INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

FORMER MARCHANT-WHITNEY SITE REMEDIAL ACTION PLAN 5679 Horton Street Emeryville, California

August 2022

For:
Department of Toxic Substances Control

Prepared by:
Baseline Environmental Consulting

In conjunction with:
Environmental Collaborative
Fehr & Peers, Inc.
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TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AB 52	Assembly Bill 52
ACCWP	Alameda County Clean Water Program
ACTC	Alameda County Transportation Commission
BAAQMD	Bay Area Air Quality Management District
Bgs	below ground surface
BMPs	best management practices
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Data Base
CO	carbon monoxide
CO2e	carbon dioxide equivalent
COC	contaminant of concern
CRHR	California Historic Resource Register
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
EKI	EKI Environment & Water, Inc.
EMFAC2014	EMission FACtors Model
ERD	enhanced reductive dechlorination
ERH	electrical resistance heating
FMW	Former Marchant/Whitney
FS	Feasibility Study
FTA	Federal Transit Administration
GAC	granular activated carbon
GHG	greenhouse gases
HAZWOPER	Hazardous Waste Operations and Emergency Response
HHRA	Human Health Risk Assessment
HRE	Historical Resource Evaluation
HSP	Health and Safety Plan
I-580	Interstate 580
I-80	Interstate 80
IS	Initial Study
ISCST3	Industrial Source Complex Short Term model
kWh	kilowatt-hours

LID	low impact development
LUC	Land Use Covenant
Marchant	Marchant Calculating Machine Company
MEIR	maximally exposed individual resident
Mgd	million gallons per day
MND	Mitigated Negative Declaration
MPE	multi-phase extraction
MRP	Municipal Regional Permit
NOI	Notice of Intent
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazard Assessment
OFFROAD2012	Off-Road Emissions Inventory Model ("OFFROAD2011")
OSHA	Occupational Safety and Health Administration
PCBs	polychlorinated biphenyls
PCU	power control unit
PM10	respirable particulate matter
PM2.5	fine particulate matter
PPE	Personal Protective Equipment
RAO	remedial action objectives
RAP	Remedial Action Plan
RDIP	Remedial Design and Implementation Plan
RI	Remedial Investigation
RO	reverse osmosis
ROGs	reactive organic gases
RWQCB	San Francisco Bay Area Regional Water Quality Board
SFBAAB	San Francisco Bay Area Air Basin
SPL	separate phase liquid
SR 24	State Route 24
SWPPP	stormwater pollution prevention plan
TACs	toxic air contaminants
TDMLs	Total maximum daily loads
UPRR	Union Pacific Railroad
US EPA	U.S. Environmental Protection Agency
USDOT	U.S. Department of Transportation
USGS	United States Geological Survey
VOC	volatile organic compound
WRTC	Whitney Research Tool Company

CHAPTER I
INTRODUCTION AND PROJECT DESCRIPTION

INTRODUCTION

Under the California Environmental Quality Act (CEQA), the purpose of an Initial Study (IS) is to provide the Lead Agency with information to use as the basis for deciding whether an Environmental Impact Report (EIR) for the proposed project is required. The IS process also enables the applicant or the Lead Agency to identify measures that can be included in the project to avoid or reduce significant impacts, thereby enabling the project to qualify for a Negative Declaration. The process in which mitigation measures are incorporated into the project, before the Lead Agency's approval, is known as a Mitigated Negative Declaration (MND).

The proposed project consists of the approval and implementation of the Updated Feasibility Study/Draft Remedial Action Plan (RAP)[1] for the Former Marchant/Whitney site (FMW Site) at 5679 Horton Street in Emeryville, California (Project). The RAP was prepared in accordance with Tasks 5.7 and 5.11 of the Imminent and Substantial Endangerment Determination and Order and Remedial Action Order (Order) issued by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) to the City of Emeryville as the Successor Agency to the Emeryville Redevelopment Agency (Successor Agency) on 13 August 2020, related to the FMW Site. The sponsor of this Project is the Successor Agency. The DTSC is the CEQA lead agency.

This first section of this document describes the Project and presents the finding that although the Project could have potentially significant effects on the environment, there would not be a significant effect in this case because revisions to the Project made by, or agreed to by, the Successor Agency would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur. The second section presents an analysis of potential impacts related to environmental conditions to document the finding, based on a standard CEQA IS checklist. Where potentially significant impacts have been identified, mitigation measures to reduce those impacts to a less-than-significant level have been drafted. The mitigation measures, representing the revisions necessary to support the finding that the Project would have no significant effects on the environment, have been compiled in Appendix A and are incorporated into the Project.

PROJECT DESCRIPTION

1. **Project Title:** Former Marchant/Whitney Site Remedial Action Plan

2. **Lead Agency Name and Address:**

   California Department of Toxic Substances Control
   Department of Toxic Substances Control
   700 Heinz Avenue, Suite 200
   Berkeley, CA 94710

3. **DTSC Contact Person and Phone Number:** Tom Price, Project Manager, 510-540-3811

[1] EKI Environment & Water, Inc. (EKI), 2022, Updated Feasibility Study/Draft Remedial Action Plan, Former Marchant/Whitney Site, 5679 Horton Street, Emeryville, California, 1 August 2022. The RAP is a combined single document incorporating the Feasibility Study and the draft Remedial Action Plan for the FMW Site.

4. **Project Location:** 5679 Horton Street, Emeryville, California (APN 49-1552-1 and 49-1319-1-20).

5. **Project Sponsor's Name and Address:**

   City of Emeryville as the Successor Agency
   to the Emeryville Redevelopment Agency
   1333 Park Avenue
   Emeryville, CA 94608

6. **General Plan Designation:** Public Use

7. **Zoning:** Public

8. **Description of Project:** The RAP was developed for remediation of contaminated subsurface materials at the FMW Site as shown on Figures 1 and 2. The FMW Site occupies approximately 1.75 acres and consists of two parcels, APN 49-1552-1 (1.58 acres) and 49-1319-1-20 (0.18 acres). APN 49-1319-1-20 provides ingress and egress between Horton Street and the other parcel that comprises the FMW Site (i.e. APN 49-1552-1), as well as two other parcels identified as APN 49-1319-001-011 and 49-1319-001-06.The FMW Site is bounded by Horton Street to the east, a former rail spur to the southeast that has now been redeveloped and is part of Horton Landing Park (HLP), active railroad tracks to the west, and light industrial/commercial properties to the north.

   The FMW Site is currently owned by the Successor Agency and consists of a large building, approximately 47,000 square feet in size, with a paved parking lot and driveway to the north and a paved outdoor fenced storage area to the east (Figure 2). The FMW Site was occupied by the City of Emeryville (City) for use as a corporation yard by its Public Works Department from 1999 to 2012. The City moved the Public Works Department out of the building in late 2012. The building remains unoccupied. The outdoor surface of the FMW Site is almost completely paved, except for two planters; one near the entrance to the former offices and the other a strip of landscaping along the eastern property boundary adjacent to the sidewalk on Horton Street. The paved areas are used for parking and landscaping and other materials handling.

   Details regarding the Project background, remedial action objectives, and the proposed Project are described below.

9. **Surrounding Land Uses and Setting:** In the area surrounding the FMW Site, current land uses include: (a) industrial/commercial land use immediately to the north and east of the FMW Site, (b) urban residential land use with no exposed soils to the north of the FMW Site at the intersection of Horton Street and Powell Street, (c) a mixture of commercial, urban residential, and hotel land use to the west the FMW Site, and (d) park/open space land use immediately to the south of the FMW Site. The southern property boundary of the FMW Site is immediately adjacent to HLP. The City redeveloped the HLP Site as part of the Emeryville Greenway, which is a network of bike paths, walking trails, and parks/open space throughout the City. Horton Street, in front of the FMW Site, is also a City-designated bike boulevard.

10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)** It is anticipated that implementation of the Project would require the following actions and approvals from regulatory agencies:

    ;

- A Notice of Intent (NOI) to comply with the State Water Board's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, and preparation of a stormwater pollution prevention plan (SWPPP) required for any construction project that disturbs more than one acre of land to be effective until the FMW Site is paved with hardscaping;
- Permits from Alameda County Public Works Agency (ACPWA) for destruction, modification, and installation of wells;
- Permits from East Bay Municipal Utility District (EBMUD) or National Pollution Discharge Elimination System (NPDES) for discharge of treated groundwater to sanitary or storm sewers, as required;
- Permits from Bay Area Air Quality Management District (BAAQMD) for discharges from soil vapor and groundwater treatment systems, as required under Regulation 8, Rule 47 and Regulation 2, Rule 5;
- Permit from BAAQMD for operation of a backup generator as required under Regulation 9, Rule 8;
- Notification of BAAQMD for excavation of soil contaminated with volatile organic compounds (VOCs) at concentrations exceeding 50 parts per million (ppm) as required under Regulation 8, Rule 40;
- Notification to BAAQMD for abatement of asbestos and lead materials on or within the warehouse building, if any, prior to demolition of the warehouse building;
- Permits from Alameda County Department of Environmental Health for treatment of hazardous wastes related to the vapor/groundwater extraction and treatment systems;
- Permits from the City of Emeryville for demolition of the building and excavation of contaminated soils, backfill with clean fill, rough grading/hardscape, and installation of treatment system equipment at the FMW Site; and,
- Permit from the City of Emeryville for Site stormwater design and management in accordance with the requirements of the San Francisco Bay Area Regional Water Quality Board (RWQCB) Municipal Regional Permit (MRP), implemented in November 2014 by Order R2-2015-0049, that have been incorporated in Title 6, Chapter 13 of the City of Emeryville Municipal Code.
- Approval by City of Emeryville of waste management plan in accordance with Chapter 26 of Title 8 of the City of Emeryville Municipal Code.
- Approval of contracts by the Successor Agency to implement the RAP in accordance with the Order.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.? Assembly Bill 52 (AB 52) added Section 21080.3.1 to the Public Resources Code, which requires notification of Native American tribes as part of the CEQA process when a proposed project may affect tribal cultural resources. Once notified, tribal representatives have 30 days to request consultation with DTSC. DTSC then has 30 days from the date of the request to start the consultation process. Lead agencies have the obligation under this law to avoid damaging effects to tribal cultural resources, when feasible, and mitigation measures agreed upon during the AB 52 consultation shall be recommended for inclusion in the CEQA document.

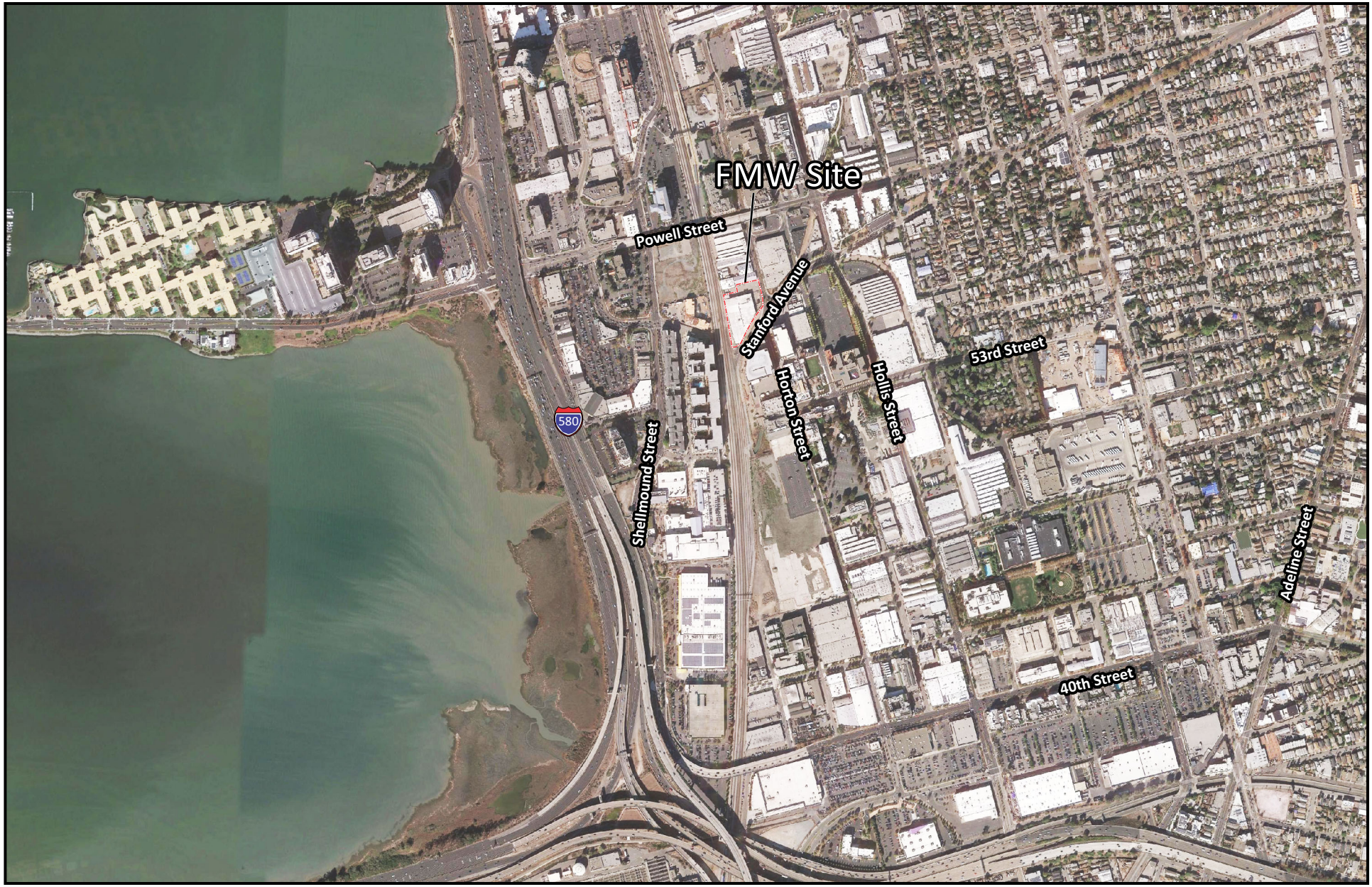
In accordance with AB 52 guidance, the DTSC Office of Environmental Justice and Tribal Affairs Office issued outreach letters for the Project to tribal representatives on 22 November 2016 (see Appendix D). No responses were received within the 30 day period and the DTSC closed the consultation in an email dated 9

January 2017. The DTSC conducted additional outreach to tribal governments[2] in December 2021 and received a response from a representative of the Nototomne Cultural Preservation, who requested a site visit and tribal oversight during ground disturbing activities. The Nototomne Cultural Preservation is a nonprofit organization whose mission is the preservation, education, and protection of the Nototomne Tribe. DTSC's tribal liaison coordinated the site visit, which was held on 3 February 2022 at the FMW Site. During the site visit, the Nototomne Cultural Preservation representatives expressed concerns in regard to a high potential for encountering buried tribal cultural resources (including human remains) within the project site during project-related, ground-disturbing activities and requested tribal monitoring of all ground-disturbing activities. The Successor Agency has agreed to Nototomne Cultural Preservation's request to provide for tribal oversight during ground disturbing activities at the FMW Site as identified in Mitigation Measure CULT-2.

[2] Tribal governments that were sent engagement letters included: (1) Amah Mutsun Tribal Band of Mission San Juan Bautista; (2) Costanoan Rumsen Carmel Tribe; (3) Guidiville Indian Rancheria; (4) Indian Canyon Mutsun Band of Costanoan; (5) Indian Canyon Mutsun Band of Costanoan; (6) Muwekma Ohlone Indian Tribe of the San Francisco Bay Area; (7) North Valley Yokuts Tribe; (8) Rumsen Am:a Tur:ataj Ohlone; (9) Tamien Nation; (10) The Confederated Villages of Lisjan; (11) The Ohlone Indian Tribe, (12) Tule River Indian Tribe, (13) Wilton Rancheria; and (14) Wuksache Indian Tribe/Eshom Valley Band.

Regional Location

Figure 1



Note: Locations are approximate.

Source: EKI, 2022

(Approximate Scale in Feet)

0 1000 2000

Former Marchant/Whitney Site
Emeryville, CA

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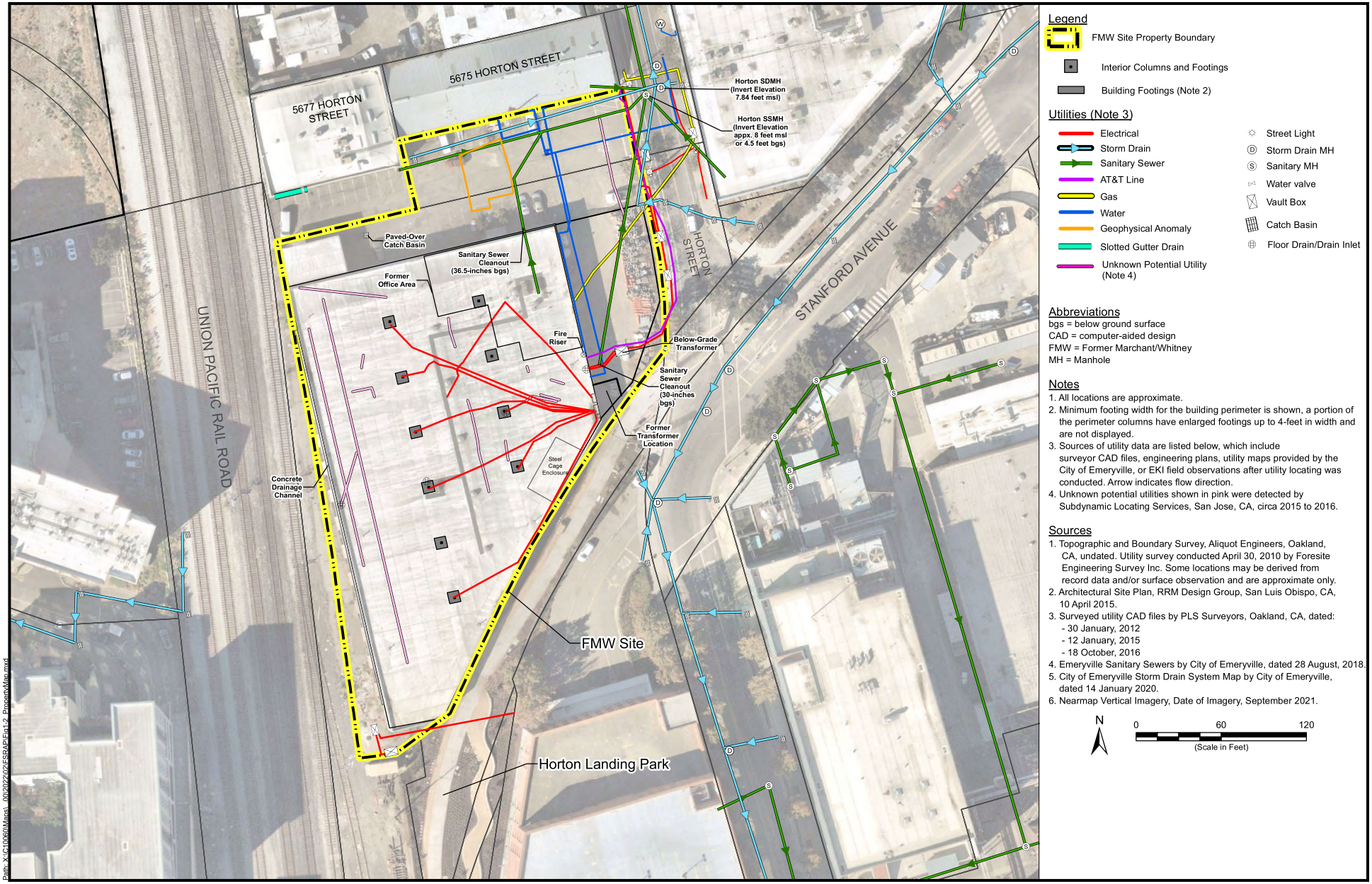
Project Site

Figure 2



Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

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BACKGROUND

This section presents background information for the FMW Site including historical uses, contaminants subject to remediation, and the process employed to select the proposed Project as the preferred remedy for protection of human health and the environment. The background information and illustrations presented below were obtained from the RAP document prepared for the Project, unless indicated otherwise.

Historical Land Uses at and Adjoining the FMW Site

As detailed in the Remedial Investigation (RI) Report,[3] available historical documentation indicated that the historical land uses at the FMW Site prior to the City's use as its corporation yard were:

- Manufacturing facilities of the Marchant Calculating Machine Company (Marchant), an electromechanical calculator manufacturer, during the late-1910's to the late-1950's, and,
- Manufacturing facilities of the Whitney (also Whitey) Research Tool Company (WRTC), a valve manufacturer, during the early/mid-1960's to the late-1990's.

The Marchant facilities on the FMW Site were demolished by 1960. The WRTC manufacturing building was constructed at the FMW Site in the early/mid-1960s based on the architectural drawings dated 14 June 1963 that are on file at the City's building department[4] and historical aerial photographs. The current building on the FMW Site was the WRTC manufacturing building. The front of the building shown on the 1963 architectural drawings has a "Whitey" sign. The WRTC facilities were apparently built over the foundations and floor slabs of the Marchant buildings and facilities (referred to as buried Marchant building features from hereon). As part of the WRTC construction over the Marchant facilities, soil was placed between the old structures and the new slab of the warehouse building. The source(s) of that soil are unknown. Historically, the full extent of the Marchant business occupied other adjacent properties to the north (5675 and 5677 Horton Street), northeast, and east of the FMW Site and the southern end of Horton Street (north of its intersection with Stanford Avenue). A detailed discussion of historical land uses at the FMW Site and vicinity is included in the RI Report[5] and the RAP.

While the City's Public Works Department occupied the FMW Site between 1999 and 2012, the warehouse area of the building was used mainly for storage of gas and diesel-powered vehicles, gas-powered tools, chemical products, and other equipment and materials used for facilities maintenance work. In addition, there was a secured area within the warehouse utilized for evidence storage by the police department. The former office area in the northeast corner of the building contained a few offices, restrooms, locker rooms, break rooms, and additional storage rooms. The former office area and associated facilities were all demolished in October 2013. An outdoor fenced area to the east of the building was mainly used for storage of landscaping materials and vegetation.

Historically, numerous other industrial properties operated in the FMW Site vicinity. Some of these past industrial operations were in the Horton District in Emeryville, an area generally bounded by Shellmound Street to the west, Powell Street to the north, Hollis Street to the east, and Christie Avenue and Stanford Avenue to the south (Figure 3). The FMW Site is located within the Horton District. Site B and the northern area of the South Bayfront Site are

[3] EKI, 2016a, Final Remedial Investigation Report, Former Marchant/Whitney Site, 5679 Horton Street, Emeryville, California, June 30. https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001628&doc_id=60332509

[4] Ibid.

