	68	85	62	51
12:00 PM	67	85	60	50
1:00 PM	66	82	59	50
2:00 PM	66	85	58	51
3:00 PM	64	81	57	50
4:00 PM	64	80	58	50
5:00 PM	64	81	58	51
6:00 PM	63	79	56	49
7:00 PM	61	78	52	47
8:00 PM	58	78	48	46
9:00 PM	57	83	46	44
10:00 PM	56	79	46	44
11:00 PM	54	76	46	44

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	68	57	65	66	52	61
Lmax (Maximum)	90	78	82	83	75	78
L50 (Median)	62	46	57	58	42	49
L90 (Background)	52	44	49	49	40	44

Computed Ldn, dB	69
% Daytime Energy	81%
% Nighttime Energy	19%

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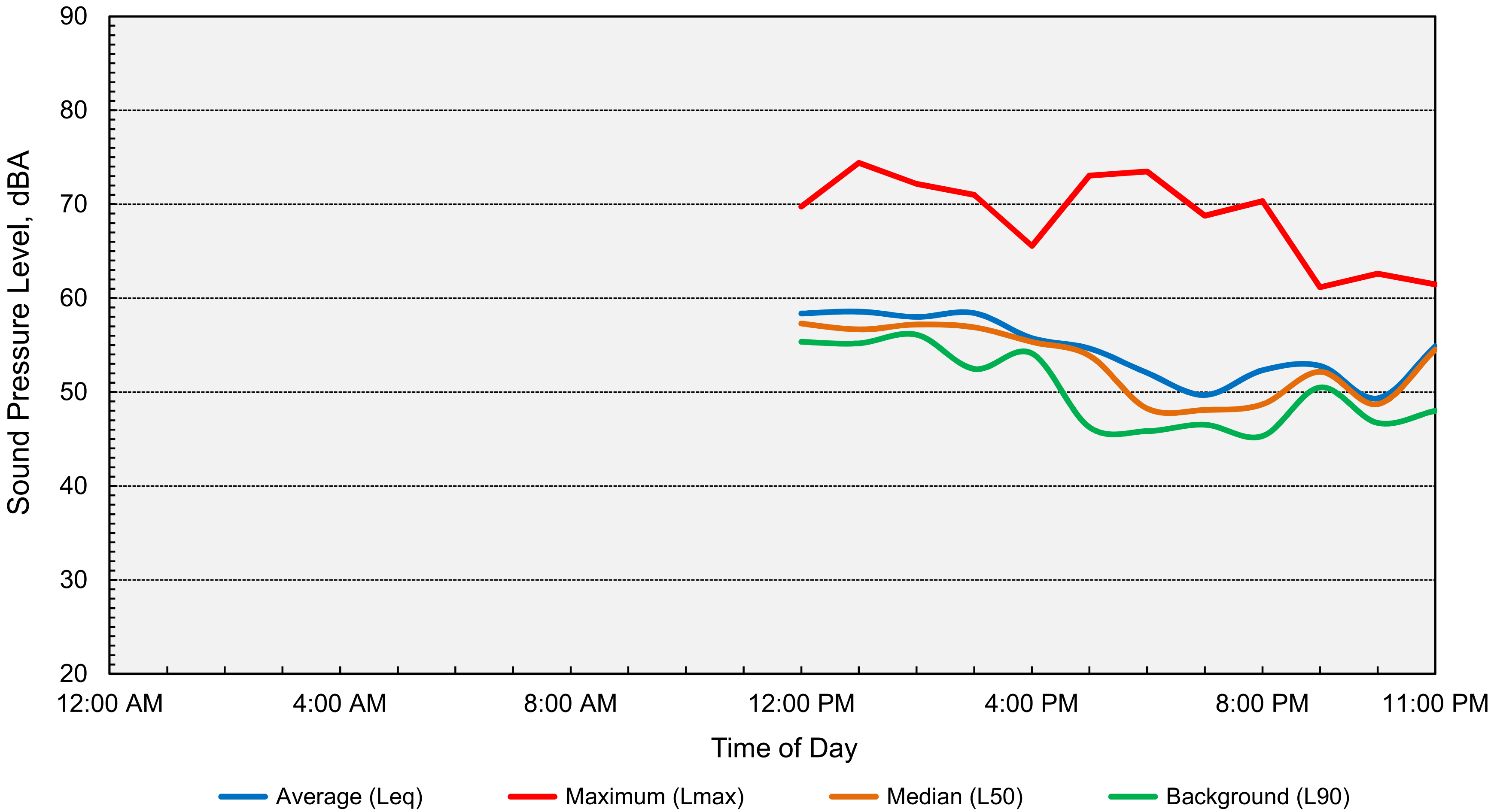
Appendix E-1
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Thursday, October 1, 2020