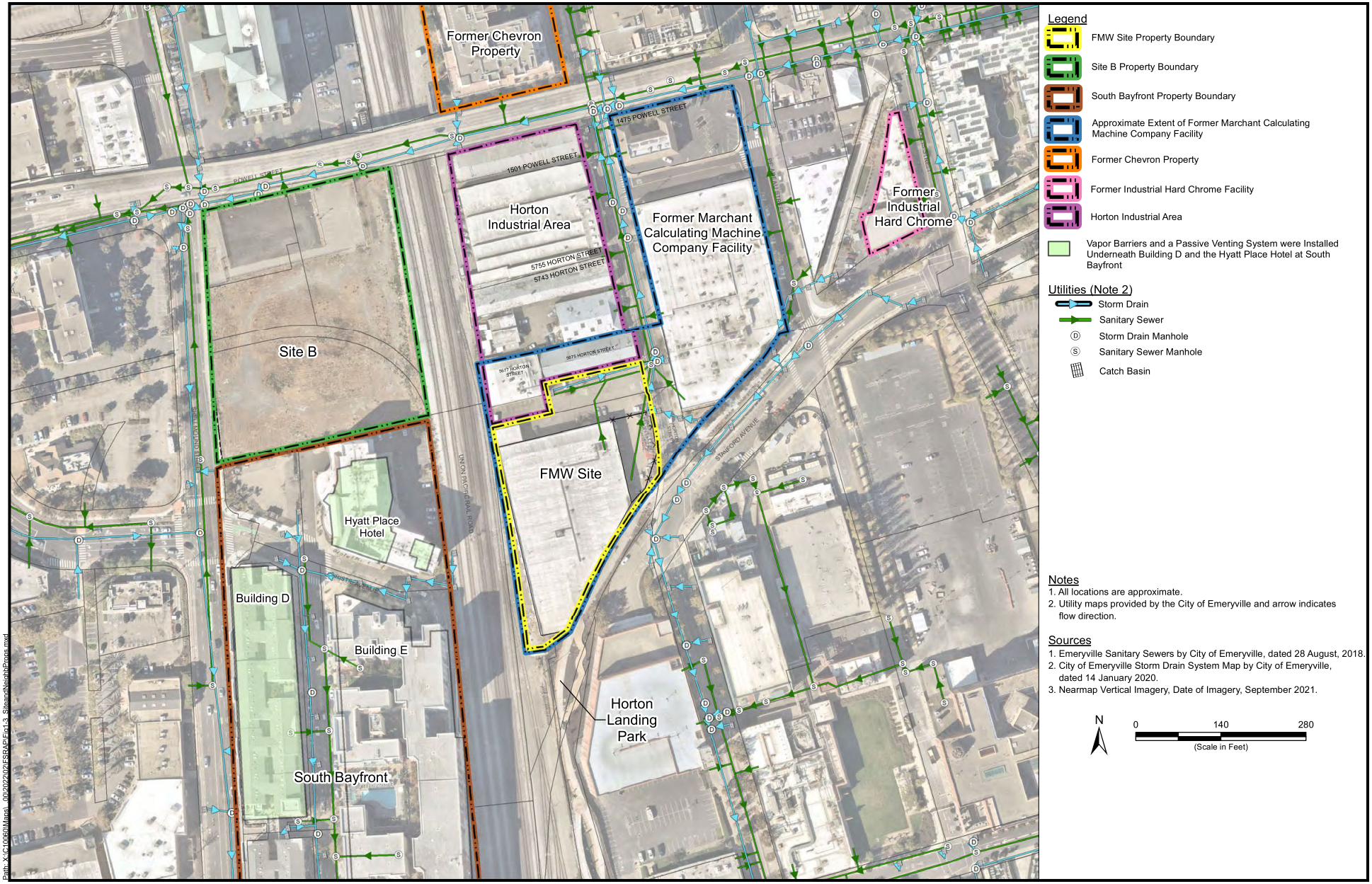
[5] Ibid.

located to the northwest and to the west of the FMW Site, respectively, and are also located within the Horton District.

Past uses at the FMW Site and nearby properties within the Emeryville Horton District have included handling and use of a wide range of hazardous materials. Known and suspected historical hazardous materials chemical releases to soil and/or groundwater have contributed to area-wide groundwater contamination. Releases from the FMW Site have impacted downgradient properties including the southern portion of Site B and the northern portion of the South Bayfront project (Figures 4 and 5).

Project Site and Neighboring Properties

Figure 3



Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

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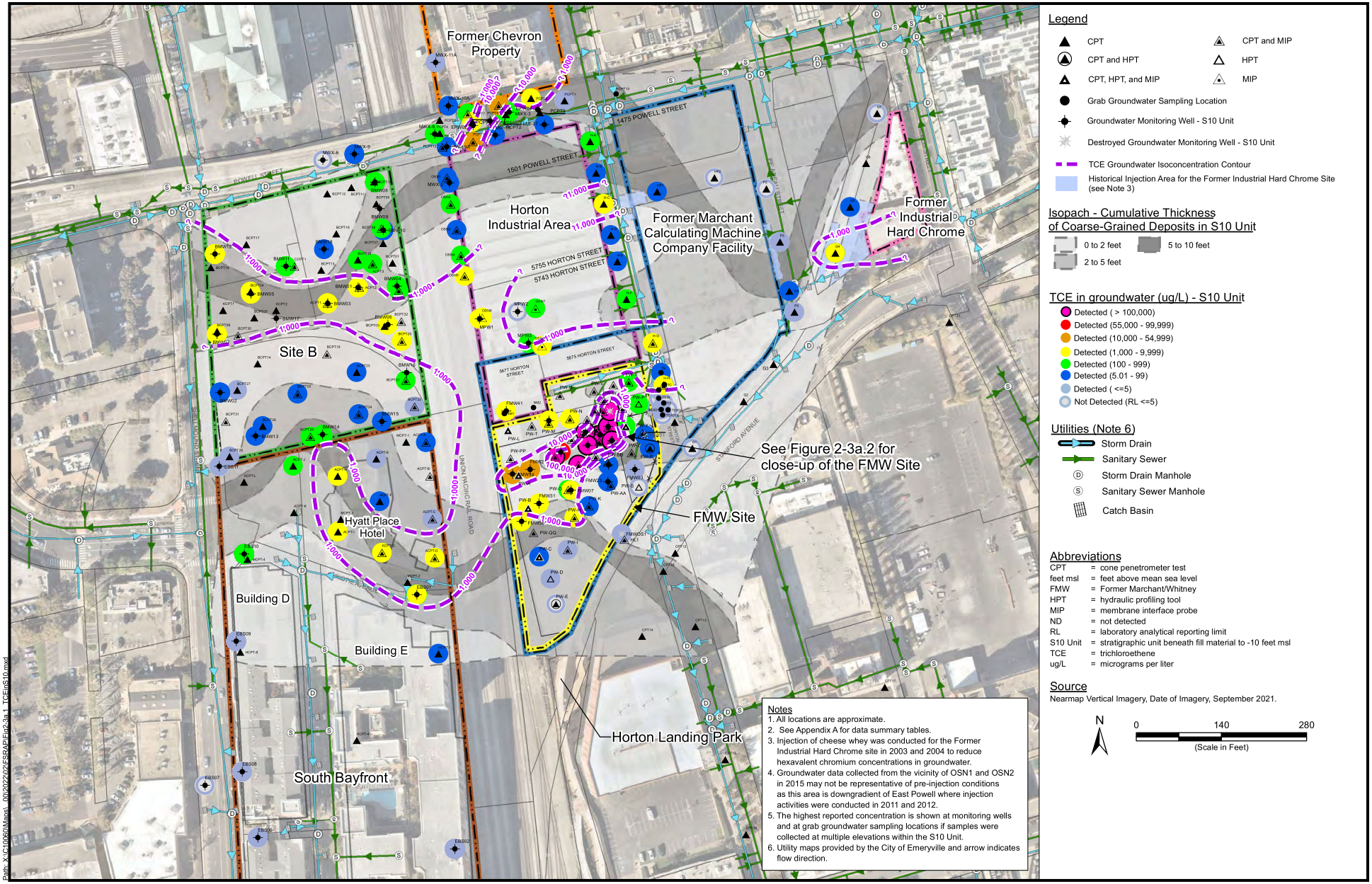
TCE Contamination in Shallow Groundwater (S10 Unit)

Figure 4



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Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

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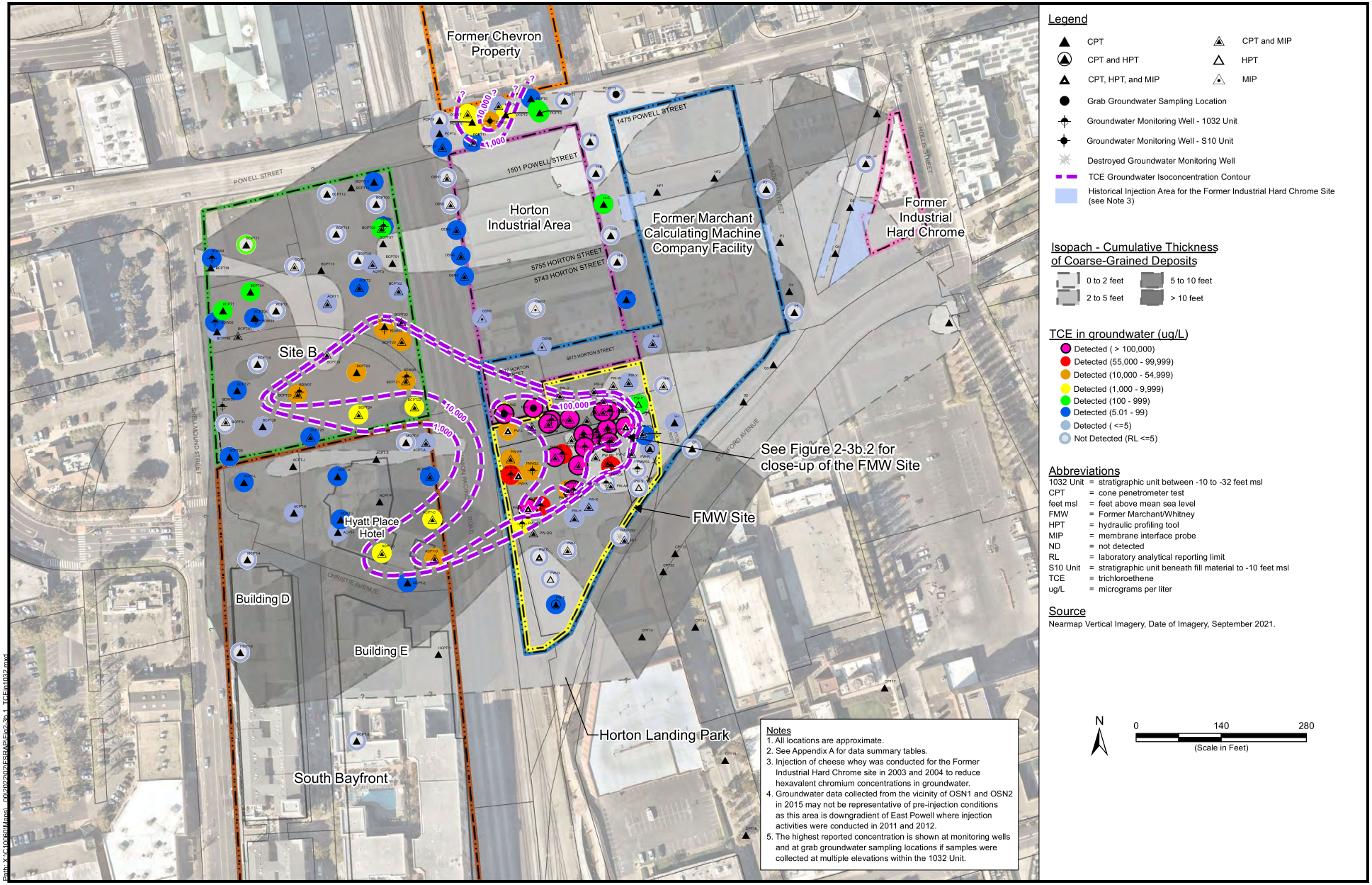
TCE Contamination in Deeper Groundwater (1032 Unit)

Figure 5



Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

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FMW Site Remedial Investigation

An overview of the FMW Site conceptual model is provided below and is based on the remedial investigation results and conclusions reported in the RI Report and additional data collected in 2016 to 2020 (Appendices A-2 and B of the RAP). These additional data were also incorporated into the Updated Human Health Risk Assessment (2021 Updated HHRA)[6]. The findings are summarized below.

Geologic Setting

The subsurface (upper 120 feet of unconsolidated sediments that were investigated) of the FMW Site consist of the following stratigraphic units.

- Buried Marchant Building Features and Historical Import Fill: Historically imported heterogeneous fill soils and building foundations are approximately three to five feet thick. Buried concrete slabs and other structures that are apparently the remnants of the Marchant facilities (buried Marchant building features), are encountered at depths ranging from approximately 0.6 to 2.2 feet below ground surface (bgs) in many locations across the majority of the FMW Site. The historical ad hoc build out of the Former Marchant facility indicates a lack of uniformity and continuity in slabs and foundations of the historical former Marchant facility buildings, which is reflected in the variation of depth, thickness, and hardscape material of buried Marchant building features encountered across the FMW Site;
- S10 Unit (beneath fill material to -10 feet relative to mean sea level (feet msl)): An unconsolidated clayey layer containing sparse, thin, discontinuous sandy and gravelly intervals within a fine-grained matrix with two coarse-grained channels, trending generally east-west, that are located on the northern and southern portion of the Horton District;
- 1032 Unit (-10 to -32 feet msl): A unit that contains thick and prevalent sand and gravel intervals within a finer-grained clayey matrix with two coarse-grained sediment layers within the lower portion of the 1032 Unit (i.e. the 1825 and 2732 Subunits) that appear to have significance with respect to chemical transport in groundwater downgradient of the FMW Site;
- 3243 Unit (-32 to -43 feet msl): A predominantly fine-grained clay-rich unit that is observed across the Horton District; and
- 4360 Unit (-43 to -60 feet msl): A predominantly fine-grained clay-rich unit that is observed across the Horton District.
- 6080 Unit (-60 to -80 feet msl): A predominately fine-grained and clay-rich unit over most of the vertical thickness of the unit at the FMW Site.
- 80110 Unit (-80 to -110 feet msl): The sediments in the upper 15 to 20 feet of the 80110 Unit consist of thick sand and gravel intervals in a finer-grained clayey matrix.

Hydrogeologic Setting

The apparent hydraulic gradient directions vary throughout the area locally but are generally to the southwest in the S10, 1032, 3243 and 4360 Units on the FMW Site proper and at neighboring properties to the immediate west and south of the FMW Site. To the west and north of the FMW Site, the apparent hydraulic gradients are to the west and northwest on Site B. However, the interpreted area wide hydraulic gradient directions do not accurately define

[6] EKI, 2021. Updated Human Health Risk Assessment, 5679 Horton Street, Former Marchant/Whitney Site, Emeryville, California, December 2021.

smaller-scale groundwater flow pathways related to heterogeneous channelization of coarse-grained sediments that influence migration of chemicals of concern (COC) in groundwater, as discussed below.

As discussed in the RI Report, the capillary fringe at the FMW Site is approximately 3 to 8 feet bgs and is essentially an extension of the saturated zone. The shallowest depth to the top of the groundwater table measured at the FMW Site in wells screened within the S10 Unit is approximately 5 feet bgs.

Nature and Extent of Contamination

The predominant COC detected at the FMW Site is trichloroethene (TCE). TCE is a human carcinogen and also poses non-carcinogenic effects such as immunotoxicity and fetal heart malformations.[7] Other COCs include other volatile organic compounds (VOCs), cadmium, and total extractable petroleum hydrocarbons (TEPH). Other COCs at the FMW Site that are human carcinogens or probable human carcinogens include vinyl chloride, benzene, and cadmium.[8] TEPH is a complex mixture of chemicals and some chemicals in this mixture can result in potential carcinogenic risks and non-carcinogenic hazards.

- TCE: Concentrations of TCE in groundwater at the FMW Site are up to 5 orders of magnitude greater than drinking water standards and the highest concentrations of TCE were detected in the 1032 Unit. Deepest significant impacts (TCE > 1,000 ug/L) are at monitoring well location FMW33 and extend to a depth of approximately 58 feet bgs. Residual separate phase liquid (SPL) was recovered from within the S10 and 1032 Units on the FMW Site. TCE and petroleum hydrocarbons with the characteristics of cutting oil were predominantly detected in the SPL in varying proportions. Subsurface vapor concentrations of TCE at the FMW Site are up to 3 orders of magnitude greater than applicable screening criteria in sub-slab vapor (between the building slab and the buried Marchant building features) and up to 4 orders of magnitude greater than applicable screening criteria in deeper soil vapor (below the buried Marchant building features at depths of approximately 3 to 5 feet below ground surface [bgs]). Indoor air concentrations of TCE were also detected in the building on the FMW Site at concentrations greater than applicable screening criteria.

  TCE-impacted groundwater, soil, deeper soil vapor, and sub-slab vapor are located primarily on the northern half of the FMW Site. The southern portion of the FMW Site is not impacted as significantly by releases to soil or groundwater, and the impacts appear to be limited to sub-slab vapor and deeper soil vapor. TCE-impacted groundwater extends to the west of the FMW Site onto the northern area of the South Bayfront site and the southern portion of Site B, primarily in the S10 and 1032 Units (Figures 4 and 5).

- Cadmium: Cadmium was detected at concentrations ranging from 3.29 to 351 milligrams per kilogram (mg/kg) dry weight. Detected concentrations of cadmium were below the commercial/industrial and construction worker screening criteria of 100 mg/kg and 51 mg/kg, respectively, with the exception of the highest detected concentration of cadmium (351 mg/kg in sample FSB16-3.5-4). Detected concentrations of cadmium exceeded the residential screening criterion of 7.1 mg/kg at 7 locations. As discussed in Section 2.4.5 of the Updated 2021 HHRA, this highest concentration of cadmium detected in soil is co-located with well FMW11 where cadmium also exceeded its maximum contaminant level (MCL) in groundwater. Therefore, cadmium is considered a COC for the FMW Site.

- TEPH: TEPH concentrations across all soil sampling depths ranged from not detected to 6,590 mg/kg. The highest concentrations of TEPH were detected in the area of the northeast corner of the warehouse building (where SPL was observed in soil samples from the top of the water table) and in soils beneath the southern

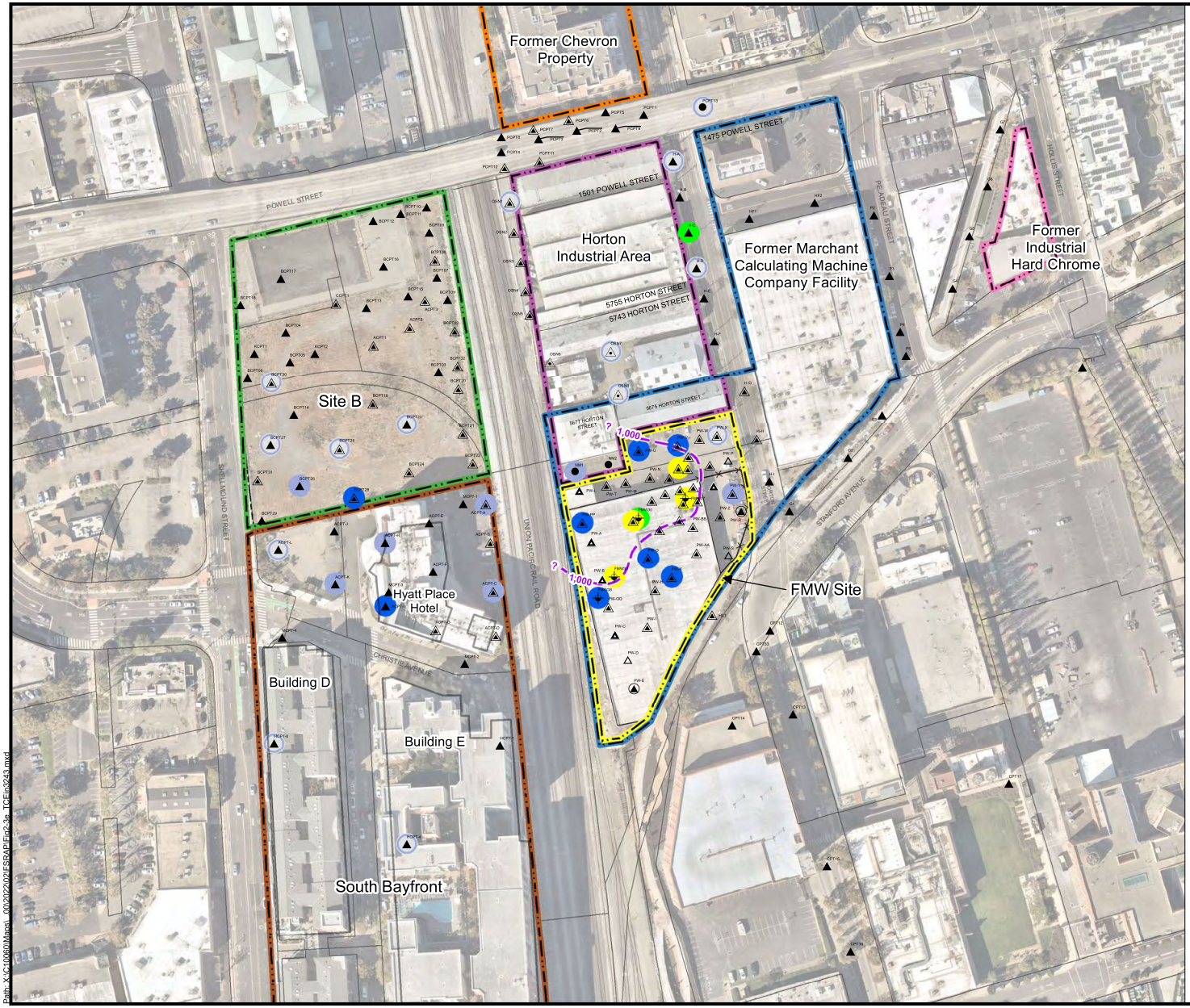
[7] Ibid.

[8] Ibid.

portion of the building. Across the FMW Site, within fills soils located between the building slab and the buried Marchant building features, TEPH concentrations ranged from 22.3 to 5,870 mg/kg (at SV36 at the southern portion of the building).

TCE Contamination in Deeper Groundwater (3243 Unit)

Figure 6



Legend

- CPT
- CPT and HPT
- CPT, HPT, and MIP
- CPT and MIP
- HPT
- MIP
- Grab Groundwater Sampling Location
- Groundwater Monitoring Well - 3243 Unit
- Destroyed Groundwater Monitoring Well
- TCE Groundwater Isoconcentration Contour

TCE in groundwater (ug/L)

- Detected (> 100,000)
- Detected (55,000 - 99,999)
- Detected (10,000 - 54,999)
- Detected (1,000 - 9,999)
- Detected (100 - 999)
- Detected (5.01 - 99)
- Detected (<=5)
- Not Detected (RL <=5)

Abbreviations

3243 Unit	=	stratigraphic unit between -32 to -43 feet msl
CPT	=	cone penetrometer test
feet msl	=	feet above mean sea level
FMW	=	Former Marchant/Whitney
HPT	=	hydraulic profiling tool
MIP	=	membrane interface probe
ND	=	not detected
RL	=	laboratory analytical reporting limit
TCE	=	trichloroethene
ug/L	=	micrograms per liter

Notes

1. All locations are approximate.
2. See Appendix A for data summary tables.
3. Groundwater data collected from the vicinity of OSN1 and OSN2 in 2015 may not be representative of pre-injection conditions as this area is downgradient of East Powell where injection activities were conducted in 2011 and 2012.
4. The highest reported concentration is shown at monitoring wells and at grab groundwater sampling locations if samples were collected at multiple elevations within the 3243 Unit.

Source

Nearmap Vertical Imagery, Date of Imagery, September 2021.

N

0 140 280

(Scale in Feet)

Path: X:\G\10060\Maps\...\00\20220202\ESRAP\Fig2-3a_TCEin3243.mxd

Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

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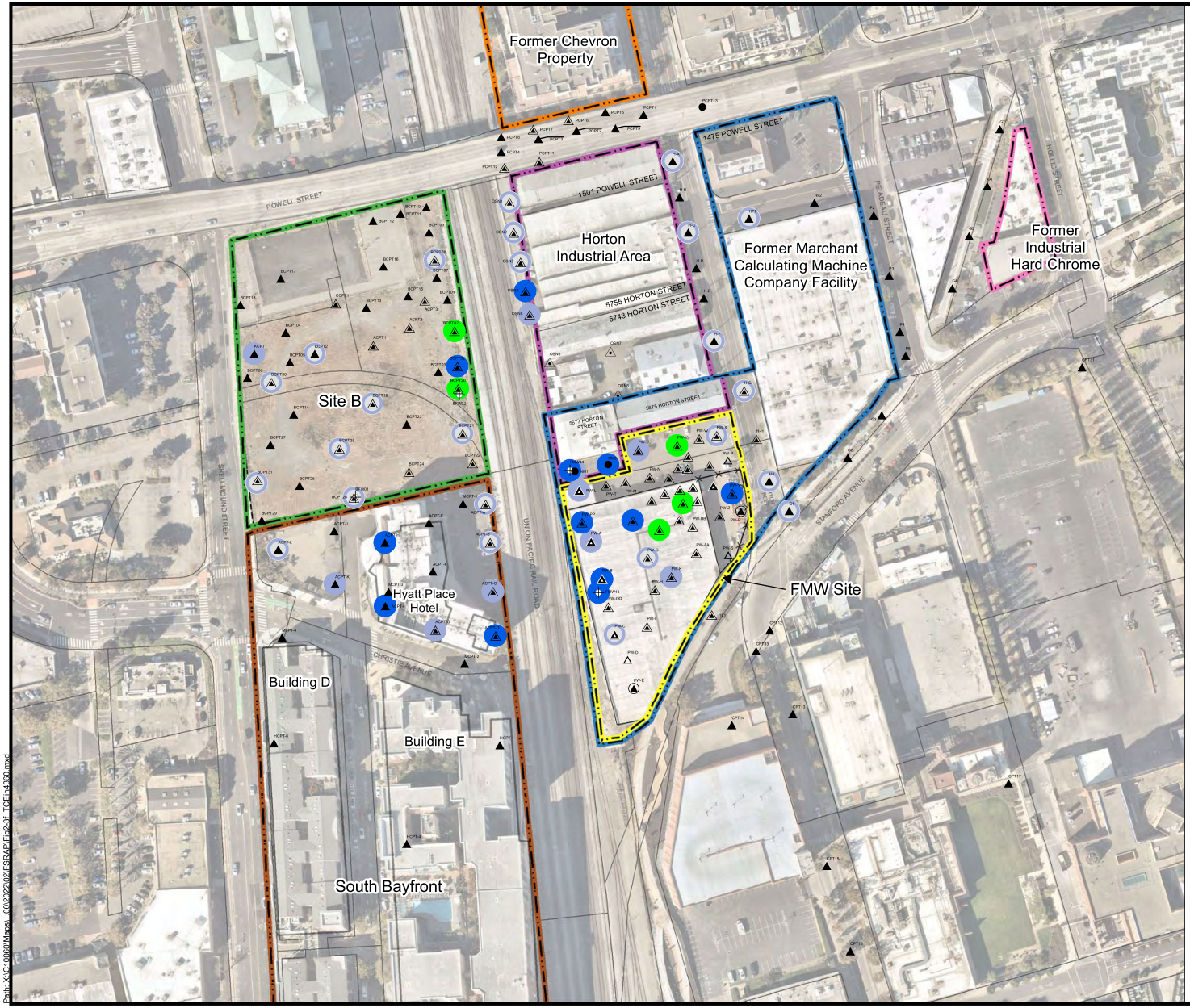
TCE Contamination in Deeper Groundwater (4360 Unit)

Figure 7



Legend

- CPT
- CPT and HPT
- CPT, HPT, and MIP
- CPT and MIP
- HPT
- MIP
- Grab Groundwater Sampling Location
- Groundwater Monitoring Well - 4360 Unit

TCE in groundwater (ug/L)

- Detected (> 100,000)
- Detected (55,000 - 99,999)
- Detected (10,000 - 54,999)
- Detected (1,000 - 9,999)
- Detected (100 - 999)
- Detected (5.01 - 99)
- Detected (<=5)
- Not Detected (RL <=5)

Abbreviations

4360 Unit	=	stratigraphic unit between -43 to -60 feet msl
CPT	=	cone penetrometer test
feet msl	=	feet above mean sea level
FMW	=	Former Marchant/Whitney
HPT	=	hydraulic profiling tool
MIP	=	membrane interface probe
ND	=	not detected
RL	=	laboratory analytical reporting limit
TCE	=	trichloroethene
ug/L	=	micrograms per liter

Notes

1. All locations are approximate.
2. See Appendix A for data summary tables.
3. The highest reported concentration is shown at monitoring wells and at grab groundwater sampling locations if samples were collected at multiple elevations within the 4360 Unit.

Source

Nearmap Vertical Imagery, Date of Imagery, September 2021.

N

0 140 280

(Scale in Feet)

Path: X:\G1\0060\Maps_00\20220202\ESRAPDF\ap2-3f_TCEin4360.mxd

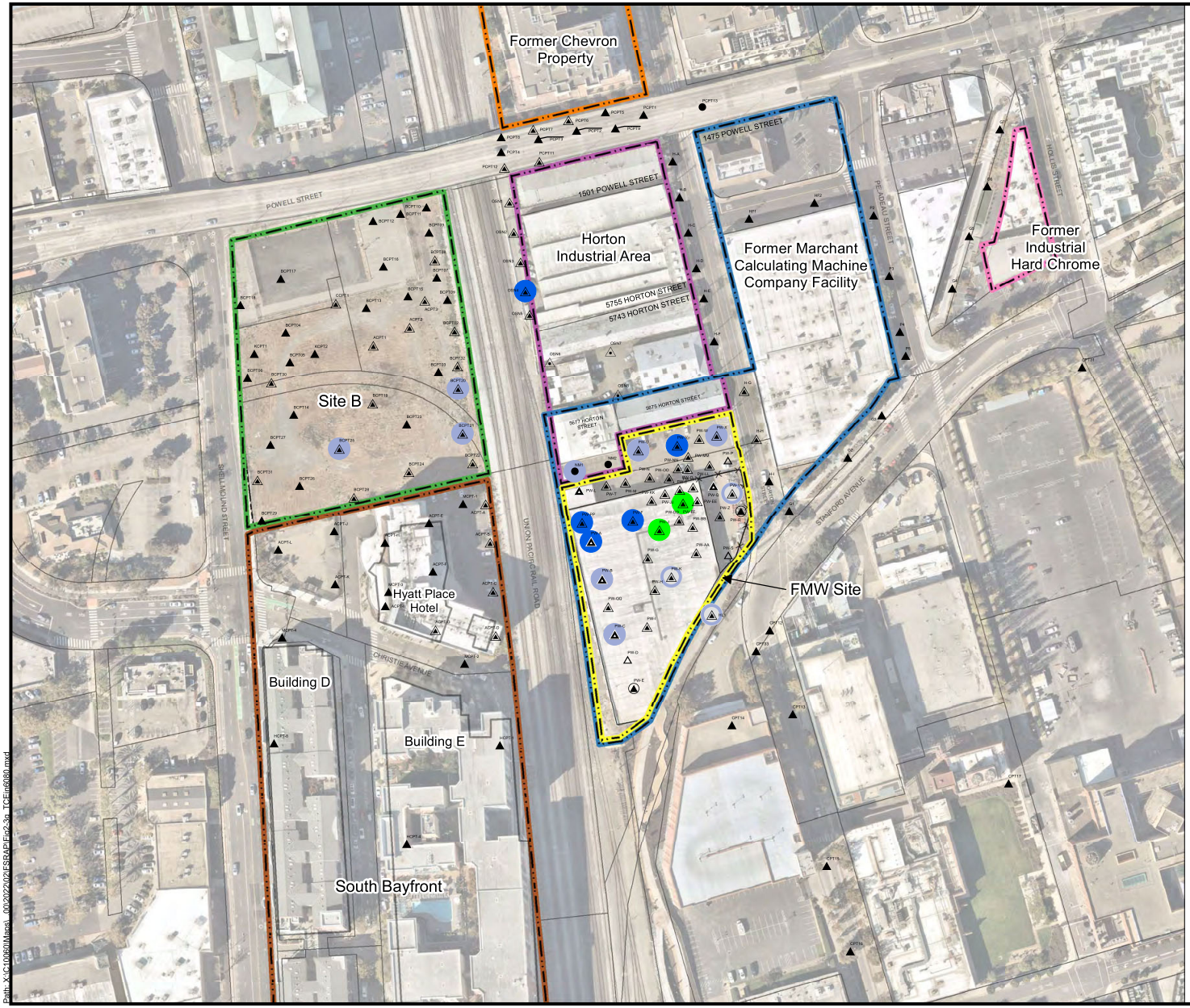
Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

BASELINE ENVIRONMENTAL CONSULTING

TCE Contamination in Deeper Groundwater (6080 Unit)

Figure 8



Legend

- CPT
- CPT and HPT
- CPT, HPT, and MIP
- CPT and MIP
- HPT
- MIP
- Grab Groundwater Sampling Location

TCE in groundwater (ug/L)

- Detected (> 100,000)
- Detected (55,000 - 99,999)
- Detected (10,000 - 54,999)
- Detected (1,000 - 9,999)
- Detected (100 - 999)
- Detected (5.01 - 99)
- Detected (<=5)
- Not Detected (RL <=5)

Abbreviations

6080 Unit	=	stratigraphic unit between -60 to -80 feet msl
CPT	=	cone penetrometer test
feet msl	=	feet above mean sea level
FMW	=	Former Marchant/Whitney
HPT	=	hydraulic profiling tool
MIP	=	membrane interface probe
ND	=	not detected
RL	=	laboratory analytical reporting limit
TCE	=	trichloroethene
ug/L	=	micrograms per liter

Notes

1. All locations are approximate.
2. See Appendix A for data summary tables.
3. The highest reported concentration is shown at monitoring wells and at grab groundwater sampling locations if samples were collected at multiple elevations within the 6080 Unit.

Source

Nearmap Vertical Imagery, Date of Imagery, September 2021.

N

0 140 280

(Scale in Feet)

Path: X:\G1\0063\Maps_00\20220202\ESRAPDF\ip2-3p_TCEin6080.mxd

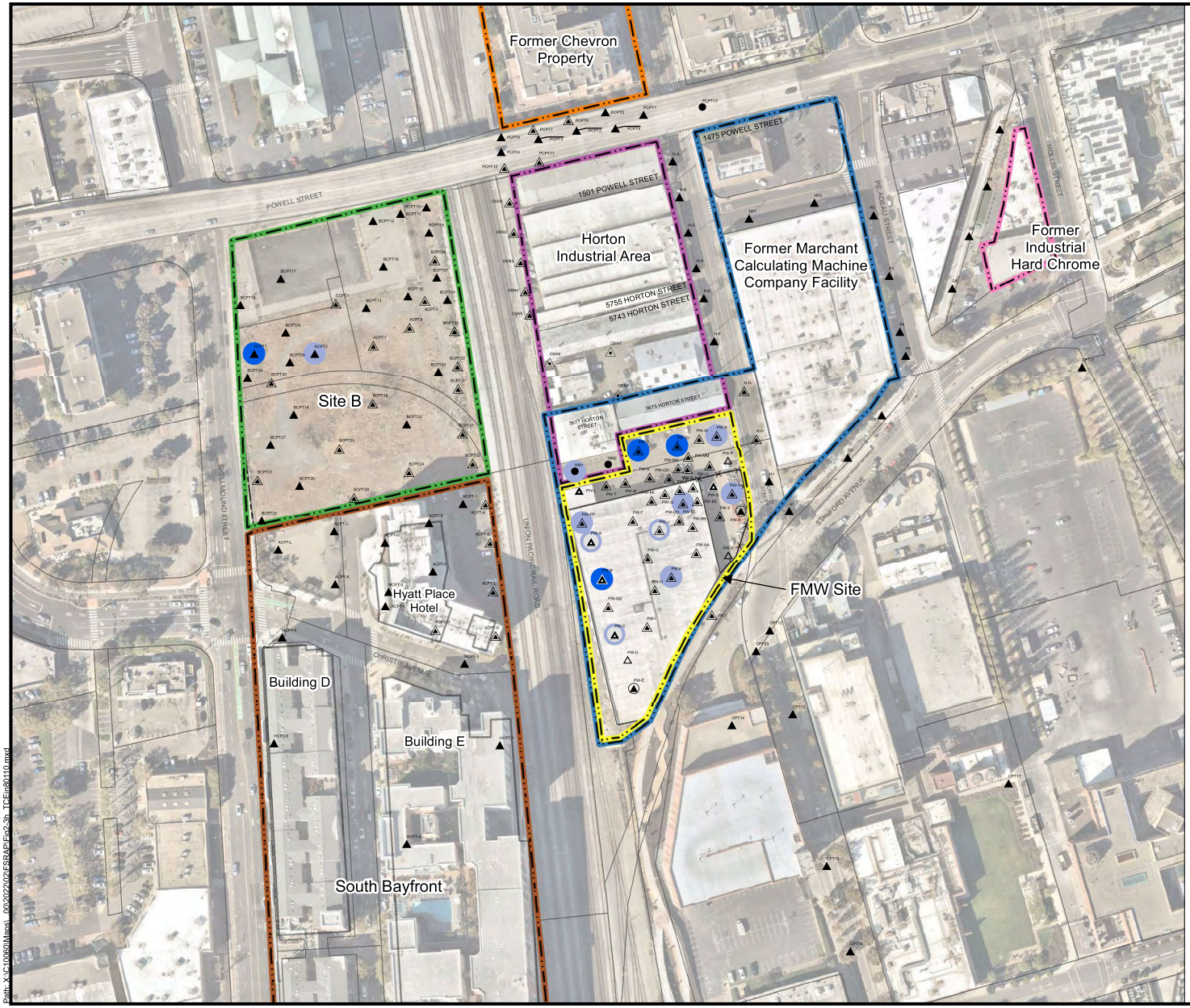
Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

BASELINE ENVIRONMENTAL CONSULTING

TCE Contamination in Deeper Groundwater (80110 Unit)

Figure 9



Legend

- CPT
- CPT and HPT
- CPT, HPT, and MIP
- CPT and MIP
- HPT
- MIP
- Grab Groundwater Sampling Location

TCE in groundwater (ug/L)

- Detected (> 100,000)
- Detected (55,000 - 99,999)
- Detected (10,000 - 54,999)
- Detected (1,000 - 9,999)
- Detected (100 - 999)
- Detected (5.01 - 99)
- Detected (<=5)
- Not Detected (RL <=5)

Abbreviations

80110 Unit	=	stratigraphic unit between -80 to -110 feet msl
CPT	=	cone penetrometer test
feet msl	=	feet above mean sea level
FMW	=	Former Marchant/Whitney
HPT	=	hydraulic profiling tool
MIP	=	membrane interface probe
ND	=	not detected
RL	=	laboratory analytical reporting limit
TCE	=	trichloroethene
ug/L	=	micrograms per liter

Notes

1. All locations are approximate.
2. See Appendix A for data summary tables.
3. The highest reported concentration is shown at monitoring wells and at grab groundwater sampling locations if samples were collected at multiple elevations within the 80110 Unit.

Source

Nearmap Vertical Imagery, Date of Imagery, September 2021.

N

0 140 280

(Scale in Feet)

Path: X:\G1\0060\Maps_00\20220202\ESRAPDF\ip2-3h_TCEin80110.mxd

Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

BASELINE ENVIRONMENTAL CONSULTING

Summary of Human Health Risk Assessment (HHRA) and Updated HHRA

The 2021 Updated HHRA provided a quantitative assessment of the potential hypothetical risks to human health due to potential exposure to COCs at the FMW Site for three potential future land use scenarios that are consistent with the range of urban land uses present in the area surrounding the FMW Site: (1) commercial/industrial, (2) urban residential, and (3) park/open space. COCs identified in the HHRA include cadmium, TEPH, and VOCs.

The results of the 2021 Updated HHRA indicate that: (1) there are unacceptable risks posed to potential future users of the FMW Site and construction workers due to the presence of contaminants in the subsurface and (2) the FMW Site is not appropriate for potential future uses and associated potential receptors without the implementation of risk mitigation measures, including remediation and risk management practices. These measures would need to be undertaken to achieve acceptable risk levels for potential future uses under current regulatory guidance.

The 2021 Updated HHRA also developed human health risk-based indoor air, sub-slab vapor, and soil vapor remedial goals for the protection of likely potential future receptors (e.g., industrial/commercial workers, urban residents, or park/open space users) based on potential future uses for the FMW Site compatible with the range of land uses in the area surrounding the FMW Site. Remedial goals were calculated for all VOCs that have been detected at least once in indoor air, sub-slab vapor, or soil vapor samples collected from the FMW Site, based on a target risk of 10^{-6} for carcinogens and a hazard index (HI) of 1 for non-carcinogens.

REMEDIAL ACTION OBJECTIVES AND REMEDIAL GOALS

The remedial action objectives (RAOs) for the FMW Site were developed to address protection of human health and the environment and are presented below.

- Mitigate or reduce potential on-site direct human exposure to COCs to levels that are considered protective of human health based on plausible exposure scenarios for the FMW Site.
- Reduce concentrations of COCs in groundwater to levels suitable for beneficial use.
- Limit off-site migration of COCs in groundwater and soil vapor from source(s) on the FMW Site.
- Investigate off-site preferential pathways of COCs migrating from the FMW Site source areas.

Remedial goals for the FMW Site are developed as benchmarks for aiding evaluation of the effectiveness of alternatives in meeting RAOs. The development patterns in the surrounding area of the FMW Site consist of : (a) urban residential/hotel land use with no exposed native soils and (b) a mixture of industrial/commercial and/or urban residential land use, and (c) park/open space land use. Remedial goals were developed and adopted for this range of land uses for protection of human health due to volatilization of VOCs and due to exposure to petroleum hydrocarbons and cadmium and for protection of groundwater.

PROPOSED PROJECT

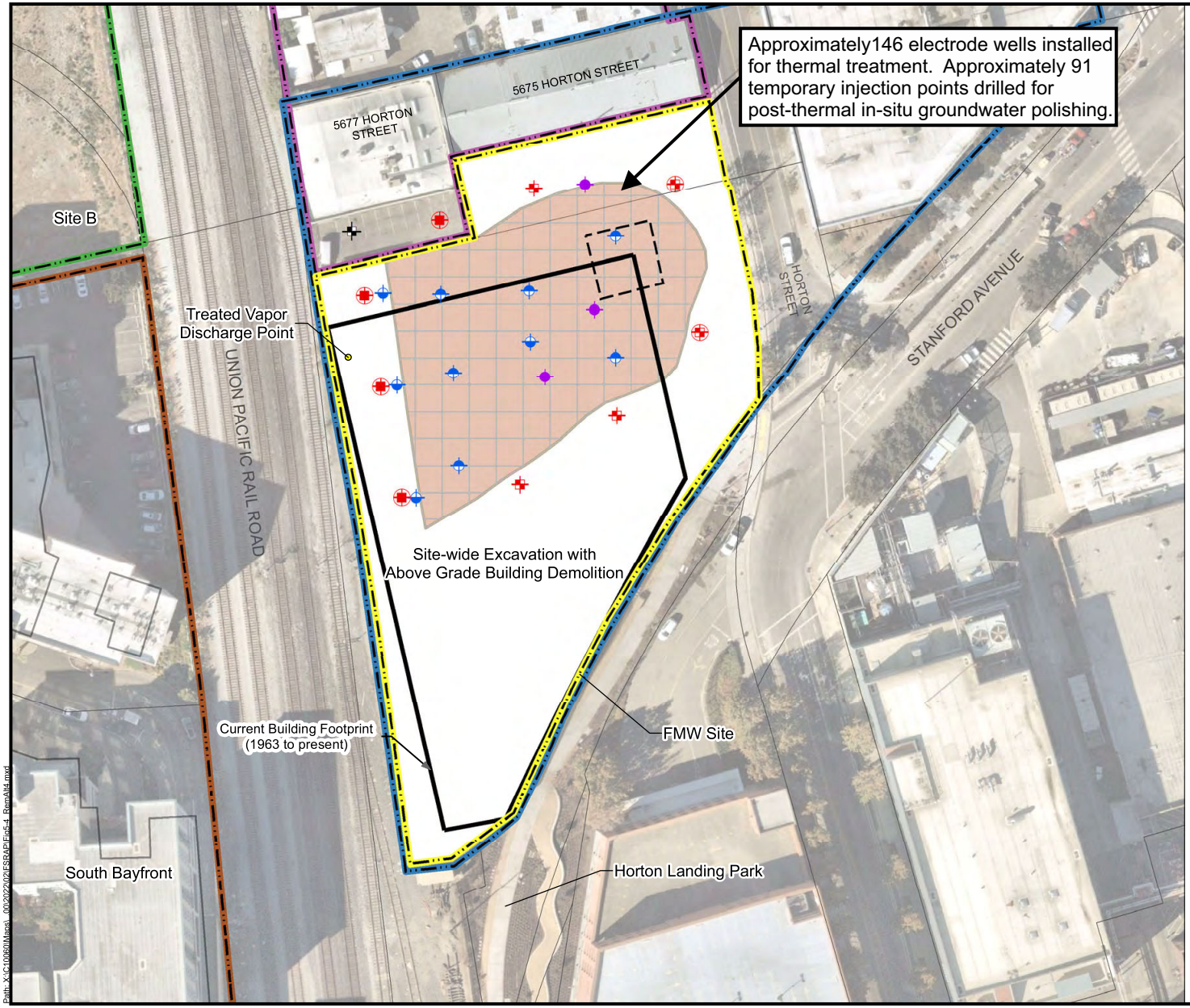
The project being evaluated under CEQA consists of the proposed actions necessary to implement the RAP. The CEQA analysis evaluates the potential environmental impacts that may occur during the remediation process.