Computed DNL = 55 dB

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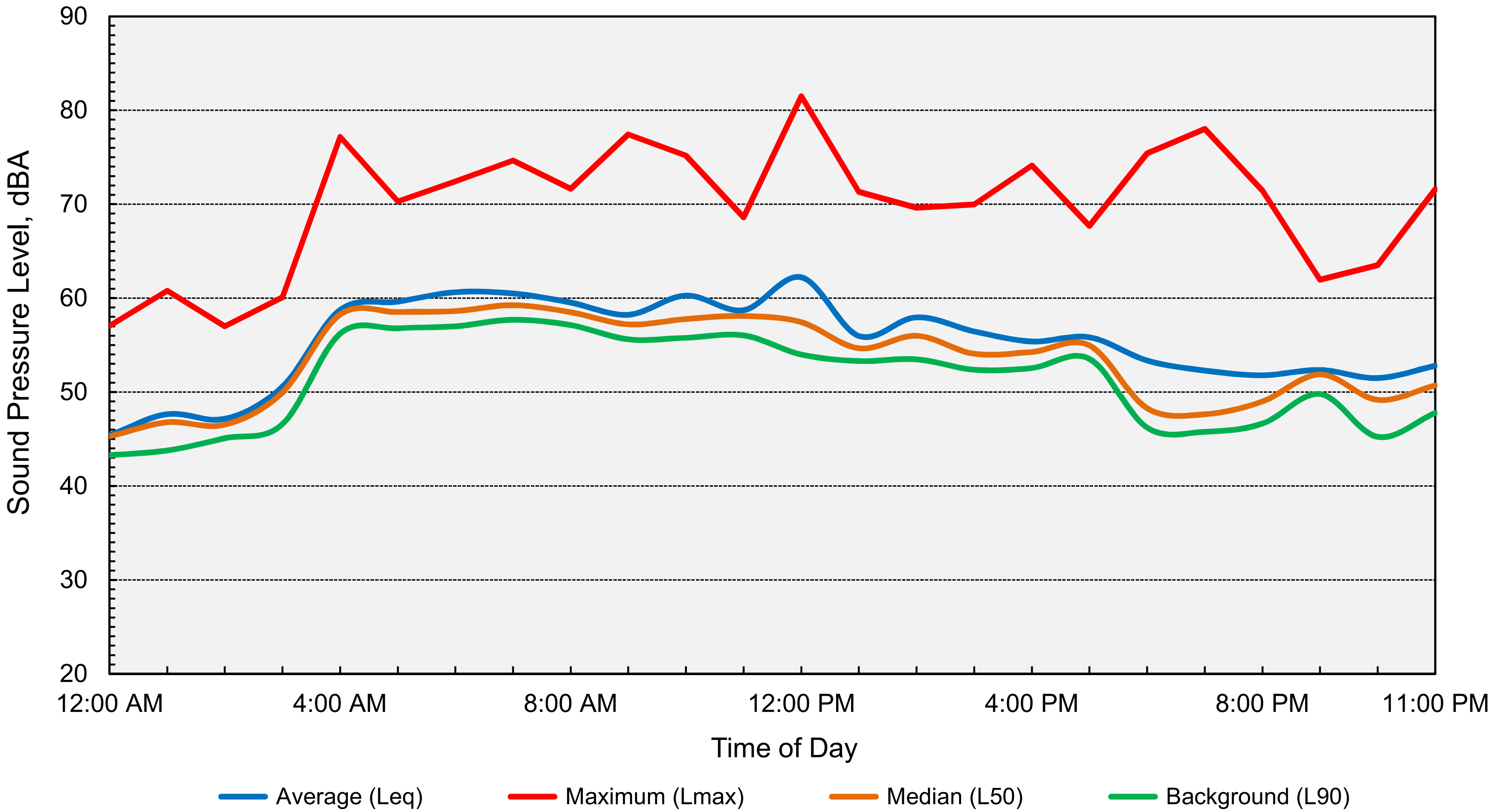
Appendix E-2
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Friday, October 2, 2020