Proposed Remedial Actions

Elements of the Project are illustrated on Figure 10 and are described below. The specific sequencing of individual actions would be evaluated during development of the Remedial Design and Implementation Plan (RDIP), described in more detail below.

Conceptual Schematic of Remedial Project

Figure 10



Legend

- Former Chevron Asphalt Plant
- Former Industrial Hard Chrome
- Former Marchant Calculating Machine Company Facility
- Horton Industrial Area
- Site B
- Site A (South Bayfront)
- (A) Thermal Treatment with MPE Area and (B) Post-Thermal In-situ Polishing with MPE Area in the S10, 1032, and 3243 Units
- Proposed soil excavation to 5 feet bgs within property boundary
- Proposed soil excavation to 10 feet bgs
- Well for Post-Thermal In-Situ Polishing in the 4360 Unit

Conceptual MPE Well Layout (Note 2)

- During Thermal - S10 & 1032 Units
- During and After ISTR Extraction - S10 & 1032 Units
- During and After ISTR Extraction - S10, 1032, & 3243 Units

Conceptual Groundwater Monitoring Well Layout

- Post-Thermal - S10, 1032, & 3243 Units
- 4360, 6080, & 80110 Units

Existing Groundwater Monitoring Wells

- Existing Well Cluster in the S10, 1032, and 4360 units

Abbreviations

BAAQMD	=	Bay Area Air Quality Management District
bgs	=	below ground surface
ft msl	=	feet above mean sea level
FMW	=	Former Marchant/Whitney
ISTR	=	in-situ thermal remediation
MPE	=	multi-phase extraction
S10 Unit	=	stratigraphic unit beneath fill material to -10 ft msl
1032 Unit	=	stratigraphic unit between -10 to -32 ft msl
3243 Unit	=	stratigraphic unit between -32 to -43 ft msl
4360 Unit	=	stratigraphic unit between -43 to -60 ft msl

Notes

1. All locations are approximate.
2. Configuration of actual MPE system during and after thermal treatment may consist of a combination of vertical extraction wells and/or horizontal extraction wells and/or shallow trenches. During thermal treatment, conveyance piping wouldl be above ground. Post-thermal treatment conveyance piping would be below ground and configuration to be determined.
3. Long-term indoor air vapor control system for any inhabited structures constructed to be protective for intended use. Treatment system for discharges may be required per a BAAQMD permit.
4. After completion of soil excavation, site would be covered with hardscape.

N

0 60 120

(Scale in Feet)

Source: EKI, 2022

Former Marchant/Whitney Site
Emeryville, CA

BASELINE ENVIRONMENTAL CONSULTING

21211-00 Figures.cdr 8/30/22

Short-Term Actions

1. Above Grade Building Demolition and Soil Excavation.

The proposed remedy includes above grade building demolition and soil excavation. Soil excavation would be performed within: (a) the upper 5 feet bgs (i.e., the unsaturated zone) across the FMW Site based on proposed soil and soil vapor remedial goals that are compatible with the range of land uses present in the area surrounding the FMW Site and (b) 5 to 10 feet bgs within an approximately 1,600 square foot area in the vicinity of the northeast corner of the existing building where SPL was encountered at approximately 8.5 to 9 feet bgs (Figure 10). Subsurface features (e.g., foundation footings and buried Marchant building features) that might be encountered that extend below 5 feet bgs would be fully removed. The soil excavation activities in the 1,600 square foot area with more elevated VOC concentrations in soil and SPL would be conducted in a tented structure in accordance with a DTSC approved Remedial Design and Implementation Plan (RDIP).

The tent structure that would be used to enclose the excavation activities during removal of soil containing SPL near the northeast corner of the existing building may also be used to enclose other excavation activities if perimeter air monitoring indicates that other vapor control measures are not adequately controlling vapor emissions. The interior of the tent structure would be high enough to allow for soil removal with heavy equipment. During excavation activities inside of the tent, excavated soil would be directly loaded into covered bins within the tent. The tent structures would be ventilated and kept under negative pressure during active work hours. The ventilation systems would be designed to achieve the appropriate air exchange necessary for worker safety, and a filtration system would be connected to the exhaust end of the ventilation blower system to remove particulates and VOCs.

Stormwater runoff from the FMW Site during demolition, excavation, and thermal treatment (discussed below) would be managed in accordance with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity, Water Quality Order 2009-0009-DWQ amended by 2010-0014-DWQ and 2012-006-DWQ (Construction General Permit) issued by the State Water Resources Control Board (SWRCB).

It is anticipated that demolition of the building would generate 1,400 tons of building debris and asphalt, 370 cubic yards of above grade concrete debris, and 1,630 cubic yards of below grade concrete debris (e.g., floor slab and buried Marchant building features), which would be recycled locally or disposed of at either a municipal landfill or a Class II non-hazardous waste landfill. Approximately 27,200 tons of soil would be excavated from the FMW site and transported to either a Class I hazardous waste or a Class II non-hazardous waste landfills (it is likely that some soils would go to each type of landfill) pending final characterization of excavated soil. The landfills chosen for soil disposal, and the quantities transported, would depend on Site conditions and the concentrations of COCs present in the excavated soils. Based on existing data it is estimated that approximately half of soil excavated for the Project (approximately 13,500 tons) would be disposed of as non-Resource Conservation and Recovery Act (RCRA) hazardous waste and approximately 2,300 tons of soil would be disposed of as RCRA hazardous waste at a Class I hazardous waste landfill, such as the Waste Management Kettleman Hills facility in Kettleman City, California. Approximately 10,700 tons of soil is considered likely to be eligible for disposal at a Class II non-hazardous waste landfill, such as the Recology Hay Road in Vacaville, California. It is estimated that 700 tons of soil would require disposal as RCRA hazardous waste through incineration at a facility such as the CleanHarbors Argonite Incineration Facility in Utah.

It is estimated that approximately 27,200 tons of clean, imported fill would be transported to the FMW Site to backfill excavations, along with 1,400 cubic yards of asphalt or concrete paving material.

If excavation dewatering from within the excavation the deeper excavation pit is required, water could be treated on-site, if needed, prior to disposal at the EBMUD water treatment facility via truck or discharged to sanitary sewer under an EBMUD permit or transported by truck to an off-site permitted treatment and/or disposal facility.

The building demolition phase of the Project would last for approximately 2 months. It is assumed that various pieces of heavy equipment, such as a demolition excavator and a bulldozer, would be used during building demolition. During building demolition, it is estimated that 20 vehicle trips for workers and up to 40 truck trips per day would be required for the transport of demolition debris off-site. The soil excavation phase of the Project would last for approximately 4 to 10 months. It is assumed that various pieces of heavy equipment, such as an excavator, back hoe and a bulldozer, would be used during soil excavation. During the soil excavation, it is estimated that 40 vehicle trips per day for workers and up to 160 truck trips per day would be required for the transport of excavated soils off-site to a permitted disposal facility and the import of clean backfill material. After completion of demolition, excavation, and backfilling activities, the thermal treatment and multi-phase extraction (MPE) phase of the Project (discussed below) would require far fewer workers and truck vehicle trips than during the other phases of the remediation (e.g. approximately 10 daily workers and up to 100 truck trips in total).

2. Thermal Treatment with MPE.

Thermal treatment of unsaturated and saturated soil and groundwater would remove significant contaminant mass in an area of approximately 25,000 square feet (i.e. approximately to the 5 mg/L TCE groundwater concentration contour while maintaining a 50 foot set back from the railroad tracks and maintaining driveway access to the FMW Site and adjacent properties) (Figure 10). For the purposes of the FS/DRAP, it was anticipated that electrical resistance heating (ERH) would likely be used for thermal treatment. Approximately 146 electrode wells (10- to 12-inch diameter) would be installed using a drill rig(s) at approximately 15 foot spacing and would remove VOCs by vaporizing VOCs from soil, groundwater, and SPL. The total depth of thermal treatment would be approximately 49 feet bgs. The vapor and steam generated would be recovered using MPE and treated aboveground using GAC and advanced oxidation, if needed, and discharged per a BAAQMD permit. MPE would also be used for hydraulic and vapor control to maximize the efficiency of thermal treatment and to prevent migration of VOCs outside the thermal treatment area. The MPE system may consist of a combination of vertical extraction wells and/or horizontal extraction wells and/or shallow trenches. Extracted groundwater would be treated aboveground likely using air stripping, GAC, and/or advanced oxidation for VOCs and advanced filtration such as RO or ion-exchange for metals, if needed based on discharge location, and discharged under an EBMUD permit to the sanitary sewer and/or a NPDES permit to the storm drain. Appendix F includes example diagrams of MPE wells and treatment system from The Work Plan for Multi-Phase Extraction Pilot Tests (MPE Pilot Test Work Plan)[9] and photographs of thermal and MPE treatment equipment at similar sites. Removal of significant VOC mass via thermal treatment would allow for other cost-effective remedial technologies to address residual contamination.

Prior to implementation of full-scale thermal treatment activities, an RDIP would be prepared and submitted to DTSC for review and approval. The RDIP would include plans for implementing and for employing safety measures during thermal treatment activities to protect human health and the environment such as: 1)

[9] EKI Environment & Water, Inc. (EKI), 2022, Work Plan for Multi-Phase Extraction Pilot Tests, Former Marchant/Whitney Site, 5679 Horton Street, Emeryville, California, March 2022. (https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001628&doc_id=60517977)

Health and Safety Plan, 2) Work Plan for Probe/Well Installation, 3) Operation & Maintenance Plan (OMP) for Thermal Treatment with MPE System, 4) Sampling and Analysis Plan, and 5) Quality Assurance Project Plan.

Installation of the thermal treatment and MPE system is anticipated to take 6 to 12 months, and would require drill rig(s) for installation of electrode wells that would be connected using above-grade piping and cables. Any electrode wells located with areas potentially affecting site access would be connected using below-grade piping and cables. An upgraded power supply would be installed by the local utility company to supply the electricity required to power the thermal treatment system. During installation, it is estimated that approximately 10 daily workers would access the site and 100 truck trips in total would be used to mobilize/demobilize equipment and dispose of drilling cuttings at an off-site permitted disposal facility. Only one worker would be required to operate and maintain the system, and it is estimated that one truck trip would be required each 90 days to dispose of GAC during operation of the thermal treatment and MPE system, which is expected to last approximately one year.

3. Site Reconstruction

Following the completion of thermal treatment and a subsurface cool down period, the FMW Site would be paved with concrete or asphalt hardscape to limit surface water infiltration. The design and maintenance of post hardscaping stormwater management and control systems at the FMW Site would be subject to the MRP, under Order R2-2015-0049.[10] The design for the post-excavation pre-redevelopment hardscape and other surface coverings would be included in the RDIP. The installation of paving is anticipated to take approximately 20 days, and require 8 workers and up to 32 truck trips for delivery of paving materials per day.

Long-Term Actions

1. Land Use and Excavation Restrictions.

A Land Use Covenant (LUC) would be implemented after the initial remedial activities are completed to restrict FMW Site use to commercial/industrial, urban residential, and/or park/open space land uses and to minimize the potential for impact on human health and the environment. Provisions of the LUC would include:

- Restrictions on land development and use consistent with the specified limited land use for this alternative;
- Restrictions on groundwater use;
- Management of soil in accordance with a DTSC approved Soil Management Plan (SMP);
- Inspection and maintenance of cover materials in accordance with a DTSC approved Operation and Maintenance Plan (OMP); and
- Access for DTSC.

[10] San Francisco Bay Regional Water Quality Control Board, 2015. San Francisco Bay Region Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008. November 19.

The need for future subsurface utility maintenance or earthwork to be performed by contractors with the proper health and safety training consistent with applicable Cal-OSHA standards for HAZWOPER (CCR, Title 8, Section 5192) would be reassessed after implementation of remedial actions.

The SMP would be prepared and submitted to DTSC for review and approval prior to implementation of shallow soil excavation and redevelopment activities. The SMP would provide a framework to manage any residual COCs in soil and groundwater in a manner that is consistent with planned future land uses and is protective of human health for expected future populations. The SMP would include a description of any vapor control systems that would be required for structures or facilities. The OMP would be prepared and submitted to DTSC for review and approval for ongoing activities related to longer-term operation and maintenance of remedial measures.

2. In-situ Groundwater Polishing (Post-Thermal) For Shallower Groundwater Zones.

After thermal treatment has reduced subsurface VOC concentrations to the extent where other in-situ technologies are effective for VOC reduction, more easily implementable, and more cost effective, in-situ groundwater polishing (which is the injection of organic and biological amendments to remediate residual concentrations) within the shallower stratigraphic units (S10 to 3243 Units) within the thermal treatment area would be conducted to further reduce concentrations of VOCs in groundwater. In-situ groundwater polishing would also be conducted in the 4360 Unit in a limited area in the northeast portion of the Site. The FS/DRAP anticipated that enhanced reductive dechlorination (ERD) would likely be used for post-thermal in-situ groundwater polishing as microbial populations would likely benefit from the warmer subsurface conditions after thermal treatment. For cost estimating purposes in the FS/DRAP, it was assumed that in-situ groundwater polishing would consist of injecting 110,000 gallons of ERD amendments via 91 temporary injection points using a direct push drill rig over 24 days and split into 2 separate events. Configuration of in-situ groundwater polishing is subject to change after post-thermal evaluation. This and other long-term groundwater monitoring and treatment actions, described below, would be anticipated to require only a few workers to collect groundwater samples and measurements and to operate and maintain treatment systems, and it is estimated that one truck trip per year would be required to dispose of GAC generated during this phase of the project. The in-situ groundwater polishing is anticipated to last for one year and long-term groundwater monitoring may be required for up to 27 years after implementation of short-term actions described above.

3. MPE (Post-Thermal) For Shallower Groundwater Zones.

The MPE system would continue to be operated after the thermal treatment to control off-site migration and on-site impacts from upgradient off-site uncontrolled sources and to address impacted groundwater remaining between the thermal treatment and in-situ groundwater polishing area and the property boundary. On-going evaluations would be conducted and the necessity of post-thermal MPE operation within the shallower stratigraphic units (S10 to 3243 Units) would be evaluated. Long-term MPE operation may be required for up to 27 years after implementation of short-term actions described above.

4. Post Thermal Monitoring and In-Situ Groundwater Polishing for Deeper Groundwater Zones.

The proposed remedy for the deeper stratigraphic units (6080 to 80110 Units) is monitored natural attenuation (MNA) with an in-situ groundwater polishing contingency, generally consistent with in-situ groundwater polishing procedures described above for shallower groundwater zones but smaller in scale. Periodic groundwater monitoring would be conducted to monitor potential effects of remedial activities in the overlying shallower stratigraphic units (S10 to 3243 Units). The need for implementation of the MNA would

be evaluated based on data collected post remedial action. The proposed monitoring plan to support this evaluation would be incorporated into the appropriate RDIP or work plan, as listed above, to be submitted to DTSC for review and approval. Long-term MNA implementation may be required for up to 30 years.

5. **Operation and Maintenance.** The Operation and Maintenance Plan (OMP), as listed above in the description of Land Use and Excavation Restrictions, would be prepared and submitted to DTSC for review and approval for ongoing activities related to longer-term operation and maintenance of remedial measures in accordance with an Operation and Maintenance Agreement (OMA) with DTSC.

    a. Depending on the success of the short-term actions, the LUC may also require that any future subsurface utility maintenance or other earthwork at the FMW Site to be performed by contractors with the proper health and safety training consistent with applicable Occupational Safety and Health Administration (OSHA) standards for Hazardous Waste Operations and Emergency Response (HAZWOPER) (CCR, Title 8, Section 5192). This need would be reassessed after implementation of remedial actions.

    b. To be protective for intended use, long-term indoor air vapor control systems would be required for any inhabited structures constructed at the FMW Site unless it can be demonstrated that there is no excess human health risk associated with the structure and use. A treatment system for discharges of vapor may be required in accordance with BAAQMD permit requirements.

    c. Depending on results of an off-site vapor intrusion evaluation and the success of the short-term actions, a vapor control system may be installed as a contingency, if needed, for buildings at off-site properties with impacted soil vapor resulting from COCs migrating from the FMW Site; and provided further that the property owner grants the requisite permission and access needed to construct, install, and monitor such systems. If needed, this work would be conducted under a new workplan. The need for continuing vapor control would be routinely assessed if warranted. Treatment of vapor discharge and a BAAMQD permit may be required, subject to results of the off-site vapor intrusion evaluation.

Remedial Design and Implementation Plan

After approval of the RAP, an RDIP would be prepared to provide details on the implementation procedures in accordance with DTSC guidance. The RDIP would contain information on:

- Technical and operational plans and engineering designs for implementation of the approved remedy;
- A Work Plan and schedule for implementing the construction phase;
- A general description of the construction equipment to be employed;
- A site-specific hazardous waste transportation plan (if warranted);
- A Sampling and Analysis Plan describing post-remedial sampling and monitoring procedures for soil, groundwater, and treated air and water;
- An Operation and Maintenance Plan of procedures and schedules;
- A Health and Safety Plan; and
- A Quality Assurance Plan.

The engineering design for the excavation will rely on a geotechnical and structural evaluation that will provide the slopes/setbacks necessary for the excavation, particularly at the boundary. The RDIP must be submitted to and approved by DTSC prior to any Project activities.

Schedule and Phasing

Short-term actions (Above Grade Building Demolition, Soil Excavation, Thermal Treatment with MPE, and Site Reconstruction) are anticipated to begin in July 2023 and take approximately 3 years to complete. Long-term actions would be implemented afterwards. Long-term actions would be re-evaluated and adjusted based on the measured success of the remedial action. After short-term and long-term actions are completed, a completion report (or phased completion reports) must be submitted to and approved by DTSC. It is estimated that groundwater monitoring and/or treatment could be required for up to 27 years following the short-term actions.

Public Participation

A minimum 30-day public comment period will be held for public review of the draft RAP and MND. After the public comment period is completed, DTSC would review and respond to the comments received on the draft RAP and MND. The draft RAP would be revised, as necessary, to address the comments received and responses would be provided to commenters on the MND.

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact without mitigation" as indicated by the checklist on the following pages.

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

Determination

On the basis of this initial evaluation:

❒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☑ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

❒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

❒ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

❒ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

T. Price

Signature

11/8/2022

Date

Tom Price

Printed Name

Project Mgr.

Title, Department of Toxic Substances Control

CHAPTER II
ENVIRONMENTAL CHECKLIST

I. AESTHETICS

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:					
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	☑
c)	In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☑	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

Affected Environment

Information regarding aesthetics for the Project is based on the Visual Resources analysis from the EIR prepared for the Emeryville General Plan.[11] Scenic vistas within the City include views to San Francisco Bay and the East Bay Hills. Views toward San Francisco Bay are limited within the City due to the lack of continuous east-west streets and the bulk of existing buildings along Interstate 80 (I-80) and railroad corridors. The most prominent scenic landmarks in the City are the Pacific Park Plaza and I-80. Near Emeryville, Interstate 580 (I-580) from State Route 24 (SR 24) to the I-80 interchange, and the portion of I-80 between I-580 and the Bay Bridge Toll Plaza have been mapped as "Eligible State Scenic Highways" by Caltrans, but have not been officially designated as scenic highways**.** [12]

Impact Analysis

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

No Impact. The Project would result in the demolition of a single-story warehouse building. No Project elements would potentially affect views of scenic vistas within Emeryville, such as San Francisco Bay and the East Bay Hills.

[11] City of Emeryville, 2009a. Emeryville General Plan, Final Environmental Impact Report, August.

[12] California Department of Transportation (Caltrans), 2021. California State Scenic Highway Map. Available at https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed September 23.

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

No Impact. The Cultural Resources Study prepared for the Project concluded that the warehouse building at the FMW Site that would be demolished does not qualify as a historic resource.[13] No other potential scenic resources would be affected by the Project.

c) Would the project conflict with applicable zoning and other regulations governing scenic quality?

Less-Than-Significant Impact. The FMW Site is located in an urbanized area. The Project would demolish an existing building, excavate and dispose of contaminated soil, backfill the excavation, pave the FMW Site, and operate groundwater treatment systems. There would be an impact to the visual character of the FMW Site during demolition, excavation, backfill, and hardscaping activities, but these impacts would be temporary. Following hardscaping, the FMW Site would not appear significantly different from other paved areas in the FMW Site vicinity and would not substantially affect the visual character of its surroundings. This impact would be *less than significant*.

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

Less-Than-Significant Impact. The Project may include exterior, temporary local lighting for treatment system equipment while this equipment remains actively operating. Exterior lighting would be subject to requirements in Section 9-4.705 of the City of Emeryville's Municipal Code. Under this section, exterior lighting must be designed to not spillover beyond the property line, except to public thoroughfares, and lighting must not cause a hazard to motorists. This impact would be *less than significant*.

II. AGRICULTURAL AND FORESTRY RESOURCES

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology				

[13] LSA Associates, 2022. Cultural Resources Study for the 5679 Horton Street Project in Emeryville, Alameda County, California, 13 May 2022.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?	❒	❒	❒	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	❒	❒	❒	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	❒	❒	❒	☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?	❒	❒	❒	☑
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland of Statewide Importance to non-agricultural use or conversion of forest land to non-forest use?	❒	❒	❒	☑

Affected Environment

The City of Emeryville is an urbanized area, with no areas of farmland or forest land. During the most recent City of Emeryville General Plan Update process, after public workshops, review of background reports, and initial analysis of the environmental setting, the topic was not determined to have environmental issues or concerns requiring review in the General Plan EIR.[14]

Impact Analysis

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?

No Impact. There is no farmland in the City of Emeryville, including the FMW Site.

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

[14] City of Emeryville, 2009a, *Op. cit.*

No Impact. There are no areas zoned for agricultural use or Williamson Act contracts in the City of Emeryville, including the FMW Site.

c) *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*

No Impact. There are no forest lands or areas zoned for forest land in the City of Emeryville, including the FMW Site.

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

No Impact. The Project would not affect forest land.

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

No Impact. The Project would not create any changes that could result in conversion of farmland or forest land.

III. AIR QUALITY

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

Affected Environment

The FMW Site is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the BAAQMD. In June 2010, the BAAQMD adopted thresholds of significance to assist lead agencies in the evaluation and mitigation of air quality impacts under CEQA. The BAAQMD's thresholds—which were incorporated into the

current 2017 *CEQA Air Quality Guidelines*[15]—established levels at which emissions of ozone precursors (i.e., reactive organic gases [ROGs] and nitrogen oxides [NOx]), suspended particulate matter (i.e., respirable particulate matter [PM_{10}] and fine particulate matter [$PM_{2.5}$]), carbon monoxide (CO), toxic air contaminants (TACs), and odors would cause significant air quality impacts. The BAAQMD's thresholds that relate to the analysis of the Project's impacts on the environment are used in this CEQA analysis and summarized in Table III-1, below.