Computed DNL = 63 dB

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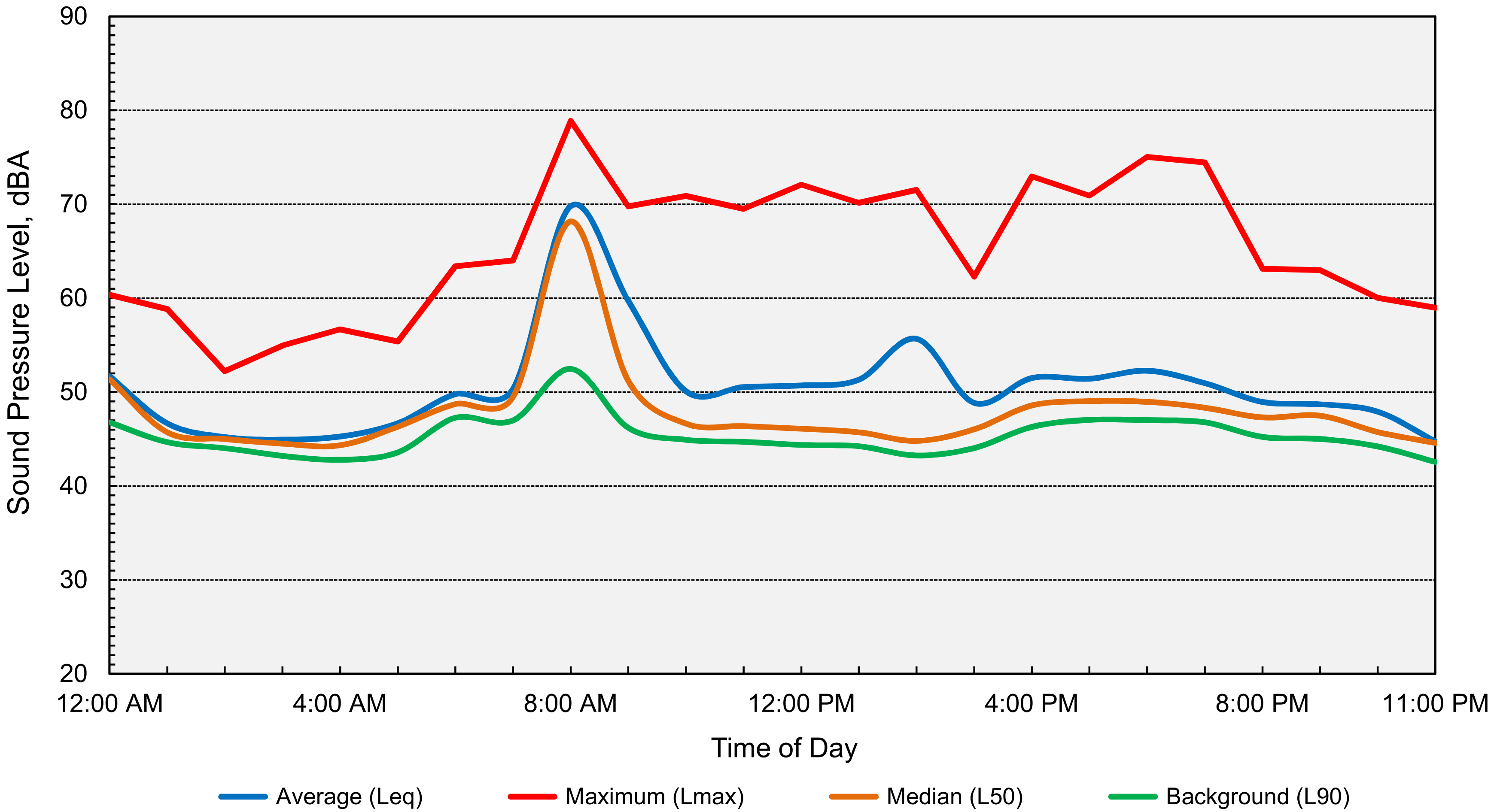
Appendix E-3
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Saturday, October 3, 2020



Computed DNL = 59 dB

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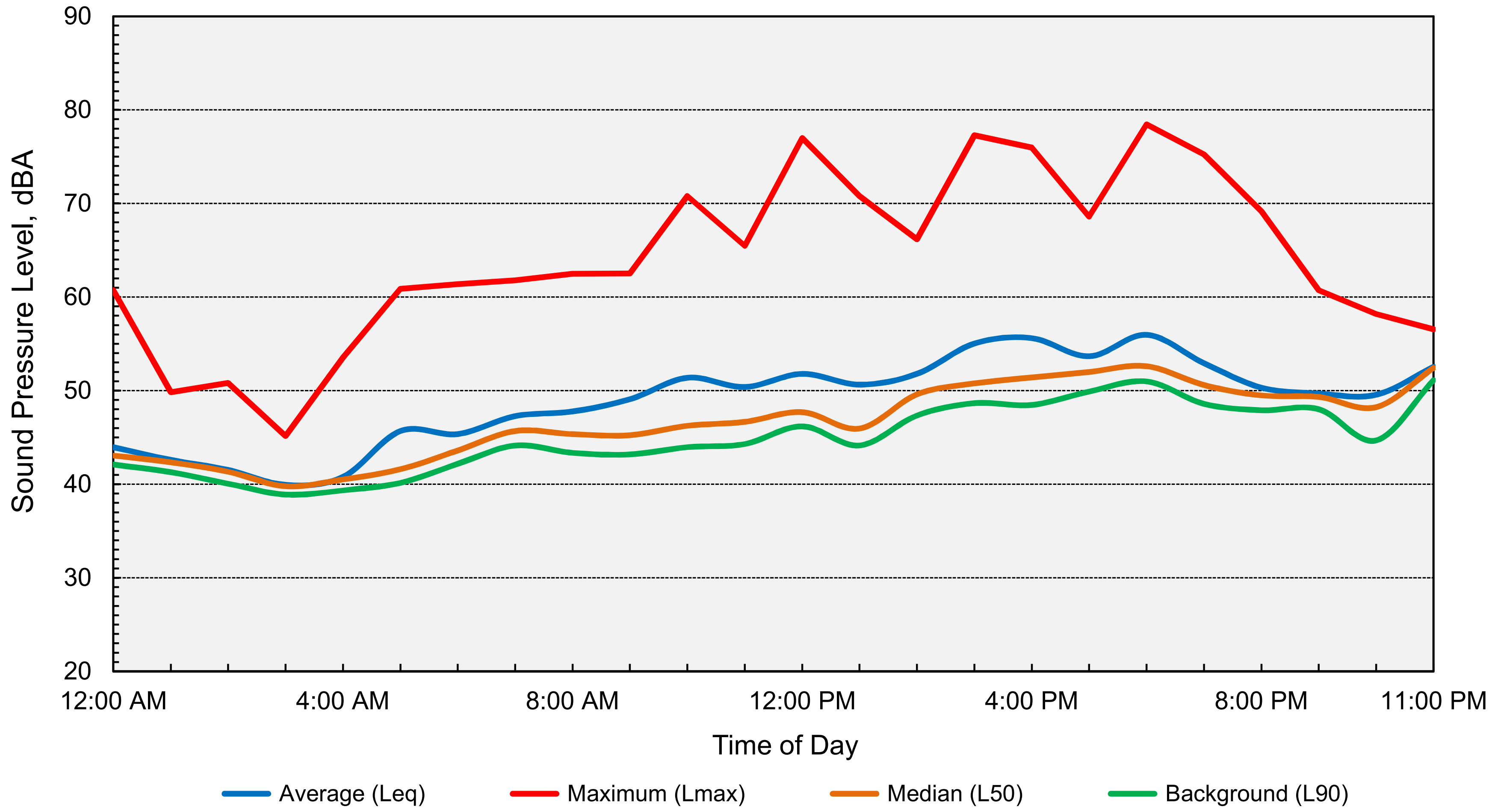
Appendix E-4
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Sunday, October 4, 2020