Table III-1. BAAQMD Project-Level Thresholds of Significance

Impact Analysis	Pollutant	Threshold of Significance
Regional Air Quality (Construction)	ROG	54 pounds/day
	NOx	54 pounds/day
	Exhaust PM_{10}	82 pounds/day
	Exhaust $PM_{2.5}$	54 pounds/day
	Fugitive Dust (PM_{10} and $PM_{2.5}$)	Best management practices
Regional Air Quality (Operation)	ROG	54 pounds/day
	NOx	54 pounds/day
	Exhaust PM_{10}	82 pounds/day
	Exhaust $PM_{2.5}$	54 pounds/day
Local Community Risks and Hazards (Operation and/or Construction)	CO	9.0 ppm (8-hour average) 20.0 ppm (1-hour average)
	Exhaust $PM_{2.5}$ (project)	0.3 $\mu g/m^3$ (annual average)
	Exhaust $PM_{2.5}$ (cumulative)	0.8 $\mu g/m^3$ (annual average)
	DPM (project)	Cancer risk increase > 10 in 1 million
	DPM (project)	Chronic Hazard Index > 1.0
	DPM (cumulative)	Cancer risk > 100 in 1 million
	DPM (cumulative)	Chronic Hazard Index > 10.0

Source: BAAQMD, 2017.
Note: ppm = part per million; DPM = diesel particulate matter; $\mu g/m^3$ = micrograms per cubic meter

The latest BAAQMD's ambient air data summary (2019[16]) for select pollutants for the San Pablo station (the closest BAAQMD monitoring station to the FMW Site) and the Federal and California ambient air standards are included in Table III-2, below.

[15] Bay Area Air Quality Management District (BAAQMD), 2017. CEQA Air Quality Guidelines. May.

[16] BAAQMD, 2019. Bay Area Air Pollution Summary – 2019.

Table III-2. BAAQMD 2019 Air Pollution Summary for the San Pablo Station

Pollutant	Avg Time	Fed/CA AA Standards	Maximum	Exceedances Fed/CA
Ozone (O_3; ppm)	1-hr	--/0.09	0.103	--/1
	8-hr	0.07/0.07	0.079	2/2
Carbon Monoxide (CO; ppm)	1-hr	35/20	1.8	0/0
	8-hr	9/9	0.9	0/0
Nitrogen Dioxide (NO_2; ppm)	1-hr	0.1/0.18	0.042	0/0
	Annual	0.053/0.03	0.007	0/0
Sulfur Dioxide (SO_2; ppm)	1-hr	0.075/--	0.0176	0/--
	24-hr	--/0.04	0.0019	--/0
PM_{10} (ug/m^3)	24-hr	150/50	36	0/0
	Annual	--/20	16.5	--/0
$PM_{2.5}$ (ug/m^3)	24-hr	35/--	35.9	1/--
	Annual	12/12	7.8	0/0

Source: BAAQMD, 2019.
Note: AA = Ambient Air; CA = California; hr = hour; Fed = Federal; PM = particulate matter; ppm = part per million; µg/m^3 = micrograms per cubic meter

The nearest residential receptors to the FMW Site are apartment buildings located approximately 130 feet to the west, across the Union Pacific Railroad (UPRR) tracks. Other nearby receptors to the FMW Site include a hotel located approximately 100 feet to the west of the FWM Site, across the UPRR tracks; office buildings and retail stores located to the north of the FMW Site, at distances ranging from adjacent to the northern boundary to approximately 400 feet; and a warehouse facility, which may contain offices, located approximately 50 feet east of the FMW Site, across Horton Street. Commercial manufacturing facilities and offices for Grifols (a healthcare company) is located approximately 100 feet southeast of the FMW Site and a parking garage is located approximately 60 feet south of the FMW Site. Light industrial land uses are also located to the north, east, and south of the FMW Site. The nearest K-12 school, the Pacific Rim International School, is located to the east of the FMW Site. The treated air emission point for any vapor treatment system at the FMW Site would be located near the northwestern property, which is approximately 1,150 feet to the west of this school.

Impact Evaluation

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

Less-Than-Significant Impact. In accordance with the federal Clean Air Act and California Clean Air Act, the BAAQMD is required to prepare and update an air quality plan that outlines measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve federal and state ambient air quality standards. In April 2017, the BAAQMD adopted the *2017 Clean Air Plan: Spare the Air, Cool the Climate* (2017 CAP), which includes 55 control measures to reduce ROG, NOx, PM_{10}, $PM_{2.5}$, TACs, and greenhouse gases.[17] The 2017 CAP was developed based on a multi-pollutant evaluation method that incorporates well-established studies and methods on quantifying the health benefits of air quality regulations, computer modeling and analysis of existing air quality monitoring data and emission inventories, and growth projections prepared by the Metropolitan Transportation Commission and the Association of Bay Area Governments.

Based on the BAAQMD's *CEQA Air Quality Guidelines*, the following criteria should be considered to determine if a project would conflict with or obstruct implementation of the 2017 CAP:

- Does the project include applicable control measures from the air quality plan?
- Does the project disrupt or hinder implementation of any air quality plan control measures?
- Does the project support the primary goals of the air quality plan?

The 2017 CAP includes control measures that aim to reduce air pollution from stationary, area, and mobile sources. The control measures are organized into nine categories: stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super greenhouse gases (GHGs). As described in Table III-3, the Project would be consistent with applicable control measures from the 2017 CAP. Since there would be no traffic or population growth associated with the Project, the proposed Project would not be expected to hinder or disrupt implementation of the 2017 CAP. Because the Project would not result in any significant and unavoidable air quality impacts related to emissions, ambient concentrations, or public exposures (see Items b-d below and Section VII, *Greenhouse Gas Emissions*), the Project supports the primary goals of the 2017 CAP. According to the BAAQMD's 2017 *CEQA Air Quality Guidelines*, the Project would have a *less-than-significant* impact on the implementation of the applicable air quality plan.

Table III-3. Project Consistency with BAAQMD's 2010 CAP

Control Measures	Proposed Project Consistency
Stationary Source	Stationary source measures are enforced by the BAAQMD pursuant to its authority to control emissions from permitted facilities. Consistent with the stationary source measures, emissions from the Project's MPE system would be subject to the BAAQMD's permitting requirements described in Chapter I, Introduction and Project Description. The applicable rules contain health-based risk limits and requirements for use of Best Available Control Technology (if necessary).
Transportation	The transportation control measures are designed to reduce vehicle trips, use, miles traveled, idling, or traffic congestion for the purpose of reducing vehicle emissions. According to Section XVII, Transportation, the project would not generate a significant net increase in vehicle trips, and therefore would be consistent with the transportation control measures of the 2017 CAP.

[17] BAAQMD, 2017. Final 2017 Clean Air Plan. Adopted April 19.

Control Measures	Proposed Project Consistency
Energy	The energy control measures are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the energy control measures of the 2017 CAP are not applicable to the Project. However, power provided to the Project would be generated by Pacific Gas and Electric (PG&E), whose electricity portfolio contains about 78 percent GHG-free sources.[a]
Buildings	The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters, but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best practices and policies to control GHG emissions. Because the Project does not propose any new buildings or modifications to the existing building operations, building control measures of the 2017 CAP are not applicable to the Project.
Agriculture	The agriculture control measures are designed primarily to reduce emissions of methane. Since the Project does not include any agricultural activities, the agriculture control measures of the 2017 CAP are not applicable to the Project.
Natural and Working Lands	Since the Project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 CAP are not applicable to the Project.
Waste Management	The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The Project would comply with the State and local requirements for waste management (e.g., recycling, composting, and hazardous wastes disposal). Therefore, the Project would be consistent with the waste management control measures of the 2017 CAP.
Water	The water control measures to reduce emissions from the water sector would reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. Since these measures apply to POTWs and local government agencies (and not individual projects), the water control measures of the 2017 CAP are not applicable to the Project.
Super GHGs	The super-GHG control measures are designed to facilitate the adoption of best practices and policies to control GHG emissions through the BAAQMD and local government agencies. Since these measures do not apply to individual Projects, the super-GHG control measures of the 2017 CAP are not applicable to the Project.

Source: BAAQMD, 2017 and Baseline, 2021 (Appendix B).
[a] Pacific Gas and Electric, 2018. Exploring clean energy solutions. Available at: https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page, accessed April 12.

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

Less-Than-Significant Impact. Construction and operation of the Project would generate criteria air pollutant emissions that could potentially impact regional air quality. The primary pollutant emissions of concern would be ROG, NOx, PM_{10}, and $PM_{2.5}$ from the exhaust of off-road construction equipment and on-road vehicles (worker vehicles and haul trucks), as well as energy used to operate the remediation system. In addition, fugitive dust

emissions of PM_{10} and $PM_{2.5}$ would be generated by soil disturbance and demolition activities, and fugitive ROG emissions would result from paving activities during construction.

Regional Criteria Air Pollutant Emissions from Construction

Project emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ during construction were estimated from off-road equipment and on-road vehicles. The primary input data used to estimate emissions associated with construction of the proposed Project were provided by the project applicant and includes information about the duration, off-road construction equipment use, and on-road vehicle trips associated with each phase of construction. The construction schedule and equipment details are summarized in Appendix B. For the purpose of estimating Project emissions, construction was assumed to occur over a continuous period of 18 months starting in July 2023, and includes demolition, site preparation, excavation and off-haul, and installation of the thermal remediation system. These construction activities are collectively referred to as "Phase 1". After installation of the proposed thermal treatment is completed, another phase of construction would last about 20 work days between September 2025 to March 2026 and would include paving activities. This phase is referred to as "Paving Phase".

The BAAQMD recommends using the most current version of the California Emissions Estimator Model (CalEEMod Version 2020.4.0) to estimate construction and operational emissions of pollutants resulting from a proposed Project. CalEEMod uses widely accepted models for emission estimates combined with appropriate default data for a variety of land-use projects that can be used if site-specific information is not available. Two separate CalEEMod models were set up for Phase 1 of the construction and the Paving Phase, respectively.

To analyze daily emission rates during Project implementation for each construction phase, the total estimated emissions were averaged over the total estimated days of construction and compared to the BAAQMD's thresholds of significance in Table III-4. The Project's estimated unmitigated emissions of NOx, ROG, and exhaust PM_{10} and $PM_{2.5}$ from Project construction would not exceed the BAAQMD's thresholds of significance; therefore, these emissions during Project implementation would have a less-than-significant impact related to ambient air quality standards.

Table III-4. Estimated Unmitigated Construction Emissions (pounds per day)

Construction Phase	Emissions Sources	ROG	NOx	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Phase 1[a]	Off-Road Equipment	0.16	2.53	0.10	0.10
	On-Road Vehicles	0.13	8.96	<0.01	<0.01
	Total Emissions	0.3	11.5	0.1	0.1
Paving Phase	Off-Road Equipment	0.05	0.59	0.04	0.03
	On-Road Vehicles	0.06	2.06	0.02	0.02
	Total Emissions	0.1	2.7	0.1	0.1
	BAAQMD's Thresholds of Significance	54	54	82	54
	Threshold Exceedance?	No	No	No	No

Source: Baseline, 2021 (Appendix B).
Note: [a] Phase 1 of the Project construction would include demolition, site preparation, excavation and off-haul, and installation of the thermal remediation system.

The BAAQMD does not have a quantitative threshold of significance for fugitive dust PM_{10} and $PM_{2.5}$ emissions during construction; however, the BAAQMD considers implementation of best management practices (BMPs) to control dust during construction sufficient to reduce potential impacts to a less-than-significant level. Prior to implementation of shallow soil excavation activities for the Project, a RDIP would be prepared and approved by the

Department of Toxic Substances Control. The Hazards and Hazardous Materials analysis (Section IX) contains a discussion of measures that would be required to limit the generation of fugitive dust emissions (contained in Mitigation Measures HAZARDS-1 and HAZARDS-2), which would satisfy the BAAQMD's BMP requirement. Because implementation of dust-control measures contained within the Project's RDIP would satisfy the BAAQMD's threshold of significance, dust emissions during Project construction would have a *less-than-significant* impact related to ambient air quality standards.

Regional Criteria Air Pollutant Emissions from Operation

Project operations would mainly consist of two phases: the thermal remediation phase and the post-thermal treatment phase. The equipment that would generate criteria air pollutant emissions during Project operation includes the thermal remediation system that would consume natural gas, an emergency diesel generator, and on-road vehicles.

Project operation would generate about four haul trips every 90 days for about a year during the thermal remediation phase, and one haul trip every year for up to 27 years during the post-thermal treatment phase. Only a few workers would be required. Because these haul trips and worker trips are infrequent and would contribute minimally to criteria air pollutant emissions during Project operation, criteria pollutant emissions from on-road vehicles were excluded from the calculation of operational emissions.

Emissions from energy use during operation of the thermal remediation system may be from either electricity (Energy Use Option 1) or a combination of electricity and natural gas (Energy Use Option 2). While criteria air pollutants are emitted from the generation of electricity, these emissions occur at offsite power plants. Because power plants are existing stationary sources permitted by air districts and/or the United States Environmental Protection Agency, criteria air pollutant emissions are generally associated with the power plants themselves and not the individual Projects that use the electricity. Additionally, criteria air pollutant emissions from power plants are subject to local, state, and federal control measures, which can be considered to be the maximum feasible level of mitigation for stack emissions. In contrast, emissions from natural gas use (if any) would occur on the Project site and would not be subject to stationary source permitting requirements. Therefore, the Project's potential emissions from natural gas were estimated using the input parameters and assumptions included in Appendix B. Emissions of ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ from natural gas use were estimated using the following equation:

$$\text{Emissions in pounds} = (NGU)(EF)$$

Where:

NGU = Natural gas use (million British Thermal Units)
EF = Emission factor (pounds/million British Thermal Units)

Although most other equipment during Project operation would be powered by electricity, an emergency diesel generator would be included in Project operation for both the thermal remediation phase and the post-thermal treatment phase to supply electricity in case of power outage. It was assumed that a 5,100-kilowatt emergency diesel generator would be required on-site to supply sufficient power. The diesel generator would be used for non-emergency operation up to 50 hours per year for routine testing and maintenance. Criteria pollutant emissions from the proposed emergency diesel generator were calculated using CalEEMod (Appendix B).

The emissions during the thermal remediation phase and the post-thermal treatment phase were summarized in Table III-5 and compared to the BAAQMD's thresholds of significance. Under the most intensive operation scenario, the Project's estimated unmitigated emissions of NOx, ROG, and exhaust PM_{10} and $PM_{2.5}$ would not exceed the

BAAQMD's thresholds of significance; therefore, exhaust emissions during Project operation would have a *less-than-significant* impact related to ambient air quality standards.

Table III-5. Estimated Unmitigated Operation Emissions (pounds per day)

Operation Phase	Emissions Scenario	ROG	NOx	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Thermal Remediation	Energy Use Option 1[a]	<0.01	<0.01	<0.01	<0.01
	Energy Use Option 2[b]	0.32	2.92	<0.22	0.22
Post-Thermal Treatment[c]	--	<0.01	<0.01	<0.01	<0.01
	BAAQMD's Thresholds of Significance	54	54	82	54
	Thresholds Exceedance?	No	No	No	No

Source: Baseline, 2021 (Appendix B)
Note: [a] Energy Use Option 1 uses electricity only.
[b] Energy Use Option 2 uses a combination of electricity and natural gas.
[c] The only on-site equipment that would generate criteria pollutant emissions would be the proposed emergency diesel generator.

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

Less-Than-Significant Impact. The term "sensitive receptor" refers to a location where individuals are more susceptible to poor air quality. Sensitive receptors include schools, convalescent homes, and hospitals because the very young, the old, and the infirm are more susceptible than the rest of the public to air-quality-related health problems. Residential areas are also considered sensitive to poor air quality because people are often at home for extended periods, thereby increasing the duration of exposure to potential air contaminants. The BAAQMD recommends evaluating the potential impacts to sensitive receptors located within 1,000 feet of a project. The Project's potential impacts to sensitive receptors from emissions of CO and TACs are discussed below.

Localized Carbon Monoxide Concentrations

The occurrence of localized CO concentrations, also known as "hotspots," can impact sensitive receptors in local communities. The source of local CO emissions is often associated with heavy traffic congestion, which most frequently occurs at signalized intersections of high-volume roadways. The BAAQMD's threshold of significance for local CO concentrations is equivalent to the 1- and 8-hour California Ambient Air Quality Standards of 20.0 and 9.0 ppm, respectively, because these represent levels that are protective of public health. Since there would be no traffic growth associated with operation of the Project, the proposed Project would not be expected to cause or contribute to local CO levels above the CAAQS. Therefore, the Project would have a *less-than-significant* impact on nearby sensitive receptors related to local CO concentrations.

Toxic Air Contaminants from Construction

Project implementation would generate diesel particulate matter (DPM) and $PM_{2.5}$ emissions from off-road diesel construction equipment and on-road vehicles accessing the Project site that could impact nearby sensitive receptors. The annual average concentrations of DPM and $PM_{2.5}$ concentrations were estimated within 1,000 feet of the proposed Project using the U.S. Environmental Protection Agency's Industrial Source Complex Short Term (ISCST3) air dispersion model.[18] For this analysis, emissions of exhaust PM_{10} were modeled to estimate concentrations of

[18] U.S. Environmental Protection Agency ("US EPA"), 1995. Industrial Source Complex Short Term (ISCST3) Air Dispersion Model.

DPM at nearby sensitive receptors. The input parameters and assumptions used for estimating on-site emission rates are included in Appendix B.

Daily emissions from off-road construction equipment and on-road vehicles were assumed to occur over an 8-hour period between 8 a.m. and 4 p.m. between Monday and Friday for 18 months. The exhaust from off-road equipment on the Project site was represented in the ISCST3 model as a series of volume sources with a release height of 5 meters to represent the mid-range of the expected plume rise from frequently used construction equipment. On road vehicles accessing the Project site from Stanford Avenue were represented in the ISCST3 model as a series of line-area sources along a 0.1-mile segment with a release height of 3 meters for exhaust emissions (see Appendix B).

A uniform grid of receptors spaced 10 meters apart with receptor heights of 1.8 meters was encompassed around the Project site as a means of developing isopleths (i.e., concentration contours) that illustrate the air dispersion pattern from the various emission sources. The ISCST3 model input parameters included 1 year of BAAQMD meteorological data from the Oakland STP weather station located about 0.9 mile southwest of the Project. Based on the results of the air dispersion model, the annual average concentrations of DPM and $PM_{2.5}$ at the maximally exposed individual resident (MEIR), which is located about 130 feet west of the Project site, are summarized in Table III-6.

Table III-6. Annual Average Concentrations at MEIR during Project Implementation

	Annual Average Concentration ($\mu g/m^3$)	
Emissions Scenario	**DPM**	**Exhaust $PM_{2.5}$**
Project Construction	0.0032	0.0031

Source: Baseline, 2021 (See Appendix B)
Note: $\mu g/m^3$ = micrograms per cubic meter
MEIR = maximally exposed individual resident

In accordance with guidance from the BAAQMD[19] and the Office of Environmental Health Hazard Assessment (OEHHA),[20] a health risk assessment was conducted to calculate the incremental increase in cancer risk and chronic hazard index (HI) to sensitive receptors from DPM emissions during construction. The acute HI for DPM was not calculated because an acute reference exposure level has not been approved by OEHHA and the California Air Resources Board (CARB), and the BAAQMD does not recommend analysis of acute non-cancer health hazards from construction activities. The annual average concentration of DPM and $PM_{2.5}$ at the MEIR were used to conservatively assess potential health risks to all nearby sensitive receptors.

The incremental increase in cancer risk from on-site DPM emissions during construction was assessed for an infant and child under the age of 2 exposed to DPM at the MEIR location. This exposure scenario represents the most sensitive individual who could be exposed to adverse air quality conditions in the vicinity of the proposed Project. It was assumed that the MEIR would be exposed to the annual average DPM concentration over the entire estimated duration of construction, which is about 18 months; therefore, this analysis is conservative. The input parameters and results of the health risk assessment are included in Appendix B.

[19] BAAQMD, 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards. May.

[20] Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February.

Estimates of the health risks to the MEIR from DPM and $PM_{2.5}$ concentrations during construction are summarized and compared to the BAAQMD's thresholds of significance in Table III-7. The estimated excess cancer risk and chronic HI for DPM emissions and annual average $PM_{2.5}$ concentration at the MEIR during construction were below the BAAQMD's thresholds of significance. Therefore, the Project's emissions of DPM and $PM_{2.5}$ during construction would have a *less-than-significant* impact on nearby sensitive receptors.

Table III-7. Health Risks at MEIR during Project Construction

	Diesel Particulate Matter		Total $PM_{2.5}$
Emissions Scenario	**Cancer Risk (per million)**	**Chronic Hazard Index**	**Annual Average Concentration ($\mu g/m^3$)**
Construction Emissions	0.32	<0.01	0.003
BAAQMD's Thresholds of Significance	10	1	0.3
Thresholds Exceedance?	No	No	No

Source: Baseline, 2021 (See Appendix B)
Note: $\mu g/m^3$ = micrograms per cubic meter

Project construction would include the temporary disturbance of contaminated soil during excavation activities, which could pose a potential health risk to the general public if contaminated dust or vapors migrate outside of the Project site. As discussed in Section IX, Hazards and Hazardous Materials, soil excavation activities would need to be permitted under BAAQMD's Regulation 8, Rule 40. The permit requirements for the excavation activities would impose requirements of soil handling to minimize the emissions of VOCs into the atmosphere. In addition, a tent structure would also be used to enclose parts of the Project site during excavation activities that have the potential to emit VOCs into the atmosphere. Perimeter air monitoring required under Mitigation Measure HAZARDS-2 would also ensure that dust and vapors containing TACs would be limited largely within the Project site. Therefore, the Project's temporary emissions of dust and vapors containing TACs during construction would have a *less-than-significant* impact on nearby sensitive receptors.

Toxic Air Contaminants from Operation

The proposed Project includes operation of a thermal remediation system with MPE to remove groundwater, vapors, and/or steam contaminated with chlorinated solvents and petroleum hydrocarbons. Many of the contaminants of concern beneath the FMW Site (e.g., TCE) are toxic compounds listed as either known or possible carcinogens by the United States Environmental Protection Agency. Under BAAQMD Regulation 2, Rule 5 and Regulation 8, Rule 47, the TAC emissions from the MPE system would be subject to stationary-source permitting requirements if emissions exceed the BAAQMD's trigger levels (i.e., health-based screening levels) listed in Table III-1 of the regulation. Both acute trigger levels (the maximum amount of the contaminant released in an hour) and chronic trigger levels (the maximum amount of the contaminant released in a year) are specified in the regulation. If TAC emissions would exceed trigger levels, a Health Risk Screening Analysis must be performed prior to construction to estimate the potential health risks to nearby sensitive receptors. If the TAC emissions would result in an excess cancer risk greater than 1.0 in a million and/or a chronic HI greater than 0.20, then Best Available Control Technologies (BACT) must be implemented to limit the TAC emission levels.

To comply with BACT requirements, the Project design includes the use of granular-activated carbon vessels and/or advanced oxidation to reduce TAC emissions. Consistent with the BAAQMD's recommended thresholds of significance (see Table III-1), the BAAQMD will not approve a permit to operate for any project that would result in an excess cancer risk greater than 10.0 in a million, chronic HI greater than 1.0, and/or acute HI greater than 1.0. Since Project compliance with BAAQMD stationary-source permitting requirements prior to operation is mandatory, the

Project's TAC emissions from operation of the MPE system would have a *less-than-significant* impact on nearby sensitive receptors.

Cumulative Toxic Air Contaminant Emissions

In addition to a project's individual TAC emissions, the BAAQMD recommends evaluating the potential cumulative health risks to sensitive receptors from existing sources of TACs (e.g., stationary sources and highways). Since the Project's estimated excess cancer risk, chronic HI, and annual average concentration of $PM_{2.5}$ at the MEIR during construction (see Table III-7) are about 3 to 4 orders of magnitude below the BAAQMD's cumulative thresholds of significance (see Table III-1), Project remediation emissions would not substantially contribute to health risks posed by existing sources of TACs in the Project vicinity. Since operation of the remediation system would be subject to BAAQMD permitting requirements under Regulation 2, Rule 5, such as using BACT (e.g., granular-activated carbon) to prevent or minimize public health risks from TAC emissions, Project operations would not substantially contribute to health risks posed by existing sources of TACs in the Project vicinity. Therefore, the cumulative impact to nearby sensitive receptors from unmitigated TAC emissions during remediation and operation would be *less than significant*.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less-Than-Significant Impact. The excavation and removal of contaminated soils during remediation could generate odors. Prior to implementation of shallow soil excavation activities, an RDIP would be prepared and approved by the Department of Toxic Substances Control. The RDIP will include a Dust, Vapor, and Odor Control Plan that describes measures to limit nuisance odor issues. The odor control measures would include, but not be limited to, tenting of some excavation activities, using watering trucks, using a vapor and odor suppressant, stockpile covering, limiting the rate of excavation, limiting excavation in odorous areas to certain hours of the day, decontaminating vehicles and equipment as they leave contaminated areas, as well as perimeter air monitoring. Therefore, Project impacts related to odors during construction would be *less than significant*.

Operation of an MPE system to remove contaminated groundwater, vapors, and/or steam could generate objectionable odors. Under BAAQMD Regulation 2, Rule 5, the emissions from the MPE system would be subject to stationary-source permitting requirements. To comply with BAAQMD's permitting requirements, emissions from the MPE system would be treated using granular-activated carbon vessels and/or advanced oxidation, which would reduce potential odors issues related to operation of the system to a *less-than-significant* level.

IV. BIOLOGICAL RESOURCES

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	❒	☑	❒	❒

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

Affected Environment

The FMW Site is located in an urbanized area, has been completely altered by past development and utility improvements, and no longer supports any natural habitat. A field habitat suitability analysis was performed during a site reconnaissance conducted on October 8, 2016 to determine the potential for occurrence of special-status species, jurisdictional waters and other sensitive resources. The FMW Site is occupied by an existing tilt-up building, impervious surfaces, and a narrow planting strip along the Horton Street frontage that supports seven street trees with trunk diameters of from 4 to 10 inches at breast height (DBH).

Impact Evaluation

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

Potential Significant Unless Mitigation Incorporated. Based on a review of records maintained by the California Natural Diversity Data Base (CNDDB) of the California Department of Fish and Wildlife (CDFW) and evaluation of the FMW Site during the habitat suitability analysis, suitable conditions necessary to support special-status species known from the East Bay are absent on the FMW Site, with the possible exception of nesting birds that are protected under federal and State regulations when nests are in active use. Special-status species are plants and animals that are legally protected under the State and/or federal Endangered Species Acts or other regulations, as well as other

species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts and other essential habitat. CNDDB mapping was reviewed to evaluate the known occurrences of special-status plant and animal species reported by the CNDDB in the surrounding Emeryville vicinity. These maps are included in Appendix C. The species identified in the maps are typically associated with the marshlands and open waters of San Francisco Bay, the remaining natural habitats in the East Bay Hills, or from historic occurrences that have long since been lost due to urbanization.

There is a remote possibility that one more species of birds protected under the federal Migratory Bird Treaty Act and California Department of Fish and Wildlife (CDFW) Code could nest in the row of street trees growing along the Horton Street frontage or other locations on the FMW Site. If nests are present, vegetation removal, building demolition and construction-related disturbance associated with the Project during the breeding and rearing season could inadvertently result in the destruction or abandonment of a nest in active use, which would be a violation of the Migratory Bird Treaty Act and California Fish and Game Code. Although no trees are scheduled to be removed as part of the Project and no nests were identified during a field reconnaissance of the FMW Site, there remains a possibility that new nests could be established in the future before Project activities are initiated. An impact on any nests in active use is considered to be a ***potentially significant*** impact. The following mitigation measure would reduce this impact to a *less-than-significant* level.

***Mitigation Measure BIO-1*:** Adequate measures to avoid inadvertent take of nesting birds protected under the Migratory Bird Treaty Act during the Project shall include at a minimum:

- If vegetation removal and initial Project activities are proposed during the nesting season (March through August), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 14 days prior to the onset of vegetation removal or other Project work, in order to identify any active nests on the FMW Site and in the vicinity of proposed construction. The FMW Site shall be resurveyed to confirm that no new nests have been established if building demolition has not been completed or if Project activities have been delayed or curtailed for more than 14 days during the nesting season.

- If no active nests are identified during the pre-Project survey period, or if Project activities are initiated during the non-breeding season (September through February), vegetation removal and building demolition may proceed with no restrictions.

- If bird nests are found, an adequate setback shall be established around the nest location and vegetation removal and other Project activities restricted within this no-disturbance zone until the qualified biologist has confirmed that any young birds have fledged and are able to function outside the nest location. Required setback distances for the no-disturbance zone shall be based on input received from the CDFW, and may vary depending on species and sensitivity to disturbance. As necessary, the no-disturbance zone shall be fenced with temporary orange construction fencing if Project activities are to be initiated on the remainder of the FMW Site.

- A report of findings shall be prepared by the qualified biologist and submitted to DTSC prior to initiation of demolition, excavation, or paving activities within the no-disturbance zone during the nesting season (March through August). The report shall either confirm absence of any active nests or should confirm that any young are located within a designated no-disturbance zone and Project activities can proceed.

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

No Impact. The FMW Site is developed with an existing structure, paved parking, and limited ornamental landscaping with no natural habitat. Riparian habitat, native grasslands, and other sensitive natural community types are absent from the FMW Site. Therefore, there would be no impact on sensitive natural communities.

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

No Impact. Jurisdictional wetlands and other regulated waters are absent from the FMW Site, which is developed with existing structures, paved parking and limited landscaping. Typical best management practices (e.g., silt fence, sediment traps, fiber rolls, street sweeping, sandbag or straw bale barriers, and storm drain inlet protection) would be utilized to prevent any construction-generated sediments or pollutants from entering the storm drain system and entering downgradient regulated waters in Temescal Creek and San Francisco Bay. Therefore, there would be no impact on jurisdictional wetlands and waters.

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

Less-Than-Significant Impact. The FMW Site is located in an urbanized area, bordered by existing roadways, railroad tracks and structures which preclude the presence of any important wildlife movement corridors. The FMW Site contains no creeks or aquatic habitat that would support fish, and proposed Project activities would not interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nurseries. Wildlife species common in urban habitat would continue to move through the area, both during and after Project activities. Therefore, this would be considered a less-than-significant impact on wildlife habitat and movement opportunities.

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

Potentially Significant Unless Mitigation Incorporated. The Project would not conflict with any policies in the Conservation, Safety, and Noise Element of the Emeryville General Plan. A number of policies in the General Plan pertain to sensitive habitat and other biological resources which are not found on the FMW Site, including CNS-P-18 through CSN-P-24. Policy CSP-P-25 calls for appropriate measures to avoid loss of nests in active use during construction. This ***potentially significant*** impact which would be reduced to a *less-than significant* level through implementation of Mitigation Measure BIO-1, which would ensure compliance with the relevant policy in the Emeryville General Plan.

The Urban Forestry Ordinance (Title 7, Chapter 10) of the Emeryville Municipal Code addresses maintenance and protection of street trees. As noted above, there are seven street trees with trunk diameters of from 4 to 10 inches DBH along the Horton Street frontage of the FMW Site. However, no impacts to these trees are anticipated as part of the proposed Project.

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

No Impact. The proposed Project would not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved conservation plan. No such plans have been adopted encompassing the Project vicinity, and no impacts are anticipated.

V. CULTURAL RESOURCES

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

Affected Environment

This analysis is based on the Cultural Resources Study Report (Cultural Report), dated May 13, 2022, prepared for the Project, which is enclosed as Appendix D.[21] The Cultural Report included discussion and evaluation of cultural resources that: (1) may meet the CEQA definition of historical or unique archaeological resources (as defined at California Public Resources Code, Section 21084.1 and 21083.2); and (2) may be disturbed, and potentially impacted, by Project implementation. The Cultural Report also addressed potential impacts to Tribal Cultural Resources, which are discussed under Section XVIII, below. Information in this section is from the Cultural Report unless otherwise indicated.

The Cultural Report includes an evaluation of potential historical and archaeological resources at the FMW Site and the potential for disturbance of human remains during development of the Project. The existing building at the FMW Site is more than 50 years old and therefore was evaluated for qualification as a "historical resource" as defined by CEQA. The FMW Site is located near previously mapped prehistoric archaeological cultural resources associated with the Emeryville Shellmound and other shellmounds. Human remains and cultural artifacts have been encountered at these shellmound sites. More details regarding these cultural resources and potential impacts related to the Project are provided in the Impact Evaluation, below.

[21] LSA Associates, 2022, *op cit.*

Impact Evaluation

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

No Impact. The FMW Site was initially surveyed for cultural resources on 21 September 2016, with an additional site visit conducted on 3 February 2022. As a result of the site visits, one cultural resource was identified within the FMW Site: the existing building at the FMW Site, most recently used as the City of Emeryville Public Works Department Corporate Yard Warehouse. The building was dated to be more than 50 years old and, as such, was evaluated for qualification as a "historical resource" as defined by CEQA. A Historic Resource Evaluation (HRE) was prepared, and the evaluation is included as part of Attachment D and Attachment E of the Cultural Report.

Based on background research and a field survey, the HRE determined that the building at 5679 Horton Street is one of many Vernacular utilitarian warehouses built in Emeryville, Alameda County, and statewide that is associated with mid-20th century industrial development. The FMW Site building does not possess any qualities that elevate it in stature relative to this association. Therefore, the HRE concluded that the building at 5679 Horton Street does not appear eligible for inclusion in the California Historic Resource Register (CRHR) due to its lack of historical significance. The building is not listed on the local Emeryville historic resource register. The building is not a contributor to the Emeryville Historic Industrial District or the Park Avenue Overlay District because it was constructed after the districts' periods of significance. For these reasons, the building does not qualify as a historical resource for the purposes of CEQA (as defined at Public Resources Code Section 21084.1) and therefore the Project will not cause a substantial adverse change in the significance of a historical resource.

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

Potentially Significant Unless Mitigation Incorporated. A review of records at the Northwest Information Center (NWIC) of the California Historical Resources Information System identified twelve previously recorded cultural resources within one half-mile of the FMW Site. Of these twelve resources, six are precontact shellmound sites and one is the reinterment of Native American human remains. Two additional resources are historic-period trash deposits, one additional resource is a historic-period water tower, and two additional resources are historic-period districts.

More than 200 soil borings have been completed at and adjacent to the FMW Site during environmental investigations conducted by EKI from 1999 through 2013. Boring logs and field notes from those borings were reviewed for the Cultural Report, confirming that soil adjacent to and beneath the buried Marchant building features are sensitive for soils consistent with precontact midden sites.

Information from the borings indicates that black or very-dark brown soil, which may be associated with midden soil, were encountered in each of the investigations at and adjacent to the FMW Site. Although no shell fragments were identified in borings from the FMW Site, shell fragments were identified in soils to the west of the FMW Site, across the railroad tracks.

Additional relevant documentation related to the Horton Landing Project (HLP) (which is south of the FMW Site) is not yet on file with the NWIC but was provided and reviewed for this Project. In 2010, archaeological testing was conducted east of the Union Pacific Railroad tracks within the HLP project parcels and resulted in the identification of intact archaeological deposits in some areas and redeposited midden scattered throughout other areas. Archaeological excavation directly adjacent to the currently channelized Temescal Creek revealed sterile backfilled sediments against the channel walls. Additional archaeological excavation revealed a minimum of 2.5 feet of asphalt

and/or concrete and gravelly fill overlying shell midden deposits. A geoarchaeological investigation was also conducted in 2010 to assess the potential for buried archaeological resources within areas of potential disturbance associated with footings for a proposed bridge over the Union Pacific Railroad tracks near the HLP site. This effort resulted in the identification of redeposited cultural materials, along with potentially intact midden materials underlying gravel fill.

Based on the records search results, soil boring samples, additional relevant documentation review, and geoarchaeological investigations, the Cultural Report concluded that there is a potential for significant intact subsurface prehistoric archaeological deposits and human remains to be encountered during excavation activities for the Project. This is a ***potentially significant*** impact.

The following mitigation measure would reduce potential impacts related to archaeological resources to a less-than-significant level.

> ***Mitigation Measure CULT-1*:** An Archaeological Monitoring Plan (Plan) shall be developed and implemented for the Project. The Plan shall require that a qualified archaeologist be present to monitor ground disturbing Project activities. The monitoring archaeologist shall have expertise in California prehistory as well as Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) certification. Monitoring should occur after demolition of the building when soils beyond the building's footprint will be disturbed and when the concrete slabs are removed. Monitoring should continue during ground disturbing activities that occur after the slabs have been removed and during well-drilling and soil removal activities.
>
> If intact archaeological deposits are encountered or other evidence of cultural resources (such as unusual amounts of bone or shell, artifacts, human remains, or archaeological remains) all work within 25 feet of the deposit shall cease or be diverted until the deposit is evaluated. The monitoring archaeologist shall immediately notify the Successor Agency and DTSC of the encountered archaeological deposit.
>
> The monitoring archaeologist shall conduct a preliminary assessment to make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit in accordance with CEQA guidelines and other established criteria. If it is determined that the identified archaeological deposit is not significant, the deposit may be removed and work in the area may resume. If it is determined that the archaeological deposit is significant, work affecting the deposit will be avoided. Within 10 calendar days, the monitoring archaeologist will submit to the Successor Agency and DTSC a preliminary assessment report describing the potential significance of the resource and recommendations regarding appropriate and feasible avoidance measures and/or other appropriate mitigation measures to preserve the status of the resource as a unique archaeological resource.
>
> The presence of hazardous materials at the FMW site could interfere with avoidance of potential cultural resources encountered during excavation. If the Successor Agency, in consultation with the monitoring archaeologist, determines that a unique archaeological resource is present and that the resource could be adversely affected by the proposed remediation project, the Successor Agency shall consult with DTSC to determine how to avoid any significant adverse effects on the unique archaeological resource.
>
> If the Successor Agency determines that avoidance of a unique archaeological resource is not feasible, DTSC shall direct the qualified archaeologist to develop and implement a plan to mitigate the effect of the Project on the qualities which make the resource unique. As specified in CEQA Guidelines (Section 15126.4 (b)), preservation of the archaeological resource in place is the preferred manner of mitigating potential impacts to the resource. If this is not possible, a data recovery plan, which makes provision for adequately

recovering the scientifically consequential information should be prepared and adopted prior to the disturbance of that resource. Any scientifically consequential information from the data recovery plan must be submitted to the appropriate California Historical Resources Information System information center. The Archaeological Monitoring Plan prepared by the Successor Agency to be implemented during the Project is appended to this IS/MND as Appendix G.

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

Potentially Significant Unless Mitigation Incorporated. As noted in Item b, above, the FMW Site is located in proximity to previously recorded and known shellmound sites where human remains have been encountered during excavations, and soils beneath the lower concrete slab at the FMW Site are consistent with midden soils. The Project at the FMW Site would not disturb any archaeological sites known to contain human remains; however, the potential to encounter human remains at the FMW Site is a ***potentially significant*** impact. The following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure CULT-2: The Archaeological Monitoring Plan (Mitigation Measure CULT-1) (Appendix G) requires that if human remains are uncovered during work at the FMW Site, all work within 25 feet shall be redirected and the County Coroner notified immediately. At the same time, the monitoring archaeologist shall assess the situation and consult with agencies, as appropriate. Project workers should not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Native American Most Likely Descendant (MLD) to inspect the site within 48 hours of being granted access to the site and provide recommendations for the proper treatment of the remains and associated grave goods. The MLD recommendations may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials, preservation of Native American human remains and associated items in place, relinquishment of Native American human remains and associated items to the descendants for treatment, or any other culturally appropriate treatment. Work within 25 feet of the discovery may resume after the MLD has inspected the site, provided recommendations, and either the remains and associated grave goods are preserved in place or removed from the FMW Site by a qualified archaeologist in consultation with the MLD. Any remains and associated grave goods shall thereafter be reinterned at the FMW Site or other appropriate location in consultation with the MLD. The Successor Agency has also agreed to Nototomne Cultural Preservation's request to provide for tribal oversight during ground disturbing activities at the FMW Site. The Nototomne Cultural Preservation's representative performing monitoring activities shall have OSHA HAZWOPER certification.

VI. ENERGY

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation??	☐	☐	☐	☑
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☑

Affected Environment

Background information regarding energy use for the Project is based on the Energy and Greenhouse Gas analysis from the EIR prepared for the Emeryville General Plan.[22] Changes in energy use in the City of Emeryville are driven by changes in population and jobs. Assuming full buildout of development proposed under the General Plan, electricity use is predicted to increase from 228 million kilowatt-hours (kWh) to 336 million kWh and natural gas use from 7.5 million therms to 11 million therms. Transportation energy use would be expected to increase along with predicted increases in vehicle miles travelled from 859,000 per day to 1,154,000 per day, though fuel efficiency standards are expected to result in fuel consumption decreasing slightly. The City General Plan includes a number of goals to increase energy efficiency, such as improving access to sunlight, promoting walkability, promoting alternative forms of transportation, and allowing higher density mixed use development.

Impact Analysis

a) Would the project result in wasteful or unnecessary consumption of energy?

No Impact. The Project has been designed to be as energy efficient as practical and will include only those activities necessary to meet the Project remedial objectives. The progress towards these remedial objectives will be evaluated throughout the Project and any activities not required to meet the objectives will be modified or eliminated.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The Project would not conflict with any applicable energy efficiency policies or standards, including goals and policies contained established the City General Plan.

VII. GEOLOGY AND SOILS

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☑	☐
ii) Strong seismic ground shaking?	☐	☐	☑	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☑	☐
iv) Landslides?	☐	☐	☐	☑

[22] City of Emeryville, 2009a, *op cit.*

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☑	☐
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☑	☐
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☑	☐

Affected Environment

Information regarding geology and soils for the Project is based on geologic data collected during site investigations for the Project RI,[23] available public agency resources, and the geology analysis from the EIR prepared for the Emeryville General Plan.[24] The FMW Site is located within the Coast Ranges geomorphic province of California, which is characterized by northwest trending mountain ridges and valleys. The FMW Site is part of the flatland area along the San Francisco Bay margins known as the East Bay Plain, and soils within this area consist of alluvial deposits originating in the Berkeley Hills. Geologic information collected for environmental investigations for the Project have found that soils at the FMW Site consist of approximately three to five feet of imported fill at the surface overlying fine-grained clayey soils interspersed with layers of coarser-grained gravelly and sandy soils. Shallow groundwater is encountered at approximately 10 feet bgs and within the layers of coarser-grained layers of soil at greater depths.[25] The FMW Site is level, with a ground surface elevation of approximately 10 feet above mean sea level.

The entire San Francisco Bay Area is located within the San Andreas Fault Zone, a complex of active faults (i.e., having evidence of fault rupture in the past 11,000 years) forming the boundary between the North American Plate and Pacific Plate. The nearest active faults to the FMW Site are the Hayward-Rogers Creek fault, located approximately 3.25 miles to the east, and the San Andreas Fault, located approximately 15 miles to the west. The latest United States Geological Survey (USGS) Working Group on California Earthquake Probabilities estimates a 72 percent chance of at least one magnitude 6.7 or greater earthquake on Bay Area faults over the next 30 years,

[23] EKI, 2016a. *Op cit.*

[24] City of Emeryville, 2009a. *Op cit.*

[25] EKI, 2016a. *Op cit.*

including a 6.4 percent chance on the Northern San Andreas Fault and a 14.3 percent chance on the Hayward-Rogers Creek fault.[26]

Impact Analysis

a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42;

Less-Than-Significant Impact. The FMW Site is not located within an Alquist-Priolo Earthquake Fault Zone,[27] and the nearest fault, the Hayward-Rogers Creek Fault, is approximately 3.25 miles to the east. Fault rupture of the surface typically occurs along existing faults that have ruptured the surface in the past. Since faults with known surface rupture have been mapped in California, and none are known to occur at the FMW Site, the potential for the Project to be affected by fault rupture is *less than significant*.

ii) Strong seismic ground shaking;

Less-Than-Significant Impact. The San Francisco Bay Area is a seismically-active region and based on recent estimates by the USGS Working Group on California Earthquake Probabilities, it is possible that a significant seismic event may occur during Project remedial activities. However, as no habitable structures would be developed as part of the Project, there would be no potential for injury or death related to seismic groundshaking. Improvements at the FMW Site as part of the Project would be limited to groundwater monitoring and treatment wells and treatment equipment maintained in a cargo container. Potential damage to these improvements as a result of groundshaking during a seismic event would be considered a *less-than-significant impact*.

iii) Seismic-related ground failure, including liquefaction;

Less-Than-Significant Impact. Liquefaction of soils can occur when ground shaking causes saturated soils to lose strength due to an increase in pore pressure. The FMW Site is located in an area having the potential for liquefaction, based on regional maps prepared in accordance with the requirements of the Seismic Hazards Mapping Act.[28] However, as noted under Item a) ii, above, no habitable structures would be developed as part of the Project, and damage to groundwater wells or treatment equipment from liquefaction would be considered a *less-than-significant* impact.

iv) Landslides?

No Impact. Topography at the FMW Site is level and there would be no potential for landslides.

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

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[26] United States Geological Survey (USGS), 2015, UCERF3: A New Earthquake Forecast for California's Complex Fault System, USGS Fact Sheet 2015-3009, March.