Computed DNL = 55 dB

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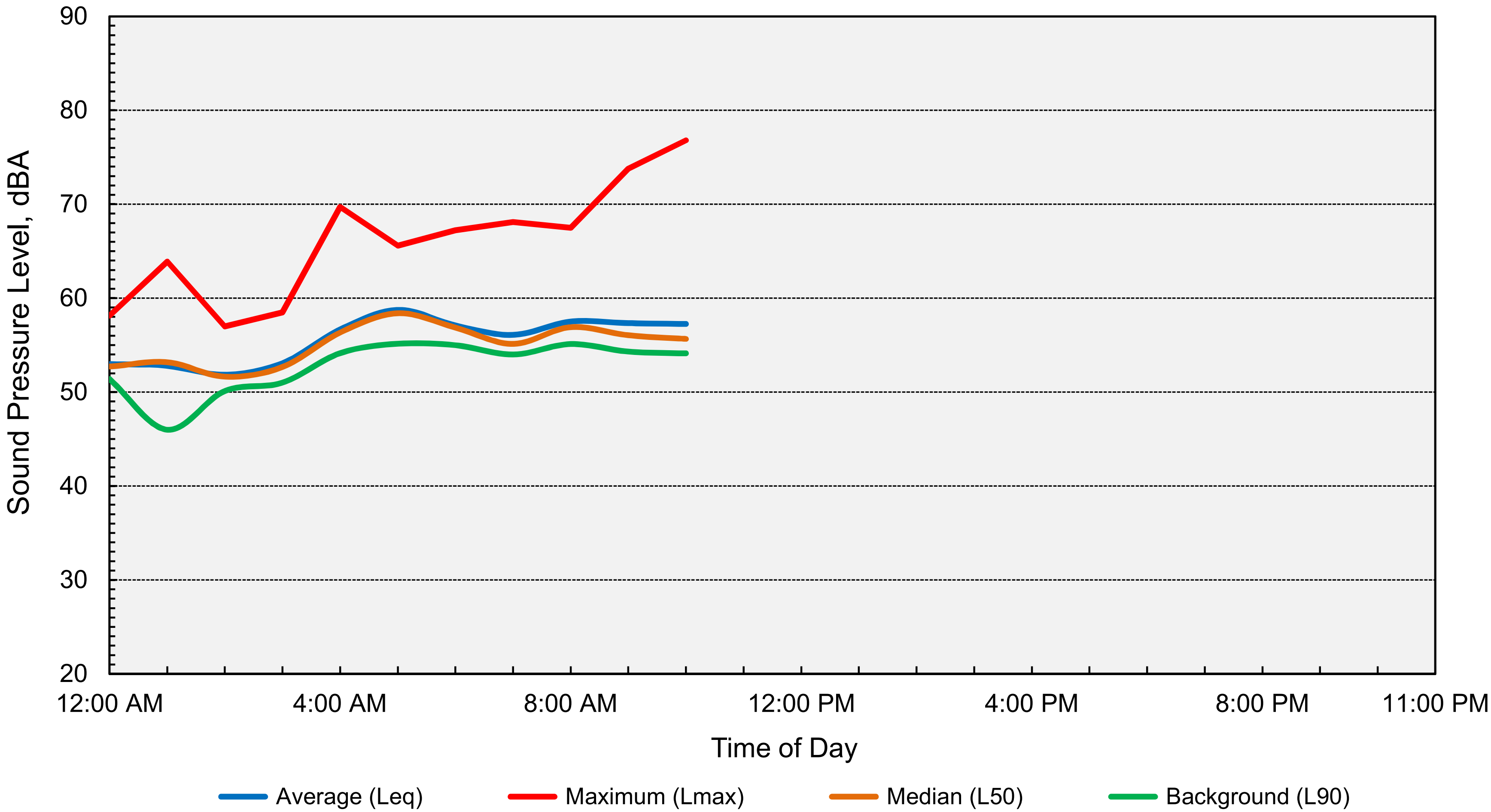
Appendix E-5
Ambient Noise Monitoring Results: Site LT-1
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Monday, October 5, 2020



Computed DNL = 60 dB

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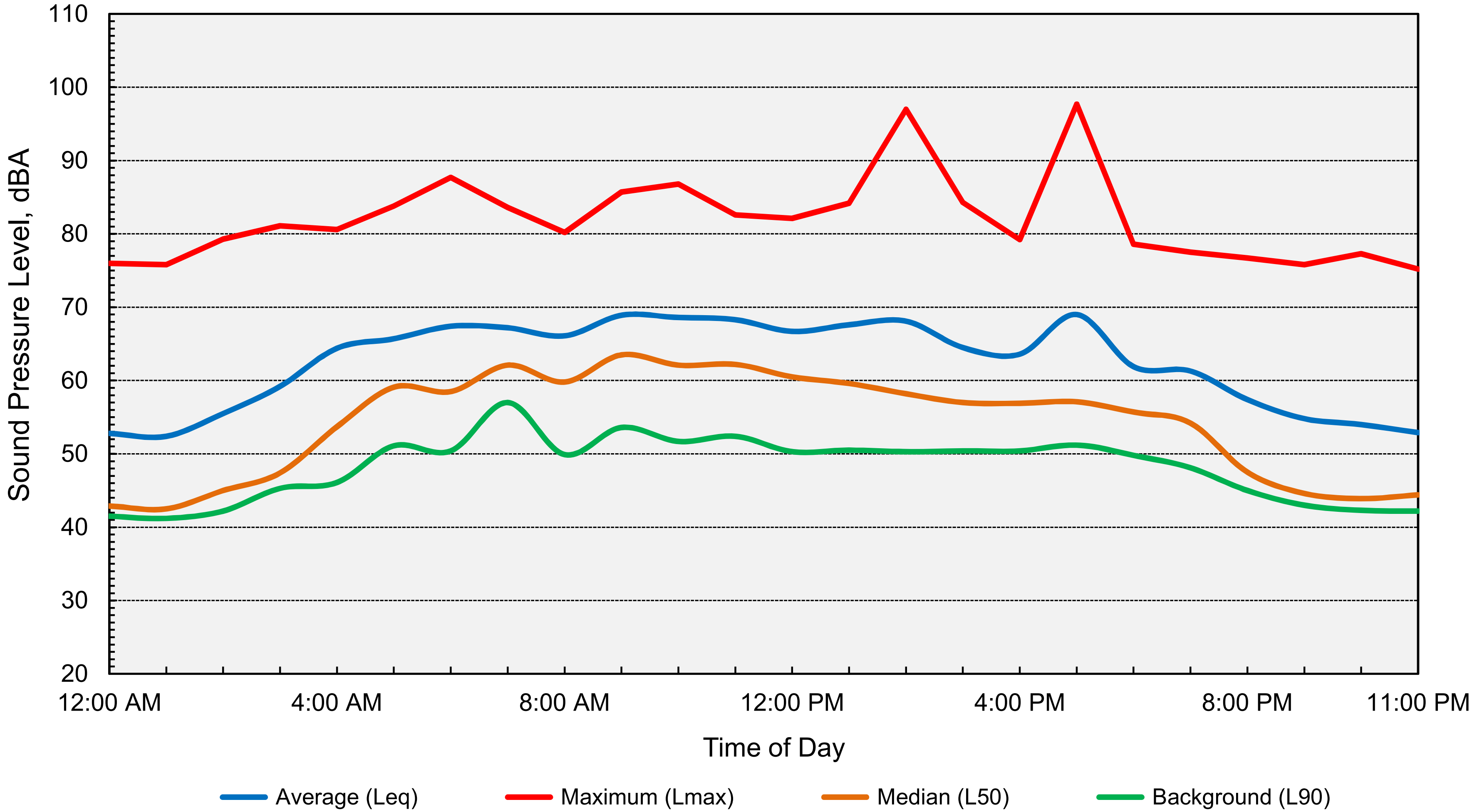
Appendix E-6
Ambient Noise Monitoring Results: Site LT-2
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Tuesday, September 14, 2021