[27] City of Emeryville, 2009a, *Op. cit.*

[28] *Ibid.*

Less-Than-Significant Impact. Remedial activities for the Project include removal of hardscape, excavation of the upper 5 feet bgs across the entire FMW Site, excavation of a 1,600 square foot area to approximately 10 feet bgs, and backfill of excavated areas with clean import fill. Exposed soils at the FMW Site during excavation of contaminated soils could be entrained in stormwater runoff and transported off-site. However, these erosion impacts would be mitigated to a less-than-significant level through implementation of existing stormwater requirements, including implementation of a Stormwater Pollution Prevention Plan as part of the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Stormwater permit requirements are discussed in more detail under Section X, Hydrology and Water Quality. Following excavation and backfill, the FMW Site would be paved and there would be no further potential for erosion. This impact would be considered *less than significant*.

c) *Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?*

Less-Than-Significant Impact. As noted under Item a) iii, above, soils at the FMW Site may have the potential to liquefy during a seismic event, but as the Project would not develop any habitable structures, no significant impact would occur. As noted under Item a) iv, above, the FMW Site would not be subject to landslides. During excavation for the Project, temporary slope stability hazards may potentially be created along excavation walls, which could impact the structural integrity of adjacent improvements such as buildings, sidewalks, utilities, and UPRR railroad tracks. Excavation setbacks and temporary sloping requirements along the boundaries of the FMW Site would be conducted in accordance with the recommendations of a geotechnical evaluation to address this concern. The Project would require a Grading Permit from the City, and excavation and backfilling activities would be required to comply with the City's Grading Ordinance (Title 7, Chapter 5 of the Emeryville Municipal Code) which includes requirements related to sloping and shoring of excavations and compaction of fill material to ensure the safety that adjacent properties and improvements would not be impacted by excavation activities. Excavation near the railroad tracks would also be subject to sloping/shoring requirements from UPRR.[29] Performing excavation setbacks and temporary sloping/shoring in accordance with geotechnical recommendations, the City's Grading Ordinance, and UPRR requirements would ensure that Project excavation and backfilling activities would not result in unstable soil conditions or the collapse of excavation sidewalls.

Subsidence can result from the removal of subsurface water resulting in gradual depression of the ground surface. The proposed groundwater extraction would result in an estimated drawdown of the shallow groundwater level of approximately 1 to 3 feet in the groundwater treatment area. The estimated zone of capture for the groundwater extraction would extend approximately 210 feet out from the groundwater treatment area.[30] The decrease in groundwater levels would be less pronounced with distance away from the groundwater treatment area, forming what is referred to as a cone of depression. The localized and relatively minor decrease in groundwater levels resulting from groundwater extraction would be within the range of historic groundwater level fluctuations that have been observed at the FMW Site[31] and a property located immediately west of the Site across the UPRR railroad tracks;[32]

[29] UPRR, 2021. Guidelines for Temporary Shoring, General Shoring Requirements, December 7.

[30] EKI, 2013. Final Treatability Investigation Report, 5679 Horton Street, Former Marchant/Whitney Site, Emeryville, California, August 2013.

[31] EKI, 2016a. *Op. cit.*

[32] EKI, 2020. Annual 2019 Groundwater Monitoring Report, Bay Street Project Area, Emeryville, CA, July 31.

therefore, subsidence related to groundwater extraction would not be expected to occur. Additionally, land subsidence generally does not occur in response to declines in shallow groundwater;[33] therefore, potential impacts related to subsidence or soil collapse would be less than significant. No other potentially significant impacts related to unstable soils are present and this impact would be considered *less than significant*.

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

Less-Than-Significant Impact. Subsidence due to desiccation and shrinkage of soils can be a potential concern for implementation of thermal treatment at sites with significant clay content in near surface soils. However, based on a 2014 US EPA study of 10 years of development and deployment of thermal treatment technologies, subsidence is generally not a problem at thermal treatment sites due to the depth where heating occurs and because the degree of moisture reduction does not result in sufficient desiccation to cause subsidence.[34] As described above, the FS/DRAP anticipated use of ERH for thermal treatment, which relies on current flow through the subsurface formation and works best when the subsurface remains wet.[35] Therefore, dry zones are unwanted due to reduced effectiveness of ERH implementation and the ERH system would be operated in a manner that maintains soil moisture and prevents desiccation. Also, the Project would not include any permanent structures or other aboveground improvements on the FMW Site that would be subject to potential damage from expansive soils. The Project would also include excavation of contaminated near surface expansive soils in the upper 5 feet bgs across the FMW Site and backfill and compaction with geotechnically approved clean import fill. Subsidence is also not likely to be a potential concern for existing buildings at neighboring properties to the north of the FMW Site as the northern edge of the thermal treatment area is set back approximately 30 to 35 feet from the southern building edge. Therefore, this impact would be considered less than significant.

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

No Impact. No use of septic tanks or alternative waste water disposal systems are proposed as part of the Project.

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

Less-Than-Significant Impact. The Caltrans Geoarchaeological Sensitivity Assessment reviewed for the Cultural Report mapped soils at the FMW Site as "Holocene to Historic" alluvium dating from 11,800 years ago to the last 150 years. These soils have the potential to contain modern vertebrate fossils and fresh-water gastropod and pelecypod

[33] EBMUD GSA and City of Hayward GSA, 2022. East Bay Plan Subbasin, Groundwater Sustainability Plan, January 2022.

[34] US EPA. 2014. Engineering Paper: In Situ Thermal Treatment Technologies: Lessons Learned. EPA 542-R-14-012. US EPA Office of Land and Emergency Management (5102G), May 2014.

[35] TRS Grounp, Inc., 2020. In Situ Thermal and Subsidence Available at:https://www.thermalrs.com/wp-content/uploads/2020/08/In-Situ-Thermal-and-Subsidence-20190926-aid.pdf, Accessed on April 14, 2022.

shells, but in general these young alluvial soils are unlikely to contain significant fossil resources.[36] Therefore, the potential to destroy a unique paleontological resource would be *less than significant*. The FMW Site is in an area of level topography and there are no unique geologic features at or near the FMW Site.

VIII. GREENHOUSE GAS EMISSIONS

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

Affected Environment

Climate change refers to change in the Earth's weather patterns, including the rise in temperature due to an increase in heat-trapping Greenhouse gases (GHGs) in the atmosphere. According to the BAAQMD,[37] some of the potential effects of increased GHG emissions and the associated climate change may include loss in snow pack (affecting water supply), sea level rise, more frequent extreme weather events, more large forest fires, and more drought years. In addition, climate change may increase electricity demand for cooling, decrease the availability of hydroelectric power, and affect regional air quality and public health.

In 2006, the California State Legislature passed the California Global Warming Solutions Act (Assembly Bill [AB] 32), which requires the California Air Resources Board to develop and implement regulatory and market mechanisms that will reduce GHG emissions to 1990 levels by 2020. In addition, Governor Schwarzenegger's Executive Order S-3-05 set a GHG reduction goal of 80 percent below 1990 levels by 2050. In 2016, the state legislature adopted Senate Bill (SB) 32, which requires further reduction of GHG emissions to 40 percent below the 1990 level by 2030. On November 15, 2016, the City of Emeryville adopted the *Climate Action Plan 2.0* (CAP) to update the City's 2008 CAP and align the City's GHG reduction emissions targets with the State's long-term GHG reduction targets. The CAP aims to reduce community-wide GHG emissions by 40 percent below 2004 levels by 2030 and 80 percent below 2004 levels by 2050.[38] The CAP includes 17 mitigation goals, 5 adaption goals, 98 mitigation initiatives, 38 adaptation initiatives, and 5 long-term strategies in the following areas: transportation, buildings, energy, consumption and waste, water use, urban space, government operations, and adaptation. The CAP also created a

[36] Helley, E.J. and Lajoie, K.R., Spangle, W.E. and Blair, M.L., 1979. Flatland Deposits of the San Francisco Bay Region – their geology and engineering properties, and their importance to comprehensive planning. Geologic Survey Professional Paper 943. U.S. Geological Survey and Department of Housing and Urban Development.

[37] BAAQMD, 2017. Final 2017 Clean Air Plan. Adopted April 19.

[38] City of Emeryville, 2016. Climate Action Plan 2.0, November.

vision for the City to be carbon neutral in the long run, and requires the City to assess the implementation status of the CAP by following a monitoring plan.

The primary GHG emissions of concern are carbon dioxide, methane, and nitrous oxide. Other GHGs of concern include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, but their contribution to climate change is less than one percent of the total GHGs that are well mixed (i.e., that have atmospheric lifetimes long enough to be homogeneously mixed in the troposphere).[39] Each GHG has a different global warming potential. For instance, methane traps about 21 times more heat per molecule than carbon dioxide. As a result, emissions of GHGs are reported in metric tons of carbon dioxide equivalents (CO_2e), where each GHG is weighted by its global warming potential relative to carbon dioxide. Carbon dioxide emissions dominate the GHG inventory in the SFBAAB, accounting for more than 90 percent of the total CO_2e emissions reported.

In 2010, the BAAQMD developed and adopted GHG thresholds of significance that were incorporated into the BAAQMD's 2017 *CEQA Air Quality Guidelines*. The GHG thresholds are designed to help lead agencies in the SFBAAB evaluate potential environmental impacts from GHG emissions for new projects and meet GHG emission reduction goals, and include thresholds for stationary sources such as the proposed thermal remediation system. Therefore, the BAAQMD's thresholds of significance were used in this CEQA analysis.

Impact Evaluation

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

Less-Than-Significant Impact. Project emissions of GHGs during construction and operation were estimated from the following three sources: off-road equipment, on-road vehicles, and energy use. Since operation activities would vary over time based on the phase of remediation (e.g., thermal remediation, in-situ groundwater polishing, post-thermal remediation), the most intensive operation scenario related to energy use and vehicle miles traveled was used to conservatively analyze the Project's GHG emissions. Emissions from the thermal remediation phase of the Project, which would last about one year, were analyzed as the most intensive operation scenario.

Construction emissions were estimated using CalEEMod, as described in Item b of Section III, *Air Quality*. The input parameters and assumptions used to estimate emissions from off-road equipment and on-road vehicles are included in Appendix B.

Emissions from energy used during operation of the thermal remediation system may be from either electricity or a combination of electricity and natural gas. Most of the equipment used during Project operation would be electric, including electrodes, condensers, blowers, and groundwater pumps, with the exception of an emergency diesel backup generator. Energy ratings for these equipment were provided by the project applicant or based on CalEEMod default assumptions, summarized in Appendix B. The Project's potential GHG emissions from electricity use and from on-site electric equipment were estimated using the input parameters and assumptions included in Appendix B and the following equation:

[39] Intergovernmental Panel on Climate Change, 2013. Climate Change 2013; the Physical Science Basis; Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

$$\text{Emissions in pounds} = (EU)(EF)$$

Where:

EU = Electricity use (megawatt hours)
EF = Emission factor (pounds/megawatt hours)

Since the Project would be considered a stationary source, the total annualized GHG emissions estimated from Project construction and maximum annual GHG emissions from Project operation were summed and compared to the BAAQMD's stationary-source threshold of significance in Table VIII-1. Since the BAAQMD does not have a threshold of significance for GHG emissions from construction, the Project's construction GHG emissions were amortized over the expected lifespan of the Project (about 28 years of remediation) and combined with the operational GHG emissions to be conservative. As shown in Table VIII-1, the Project's total GHG emissions are substantially less than the BAAQMD's stationary-source threshold; therefore, the Project's GHG emissions would have a less-than-significant impact on global climate change.

Table VIII-1. Estimated Unmitigated GHG Emissions

Phase	Emission Source	MT CO2e/year
Project Construction[a]	On-Site Equipment and On-Road Vehicles	57
Thermal Remediation	Energy Use Option 1[b]	4,231
	Energy Use Option 2[c]	4,243
Post Thermal Treatment	On-Site Electric and Diesel Equipment	84
	Maximum Annual Project Emissions	4,300
	BAAQMD's Stationary-Source Threshold	10,000
	Threshold Exceedance?	No

Source: Baseline, 2021 (Appendix B)
Notes: MT CO2e/year = metric tons of carbon dioxide equivalents per year
[a] Construction GHG emissions were amortized over the expected lifespan of the Project (about 28 years).
[b] Energy Use Option 1 uses electricity only.
[c] Energy Use Option 2 uses a combination of electricity and natural gas.

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

Less-Than-Significant Impact. As discussed above, the Project would not exceed the BAAQMD's stationary source threshold of significance and, therefore, would be consistent with the Statewide GHG reduction goals. Therefore, the

proposed Project would have a less-than-significant impact on applicable plans, policies, or regulations related to GHG emission reductions in the SFBAAB.

IX. HAZARDS AND HAZARDOUS MATERIALS

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:					
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☑	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☑	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☑	☐	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☑	☐	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☑
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☑

Affected Environment

The Project is intended to remediate soils, groundwater, and soil vapor at the FMW Site that have been affected by historic releases of hazardous materials. These activities would require the demolition of the existing warehouse building, the excavation and disposal of an estimated 27,200 tons of soil, and the operation of groundwater treatment systems. With the exception of a small area in the northeastern portion of the FMW Site, where excavation depths would reach 10 feet, excavation would affect the top five feet of soil and would not encounter groundwater. The

analysis of potential hazards and hazardous materials impacts is based on information from the FS and RAP for the Project[40] unless indicated otherwise.

The FMW Site and surrounding properties were historically used for industrial land uses beginning in the early 20th Century. The FMW Site contained a portion of the manufacturing facilities for the Marchant Calculating Machine Company from the late 1910s to the late 1950s, and the manufacturing facilities for the Whitney Research Tool Company from the mid-1960s to the late 1990s. These uses and others on adjoining properties within the Emeryville Horton District have included a wide range of hazardous materials. Known and suspected historical hazardous materials releases to soil and/or groundwater have contributed to area-wide groundwater contamination.

The primary COC at the FMW Site is the volatile organic compound TCE, a common cleaner, degreaser, and industrial solvent. Historic releases of TCE at the FMW Site have affected soils, soil vapor, and groundwater, and COCs have migrated off-site via groundwater to affect properties westward of the FMW Site (northwest to southwest) TCE-impacted groundwater also migrates onto the FMW Site from upgradient off-site locations to the east. Portions of the historical Marchant Calculating Machine Company operations are upgradient (to the east) and cross-gradient (to the north) of the FMW Site.

Groundwater at the FMW Site and vicinity is present in coarse-grained layers of soil in between finer-grained layers. TCE has most significantly affected the groundwater layer located approximately 23 to 45 feet bgs (referred to as 1032 Unit) and the shallowest groundwater layer located beneath fill materials to approximately 23 feet bgs (referred to as S10 Unit). Groundwater in these layers contains concentrations of TCE up to 160,000 times higher than MCLs for drinking water. The extent of groundwater contamination in these stratigraphic units and deeper stratigraphic units (referred to as the 3243, 4360, 6080, and 80110 Units, which are approximately 45 to 56 feet bgs, 56 to 73 feet bgs, 73 to 93 feet bgs, and 93 to 123 feet bgs, respectively) is shown on Figures 4 to 9. Some of the TCE identified in past groundwater investigations has been encountered in a more concentrated, undissolved separate phase liquid (SPL) in portions of the FMW Site.

Subsurface vapor concentrations of TCE at the FMW Site are up to 200 times greater than applicable commercial/industrial health-risk based screening criteria in sub-slab vapor (under foundations) and up to 300,000 times greater than applicable commercial/industrial screening criteria in deeper soil vapor (at depths of approximately 3 to 5 feet bgs). Indoor air concentrations of TCE have also been detected in the warehouse building at concentrations greater than applicable commercial/industrial screening criteria.

Other COCs identified at the FMW Site include petroleum hydrocarbons and cadmium. Shallow soils containing elevated concentrations of VOCs, petroleum hydrocarbons, and cadmium would be removed from the FMW Site during the excavation phase of the Project.

Impact Analysis

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

Less-Than-Significant Impact. During remedial activities related to building demolition, soil excavation, and backfill, hazardous materials related to construction equipment, such as fuels and lubricants, would be used at the FMW Site. As the FMW Site is greater than one acre in area, management of these materials at the FMW Site during remediation would be subject to the requirements of a SWPPP as part of the Construction General Permit.

[40] EKI, 2022. *Op cit.*

Stormwater permit requirements are discussed in more detail under Section X, Hydrology and Water Quality. Compliance with the Construction General Permit would require preparation and implementation of a SWPPP which would be designed to reduce the risk of spills or leaks from reaching the environment, including procedures to address minor spills of hazardous materials.

The Project includes the export and disposal of about 27,200 tons of contaminated soil from the FMW Site to permitted disposal facilities. Transportation of the contaminated soil would be subject to requirements of the federal Hazardous Materials Transportation Act. The U.S. Department of Transportation (USDOT) has developed hazardous materials regulations under this law, which govern the classification, packaging, communication, transportation, and handling of hazardous materials, as well as employee training and incident reporting. Trucks and transport vehicles will be covered when hauling excavated soil from the FMW Site or other loose material off-site or the excavated soil will be placed in covered containers and then transported off-site.

Following the excavation and backfill phase of the Project, groundwater treatment systems would be operated at the FMW Site. The groundwater remediation systems at the FMW Site would be subject to BAAQMD permitting requirements under Regulation 8, Rule 47 and Regulation 2, Rule 5, which requires any toxic emissions from the systems to be treated using granular-activated carbon vessels and/or advanced oxidation such as potassium permanganate-impregnated media to prevent significant emissions of hazardous materials during routine operations.

Adherence to these existing regulatory requirements would reduce the potential impacts of the Project related to routine transport, use, or disposal of hazardous materials to a *less-than-significant* level.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Potentially Significant Unless Mitigation Incorporated. The Project involves the demolition of a warehouse building, constructed in the mid-1960s, as well as the excavation and disposal of soil containing TCE and other contaminants. These activities could potentially release hazardous materials into the environment, posing a health risk to construction workers and nearby members of the general public.

Based on the age of the FMW Site warehouse building, the building could contain hazardous building materials such as lead-based-paint (LBP), asbestos-containing materials (ACMs), polychlorinated biphenyls (PCBs)-containing caulking or equipment (e.g., transformers, capacitors, light ballasts), and/or mercury containing fluorescents light bulbs and thermometers. Fluorescent lighting tubes and ballasts, and several other common items containing hazardous materials are regulated as “universal wastes” by the State of California. Universal waste regulations allow common, low-hazard wastes to be managed under less stringent requirements than other hazardous wastes. Although these hazardous materials do not pose a significant threat to public health or the environment in their intact condition, demolition/renovation activities have the potential to break up and release these materials to the air, where they can pose a potential hazard to demolition workers and the general public.

If lead paint is present on structure to be demolished, the stabilization and/or removal of lead paint would be required in accordance with applicable laws and regulations, including but not limited to: California OSHA’s Construction Lead Standard, Title 8 CCR Section 1532.1, and Department of Health Services (DHS) regulation 17 CCR Sections 35001 through 36100, as may be amended. Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an Applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. BAAQMD Regulation 11-2 requires that prior to commencement of any demolition or renovation, the owner or operator must thoroughly survey the affected structure or portion thereof for the presence of ACMs. The survey must be performed by a person who is certified by the Division of Occupational Safety and Health, and who has taken and

passed an EPA-approved Building Inspector course and who conforms to the procedures outlined in the course. The survey must include sampling and the reporting of results of laboratory analysis of the asbestos content of all suspected ACMs. This survey must be made available, upon request by the Air Pollution Control Officer, prior to the commencement of any regulated ACMs removal or any demolition. If ACMs are identified, the disturbance/removal and management of ACMs must be performed in accordance with BAAQMD Regulations under Rule 11-2 to ensure that asbestos would not be released into the environment. Based on the requirements described above, potential impacts related to release of lead and asbestos into the environment during demolition would be less than significant.

Title 8 Chapter 26 of the Emeryville Municipal Code include demolition waste requirements, including requirements related to removal and proper disposal of hazardous building materials including universal waste and PCBs during demolition activities. Demolition of a building constructed between the years 1950 and 1980 with building materials containing PCB at concentrations of 50 ppm or greater requires a PCB demolition permit. In order to obtain this permit, information must be submitted to the City detailing the building materials involved, including test results showing PCB concentrations in all building materials specified in the permit application. PCB management must be employed and documented for all permitted projects. In order to obtain a demolition permit for the existing structure on the FMW site, the Successor Agency would need to complete a PCBs Screening Assessment and perform representative sampling and analysis of building materials as outlined in the Bay Area Stormwater Management Agencies Association (BAASMA) Protocol for Evaluating Priority PCBs-Containing Materials before Building Demolition.[41] PCBs or PCBs-contaminated items require proper off-site transport and disposal at a facility that can accept such wastes, in accordance with the Toxic Substances Control Act of 1976 and other federal and State regulations. Hazardous building materials removed during construction must be transported in accordance with USDOT regulations and disposed of in accordance with the Resource Conservation and Recovery Act, CCR, and/or California Universal Waste Rule at a facility permitted to accept the wastes. Based on the requirements described above, potential impacts related to the release of PCBs into the environment during demolition would be less than significant.

Currently, the FMW Site is covered with building foundation and pavement. Remedial activities would remove this cover and expose and disturb contaminated soils, which may potentially affect nearby members of the general public or the environment if organic vapor from TCE-contaminated soils and groundwater or fugitive dust containing COCs migrates from the FMW Site. Because soil to be excavated at the FMW Site is contaminated with VOCs at concentrations exceeding 50 ppm, notification of BAAQMD for excavation would be required under BAAQMD Regulation 8, Rule 40, which includes requirements for management of soil excavation and handling to minimize the emissions of VOCs to the atmosphere.

A decontamination pad where trucks, equipment, and demolition debris can be decontaminated prior to exiting the FMW Site will be constructed before remediation activities start to remove potentially contaminated soil and debris from vehicles and equipment.
A tent structure would be used to enclose the excavation activities during removal of soil containing separate phase liquid and may be used to enclose other excavation activities if perimeter air monitoring indicates that other vapor control measures are not adequately controlling vapor emissions. The interior of the tent structure would be high enough to allow for soil removal with heavy equipment. During excavation activities inside of the tent, excavated soil would be directly loaded into covered bins within the tent. The tent structures would be ventilated and kept under negative pressure during active work hours. The ventilation systems would be designed to achieve the appropriate air exchange necessary for worker safety, and a filtration system would be connected to the exhaust end of the ventilation blower system to remove particulates and VOCs in accordance with a BAAQMD permit.

[41] BAASMA, 2019. PCBs in Priority Building Materials: Model Screening Assessment Applicant Package, Managing PCBs−Containing Building Materials during Demolition: Guidance, Tools, Outreach and Training, City of Emeryville, July.