Computed Ldn = 69 dB

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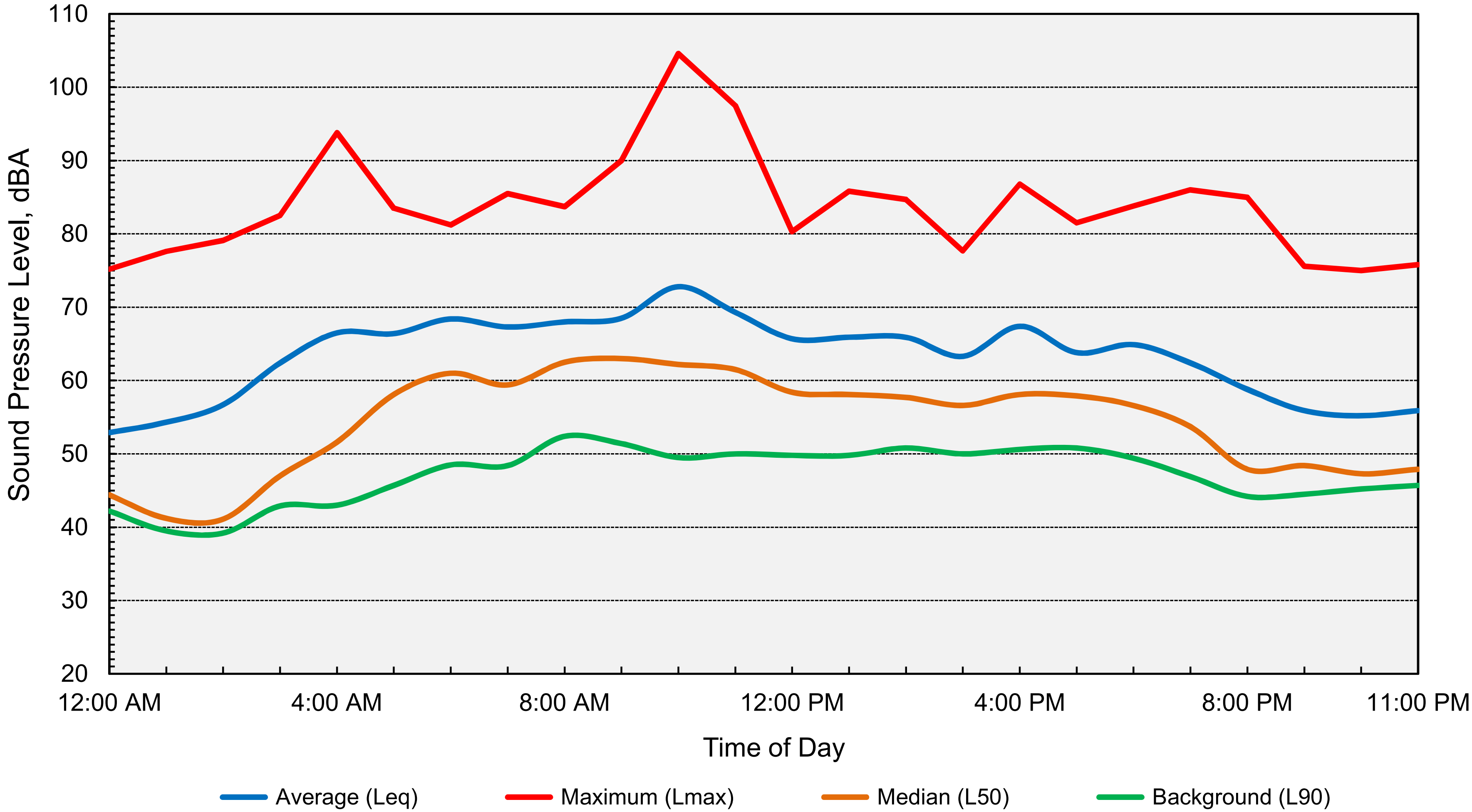
Appendix E-7
Ambient Noise Monitoring Results: Site LT-2
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Wednesday, September 15, 2021



Computed Ldn = 70 dB

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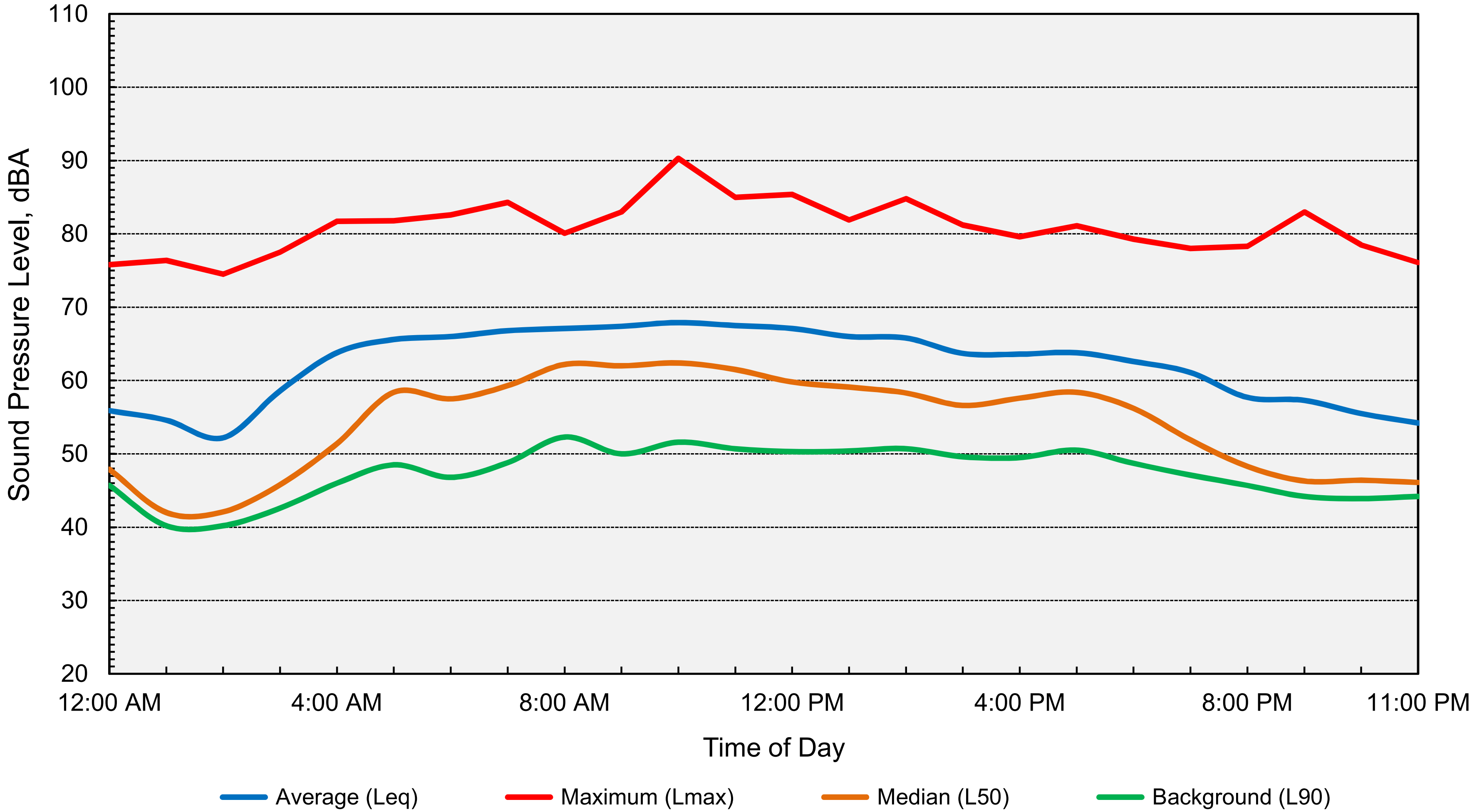
Appendix E-8
Ambient Noise Monitoring Results: Site LT-2
CEMEX Ready Mix Project Site Vicinity - Redwood City, California
Thursday, September 16, 2021



Computed Ldn = 69 dB

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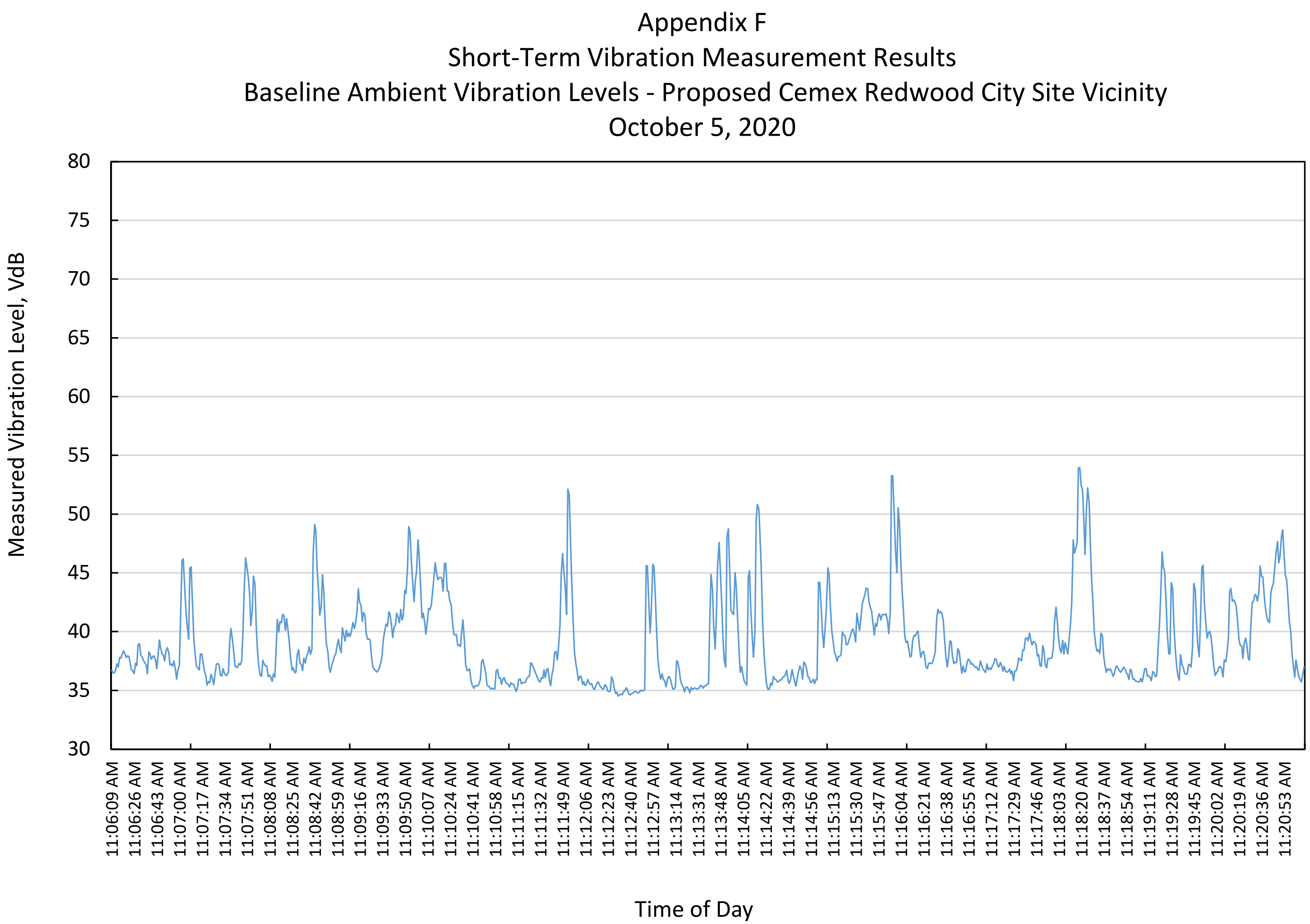

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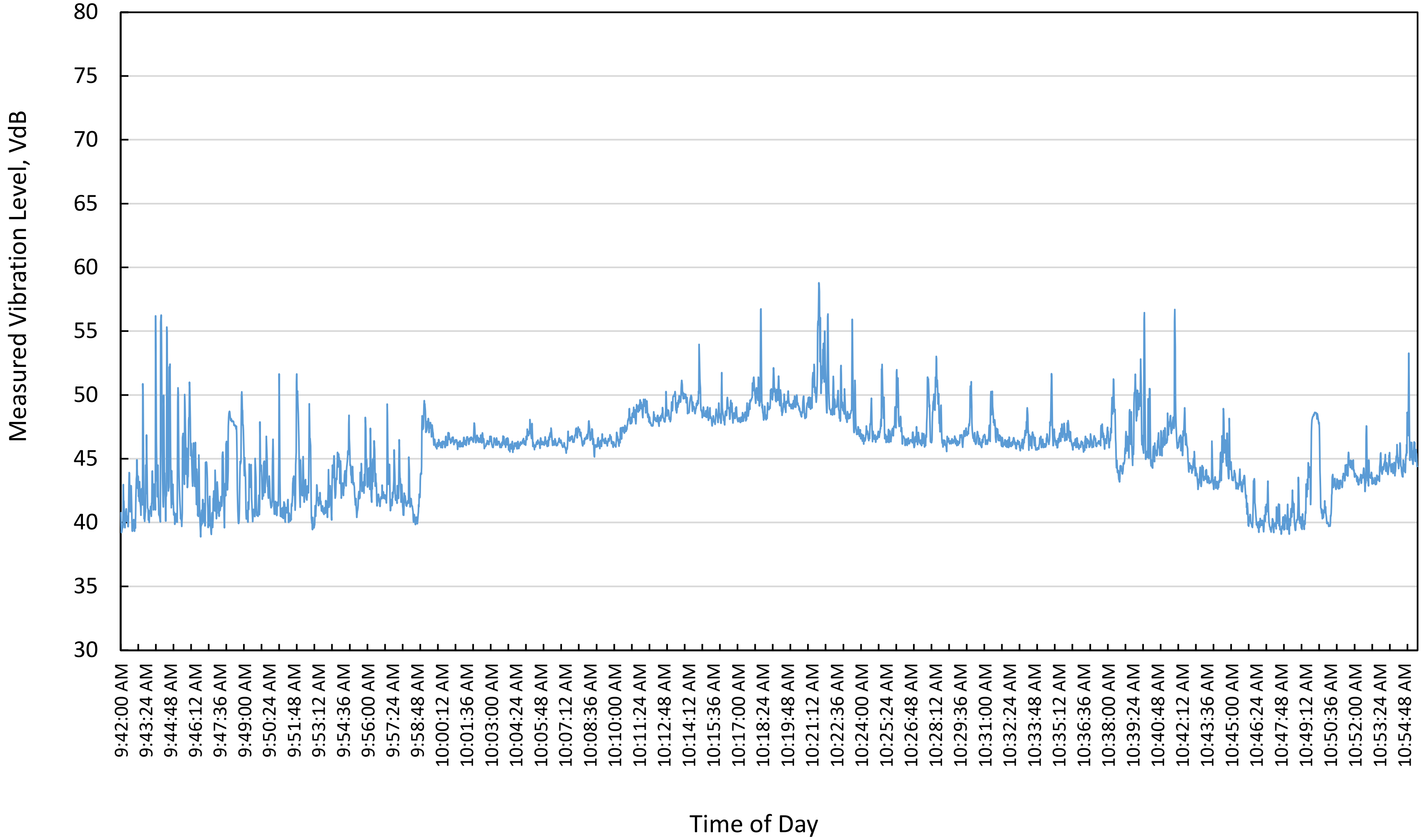
Appendix G
Short-Term Vibration Measurement Results
Existing Cemex Ready Mix Plant - 1025 Branston Road, San Carlos, California
October 1, 2020



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Appendix H-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2020-159 Cemex RWC
Description: Existing Plus Project Traffic Noise Levels
Ldn/CNEL: Ldn
Hard/Soft: Soft

Receptor	Description	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
R-1	Interior of business park office building	186	80	20	0	100	45	300	-25
R-2	Center of business park playing fields	186	80	20	0	100	45	300	0
R-3	Interior of Port of RWC office building	186	80	20	0	100	45	80	-25
R-4	Westpoint Harbor Yacht Club (nearest boats)	186	80	20	0	100	45	2000	0
R-5	Redwood City Marina (nearest boats)	186	80	20	0	100	45	150	0
R-6	Interior of Seaport Center office buildings	186	80	20	0	100	45	180	-25

Note: A -25 dB offset was applied to the predicted exteiror noise levels to account for the noise attenuation provided by the office building facades

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Appendix H-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2020-159 Cemex RWC
Description: Existing Plus Project Traffic Noise Levels
Ldn/CNEL: Ldn
Hard/Soft: Soft

Receptor	Description	Autos	Medium Trucks	Heavy Trucks	Total
R-1	Interior of business park office building	0	0	26	26
R-2	Center of business park playing fields	0	0	51	51
R-3	Interior of Port of RWC office building	0	0	34	34
R-4	Westpoint Harbor Yacht Club (nearest boats)	0	0	38	38
R-5	Redwood City Marina (nearest boats)	0	0	55	55
R-6	Interior of Seaport Center office buildings	0	0	29	29

Note: A -25 dB offset was applied to the predicted exteiror noise levels to account for the noise attenuation provided by the office building facades

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