Excavation activities outside the tent will be performed in accordance with a Dust Control Plan and a Perimeter Air Monitoring Plan, to limit generation of dust and vapors and to control dust from spreading outside of designated work areas to off-site properties or to public streets. The Dust Control Plan also includes contingency measures if perimeter air monitoring shows the need to control such emissions. The Dust Control Plan and the Perimeter Air Monitoring Plan will be prepared in accordance with DTSC's Community Air Monitoring Plan Guidance.[42]

Project information and points of contact (e.g., environmental consultant, DTSC, and BAAQMD) for questions and concerns will be posted on sign(s) at the FMW Site in visible locations.

After the excavation of contaminated soil and backfill with clean import fill, the FMW Site would be re-paved and groundwater treatment would begin. As the groundwater treatment systems would be operated under BAAQMD permit requirements, no hazardous emissions would be anticipated during this stage of the Project.

The potential release of hazardous materials into the environment during Project excavation activities is a ***potentially significant*** impact. Implementation of the following mitigation measures would reduce this impact to a *less-than-significant* level.

> ***Mitigation Measure HAZARDS-1:*** As a condition of approval, the Project RDIP shall include a Health and Safety Plan (HSP) prepared by a Certified Industrial Hygienist and reviewed by DTSC. The HSP shall include measures designed to protect remedial workers, the general public, and the environment from releases of hazardous materials that may occur during each phase of Project activities. The HSP shall include the use of Personal Protective Equipment (PPE) to address potential exposures to FMW Site contaminants for workers, in accordance with OSHA worker safety requirements. The HSP shall include training requirements, including requirements for remedial workers and on-site monitors/observers of remedial work to be trained in Hazardous Waste Operations and Emergency Response (HAZWOPER) in accordance with Title 8, Section 5192 of California Code of Regulations. The HSP shall include measures to minimize the potential for hazardous emissions that could affect off-site receptors, including BAAQMD dust control Best Management Practices. In addition, the Project RDIP will include a dust, vapor, and odor control plan and a perimeter air monitoring plan that will be reviewed and approved by DTSC. The perimeter air monitoring plan will develop human health risk-based airborne action levels for dust and COCs protective of off-site receptors, will describe air monitoring procedures, and will specifies contingency measures to be undertaken if airborne action levels are exceeded. The dust, vapor, and odor control plan will specify measures to be undertaken to limit generation of dust, vapors, and odors in accordance with airborne action levels specified in the perimeter air monitoring plan. The HSP shall include emergency response procedures for remedial site workers, as well as procedures for the investigation and safe removal of previously unknown sources of contamination, such as underground tanks, that may be encountered during remedial excavation activities. The HSP shall also include soil and groundwater management procedures designed to ensure handling of those materials in accordance with regulatory requirements and prevent migration of contaminants off-site through trackout, runoff, or dust.
>
> ***Mitigation Measure HAZARDS-2:*** As a condition of approval, the Project RDIP shall include a Perimeter Air Monitoring Plan (Plan) for remedial activities to be reviewed by DTSC. The Plan shall require real time air monitoring at the perimeter of the FMW Site during earthmoving activities. The Plan shall establish health risk-based action levels for organic vapor and fugitive dust and the air monitor personnel designated in the Plan shall have the authority to stop work at the FMW Site if these action levels are exceeded. The Plan shall include remedial measures to be implemented in the event of action level exceedances, prior to the restart of work, such

[42] DTSC, 2020. Community Air Monitoring Plan Guidance, DTSC, January.

as a temporary work stoppage during windy conditions, additional dust and vapor control measures, the use of non-toxic VOC vapor suppressants, and/or tenting of excavation activities.

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

Potentially Significant Unless Mitigation Incorporated. A private school, the Pacific Rim International School, is located at 5521 Doyle Street, approximately 950 feet east of the eastern property boundary of the FMW Site. No other schools were identified within a quarter mile of the FMW Site.[43] The Project would emit hazardous emissions and handle hazardous materials within one-quarter mile of this school. The potential exposure to students to hazardous materials during Project implementation is a ***potentially significant*** impact during subsurface work such as soil excavation. Implementation of Mitigation Measure HAZARDS-1, above, would ensure that hazardous materials would be handled during Project implementation in a manner that would minimize the potential for hazardous materials to be released into the environment. Implementation of Mitigation Measure HAZARDS-2 would require perimeter air monitoring to further ensure that hazardous emissions with the potential to affect off-site receptors, including the school, do not occur. These measures, in addition to excavation within a tent structure in accordance with a BAAQMD permit, if warranted, would reduce this potential impact to a *less-than-significant* level.

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

Potentially Significant Unless Mitigation Incorporated. The FMW Site is listed on DTSC's Hazardous Waste and Substances Site List, which is compiled pursuant to Government Code Section 65962.5.[44] The purpose of the Project is to remediate soil, groundwater, and soil vapor that have been impacted by past hazardous materials releases at the FMW Site in order to mitigate or reduce potential human exposure to the hazardous materials, reduce concentrations of hazardous materials in groundwater, and limit off-site migration of hazardous materials in groundwater. As discussed in Item b) above, the excavation of soil containing TCE and other contaminants could potentially release hazardous materials into the environment. The potential release of hazardous materials into the environment during Project excavation activities is a ***potentially significant*** impact. Implementation of Mitigation Measure HAZARDS-1, above, would ensure that hazardous materials would be handled during Project implementation in a manner that would minimize the potential for hazardous materials to be released into the environment. Implementation of Mitigation Measure HAZARDS-2 would require perimeter air monitoring to further ensure that hazardous emissions with the potential to affect off-site receptors do not occur. These mitigation measures would reduce this potential impact to a *less-than-significant* level.

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

[43] California Department of Education, 2021. California Schools Directory. Website https://www.cde.ca.gov/schooldirectory/, accessed October 18.

[44] Department of Toxic Substances Control (DTSC), 2021. Hazardous Waste and Substances Site List (Cortese), Available at: https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,FUDS&status=ACT,BKLG,COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29, Accessed September 24.

No Impact. The FMW Site is not located within an airport land use plan.[45] The nearest public airport is the Oakland International Airport, located approximately 10 miles southeast of the FMW Site.

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

No Impact. Remedial activities at the FMW Site would be limited to the parcel boundaries and would not result in any changes to existing roadways or include any other element with the potential to impair or physically interfere with an adopted emergency response or emergency evacuation plan. Truck traffic during the demolition, excavation, backfill, and paving operations for the Project would be subject to a hazardous waste transportation plan presented in the Project RDIP.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

No Impact. The FMW Site is located within an urbanized area and is not located near wildlands or the wildland-urban interface where wildland fire hazards may be present.

X. HYDROLOGY AND WATER QUALITY

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

[45] Alameda County Community Development Agency, 2010. Oakland International Airport, Airport Land Use Compatibility Plan, December.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
	(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	❒	❒	☑	❒
	(iv) impede or redirect flood flows?	❒	❒	☑	❒
d)	In flood hazard, tsunami, or seiches zones, risk release of pollutants due to project inundation?	❒	❒	☑	❒
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	❒	❒	☑	❒

Affected Environment

Information regarding hydrology and water quality for the Project is based on environmental investigations at the FMW Site described in the RI report, the hydrology analysis of the Emeryville General Plan EIR,[46] and available public agency hydrologic maps and plans.

The FMW Site is located within the Central Basin of the San Francisco Bay hydrologic region. The nearest surface water body to the FMW Site is Temescal Creek, located approximately 800 feet to the south. Temescal Creek is a channelized creek, which runs underground near the FMW Site, that serves as a main drainage outfall within the City of Emeryville.[47] Stormwater from the project site is collected in the City storm drain system and conveyed to Temescal Creek, from there it is discharged to the Central Basin of San Francisco Bay approximately 2,000 feet southwest of the FMW Site.

The Central Basin of San Francisco Bay has been designated as an impaired water body in accordance with Section 303(d) of the federal Clean Water Act. Pollutants contributing to this designation are pesticides (chlordane, DDT, and dieldrin), dioxins, furans, invasive species, mercury, PCBs, selenium, and trash in water. Total maximum daily loads (TDMLs) have been established for mercury, PCBs, and selenium and will ultimately be prepared for other pollutants affecting the Bay.[48] Development projects must be consistent with TDMLs and comply with NPDES stormwater permit requirements.

[46] City of Emeryville, 2009a. *Op. cit.*

[47] *Ibid.*

[48] State Water Resources Control Board (State Water Board), 2018. Final 2018 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report), Available: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html, Accessed September 27, 2021.

The San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)[49] establishes beneficial water uses for waterways, water bodies, and groundwater within the region and is a master policy document for managing water quality in the region. Temescal Creek is listed in the Basin Plan as providing the beneficial uses of cold water habitat, warm water habitat, wildlife habitat, and water contact and noncontact recreation. The Central San Francisco Bay is listed in the Basin Plan as providing the beneficial uses of industrial service supply, industrial process supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact and noncontact recreation, and navigation.

The FMW Site is located within the Santa Clara Valley Groundwater Basin, East Bay Plain Groundwater Subbasin. The East Bay Plain Sub basin is listed in the Basin Plan as providing the beneficial uses of municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply.[50] At the FMW Site, groundwater is encountered at a depth of approximately 5 to 10 feet bgs.[51] Groundwater is encountered within gravelly and sandy layers within several distinct stratigraphic units at the FMW Site, which are separated by clayey, fine-grained soils.

Groundwater at the FMW Site has been affected by historic releases of TCE. The highest concentrations and greatest extent of contamination is within the shallowest groundwater between approximately 5 and 20 feet bgs, and a deeper layer of coarse-grained soils between approximately 28 to 42 feet bgs (Figures 4 and 5). Contaminated groundwater has migrated westward and affected properties to the west of the FMW Site (Figures 4 and 5).

Impact Analysis

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less-Than-Significant Impact.

As discussed under Section IX, Hazards and Hazardous Materials, compliance with existing demolition permit requirements from the City would ensure that the potential for PCBs, mercury, and other hazardous building materials to be released into the environment during demolition of the existing structure would be less than significant. During soil excavation for the Project, contaminated soils, currently covered by buildings and pavement, would be exposed and could potentially be entrained in stormwater runoff. Discharge of contaminants in stormwater during this phase of the Project could violate water quality standards, however, implementation of best management practices described below will minimize the likelihood of violating water quality standards.

As the FMW Site is greater than one acre in area, excavation would be subject to the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-006-DWQ (Construction General Permit).[52] Construction General Permit requirements have been incorporated in Title 6, Chapter 13 of the City of Emeryville Municipal Code. To

[49] San Francisco Bay Regional Water Quality Control Board, 2017. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*. Incorporating all amendments as of May 4.

[50] *Ibid.*

[51] EKI, 2016a, *op cit.*

[52] State Water Resources Control Board Division of Water Quality, 2009. Construction General Permit Fact Sheet. 2009-0009-DWQ amended by 2010-0014-DWQ & 2012-0006-DWQ.

obtain coverage under the Construction General Permit, the project applicant must provide via electronic submittal, a Notice of Intent (NOI), a Storm Water Pollution Prevention Plan (SWPPP), and other documents required by Attachment B of the Construction General Permit. Activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as grubbing or excavation.

The Construction General Permit uses a risk-based permitting approach and mandates certain requirements based on the project risk level (i.e., Level 1, Level 2, or Level 3). The project risk level is based on the risk of sediment discharge and the receiving water risk. The sediment discharge risk depends on the project location and timing (i.e., wet season versus dry season activities). The receiving water risk depends on whether the project would discharge to a sediment-sensitive receiving water. The determination of the Project risk level would be made by the Project applicant when the NOI is filed.

The performance standard in the Construction General Permit is that dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and management practices that achieve Best Available Technology (BAT) for treatment of toxic and non-conventional pollutants and Best Conventional Technology (BCT) for treatment of conventional pollutants. A SWPPP must be prepared by a Qualified SWPPP Developer that meets the certification requirements in the Construction General Permit. The purpose of the SWPPP is to (1) to help identify the sources of sediment and other pollutants that could affect the quality of stormwater discharges, and (2) to describe and ensure the implementation of Best Management Practices (BMPs) to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges resulting from construction activity. Operation of BMPs must be overseen by a Qualified SWPPP Practitioner that meets the requirements outlined in the permit.

The SWPPP must also include a construction site monitoring program. The monitoring program includes, depending on the project risk level, visual observations of site discharges, water quality monitoring of site discharges (pH, turbidity, and non-visible pollutants, if applicable), and receiving water monitoring (pH, turbidity, suspended sediment concentration, and bioassessment).

Following the excavation and backfill activities and prior to installation of hardscaping, stormwater management at the FMW Site would continue to be conducted under the Construction General Permit. Hardscaping and associated stormwater management systems at the FMW Site would be subject to MRP, under Order R2-2015-0049.[53] Like Construction General Permit requirements, the requirements of the MRP have been incorporated in Title 6, Chapter 13 of the City of Emeryville Municipal Code. Provision C.3 of the Municipal Regional Permit requires implementation of low impact development (LID) source control, site design, and stormwater treatment for regulated projects, defined as those that create and/or replace 10,000 square feet or more of impervious surfaces. LID employs principles such as preserving and recreating natural landscape features and minimizing impervious surfaces to create functional and appealing site drainage that treats stormwater as a resource, rather than as a waste product. In general, practices used to adhere to these LID principles include, among others, measures such as rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes. Provision C.3 also requires an operations and maintenance plan be implemented to ensure routine inspection and maintenance of stormwater treatment measures.

The plan for interim ground cover, if it would be installed after excavation and backfill activities, would be provided in the RDIP for the Project. Stormwater treatment design must be incorporated into the Site hardscaping plan in consideration of remedial objectives. The Alameda County Clean Water Program (ACCWP) has developed a C.3

[53] San Francisco Bay Regional Water Quality Control Board, 2015. San Francisco Bay Region Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008. November 19.

Stormwater Technical Guidance document to assist in the design implementation, and maintenance of required stormwater infrastructure. In Section F.3 of the guidance document, ACCWP acknowledges that stormwater treatment designs should generally maximize infiltration to the underlying soils; however, at sites with groundwater contamination, where stormwater infiltration could promote migration of contamination and/or interfere with remediation, flow-through planters and other stormwater controls that are isolated from underlying soils are appropriate.[54] The stormwater treatment design would be reviewed by DTSC to ensure that it would not promote migration of contamination or interfere with remediation, and it would also be reviewed by the City to ensure that it complies with the Provision C.3 requirement of the of MRP.

The Project would include the destruction or modification of existing groundwater monitoring wells to allow for demolition and excavation of the FMW Site. The wells that are proposed to be destroyed would be pressure grouted and the tops of the wells would be removed in accordance with ACPWA permit requirements. Modification of existing wells (e.g., cutting and capping below the depth of proposed excavation, and then reconstruction the upper portion of the well after backfilling activities) would also be performed in accordance with ACPWA permit requirements. New wells that are proposed to be installed for remediation and groundwater monitoring would be constructed in accordance with ACPWA permit requirements, including the placement of annular seal materials at depth inside of the drill casing as it is retracted to prevent bridging or borehole collapse. Destruction, modification, and construction of wells in accordance with ACPWA requirements would ensure that the wells would not serve as conduits that could allow vertical migration of contaminants in groundwater.

Dewatered groundwater during the excavation phase and groundwater treated by treatment systems during subsequent phases of the Project is proposed to be discharged to storm or sanitary sewers. All discharges of groundwater for the Project would be subject to NPDES or EBMUD permits for discharge to the storm or sanitary sewers, respectively, which would include requirements for testing to ensure that discharge standards are met. Extracted groundwater would be treated aboveground likely using air stripping, GAC, and/or oxidation for VOCs and advanced filtration, such as RO or ion-exchange for metals, if needed based on the discharge location. The Project would improve the quality of groundwater beneath the FMW Site and surrounding areas compared to the existing conditions by removing contaminated soil source material, remediating contaminated groundwater beneath the FMW Site, and limiting off-site migration of contaminated groundwater.

Compliance with existing permit requirements described above would reduce potential Project impacts related to water quality to a *less-than-significant* level.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?

Less-Than-Significant Impact. The Project would remediate groundwater at the FMW Site with thermal treatment, MPE wells, and in-situ groundwater polishing potentially using enhanced ERD. During remedial activities, soil vapor and groundwater would be extracted from treatment wells and air stripping, GAC, oxidation, and/or reverse osmosis would be used to remove contaminants prior to discharge of the treated groundwater to the storm or sanitary sewer under an NPDES or EBMUD permit. Groundwater extraction would result in localized lowering of the water table in the vicinity of the FMW Site. The contaminated groundwater that would be extracted for treatment is not suitable for designated groundwater beneficial uses due to TCE contamination, so no significant effects on groundwater supplies would result from the proposed groundwater extraction. The surface of the FMW Site is currently nearly completely covered with impervious surfaces, including a building and asphalt pavement, and would be paved following building

[54] Alameda County Clean Water Program (ACCWP), 2021. C.3 Stormwater Technical Guidance, 3rd Revision, Version 7.1. February 8.

demolition and excavation, so no significant increases in impervious surface area potentially interfering with groundwater recharge would occur. This would be a *less-than-significant* impact.

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

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

Less-Than-Significant Impact. Remedial activities for the Project have the potential to result in erosion and siltation. Exposed soils at the FMW Site during excavation of contaminated soils could be entrained in stormwater runoff and transported off the FMW Site. Compliance with the Construction General Permit, described above under Item a), including preparation and implementation of a SWPPP, would reduce the potential for substantial erosion or siltation during earthmoving activities to a less-than-significant level. The FMW Site would be paved following building demolition, soil excavation and backfill with clean soils, and stormwater runoff from the FMW Site would continue to be conveyed through subsurface storm drains and the concrete lined channel of Temescal Creek, which are not susceptible to erosions. Therefore, no potential erosion or siltation impacts would occur after the demolition, excavation and backfill phase of the Project. This would be a *less-than-significant* impact.

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

No Impact. The surface of the FMW Site is currently nearly completely covered with a building and pavement and would be paved following building demolition and excavation, so no significant increases in impervious surface area that would potentially affect the rate or amount of stormwater runoff from the FMW Site would be expected. In addition, treatment of stormwater runoff from new pavement at the FMW Site would be required in accordance with Provision C.3 of the of MRP, which may reduce the rate of stormwater runoff from the FMW Site compared to the existing conditions, which do not include treatment of stormwater runoff.

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

Less-Than-Significant Impact. Compliance with the Construction General Permit and MRP, described above under Item a), would reduce the potential for polluted runoff during construction and operation of the Project to a less-than-significant level. As noted under Item c) (ii), above, the rate and amount of stormwater runoff from the FMW Site would not be significantly affected by the Project. No substantial additional sources of polluted runoff would be generated by the Project. This would be a *less-than-significant* impact.

(iv) impede or redirect flood flows?

Less-Than-Significant Impact. The FMW Site is not located within a 100-year flood hazard area.[55] The FMW Site is located within the Lake Temescal Dam failure inundation area. Lake Temescal Dam is managed by the East Bay Regional Parks District and overseen by the California Department of Water Resources, Division of Safety of Dams

[55] FEMA, 2018. Flood Insurance Rate Map, Alameda County, California, and Incorporated Areas, Panel 58 of 725, Map Number 06001C0058H, Revised December 21.

(DSOD), which supervises dam maintenance and inspections.[56] Due to the high maintenance and inspection standards, analysis for the City of Emeryville General Plan EIR concluded that the failure of Temescal Dam is highly unlikely.[57] The Project would not include structures that could impede or redirect flood flows, as the project would remove the existing building and the only aboveground improvements would be remediation equipment. This would be a *less-than-significant* impact.

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

Less-Than-Significant Impact. The FMW Site is not located within a 100-year flood hazard area.[58] As noted under Item c) (iv), the FMW Site is located within the Lake Temescal Dam failure inundation area; however, the failure of Temescal Dam is highly unlikely.[59] The City of Emeryville has a low likelihood of seiches due to the absence of enclosed water bodies. The FMW Site is not located in an area mapped by the California Emergency Management Agency as being potentially inundated by a tsunami.[60] This would be a *less-than-significant* impact.

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

Less-Than-Significant Impact. The Basin Plan is the master policy document that establishes the water quality objectives and strategies needed to protect designated beneficial water uses in the San Francisco Bay region. The State Water Board and the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) enforce compliance with the water quality objectives of the Basin Plan through the issuance of NPDES permits. As described in Item a) above, the Project's compliance with existing permit requirements would ensure that the proposed project would not have the potential to conflict with the Basin Plan.

A sustainable groundwater management plan was finalized for the Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin. The Groundwater Sustainability Plan (GSP)[61] was recently issued by the EBMUD and City of Hayward groundwater sustainability agencies (GSAs) in January 2022 after public review. According to the GSP, the sustainability goal for the East Bay Plain Subbasin is to manage and protect the Subbasin in a manner that avoids the six undesirable results listed below while continuing to collect and analyze data to support science-based decision making to evaluate new opportunities for sustainable groundwater beneficial uses:

- Chronic lowering of groundwater levels, indicating a significant and unreasonable depletion of supply.
- Significant and unreasonable reduction of groundwater storage.
- Significant and unreasonable seawater intrusion.

[56] City of Emeryville, 2009b. *Op cit.*

[57] City of Emeryville, 2009a. *Op cit.*

[58] FEMA, 2018. *Op cit.*

[59] City of Emeryville, 2009a. *Op cit.*

[60] California Emergency Management Agency (CalEMA), 2009. Tsunami Inundation Map for Emergency Planning, Oakland West Quadrangle, July.

[61] EBMUD GSA and City of Hayward GSA, 2022. *Op. cit.*

- Significant and unreasonable degraded water quality.
- Significant and unreasonable land subsidence.
- Depletions of interconnected surface water and groundwater that have significant and unreasonable reductions in beneficial uses of surface water, including beneficial use by ecosystems that depend on groundwater.

According to the GSP, the East Bay Plain Subbasin is not experiencing a chronic lowering of groundwater levels and is currently in a sustainable and stable condition because estimated groundwater pumping from the 1990s to present is well below the estimated sustainable yield of the Subbasin. Additionally, the Subbasin has not experienced significant seawater intrusion even during historical periods of much greater groundwater pumping than is occurring today, and the Subbasin has no observed inelastic land subsidence even during historical periods of much greater groundwater pumping and much lower confined aquifer groundwater elevations than are occurring today.

The Project would improve the quality of groundwater beneath the FMW Site and surrounding areas compared to the existing conditions by removing contaminated soil source material, remediating contaminated groundwater beneath the FMW Site, and limiting off-site migration of contaminated groundwater. There are no areas of interconnected surface water and groundwater that could be impacted by the Project. As discussed under Item b) above, the contaminated groundwater that would be extracted for treatment is not suitable for designated groundwater beneficial uses due to TCE contamination, so no significant effects on groundwater supplies would result from the proposed groundwater extraction. The proposed groundwater extraction would result in an estimated drawdown of the shallow groundwater level of approximately 1 to 3 feet in the groundwater treatment area. The estimated zone of capture for the groundwater extraction would extend approximately 210 feet out from the groundwater treatment area.[62] The decrease in groundwater levels would be less pronounced with distance away from the groundwater treatment area, forming what is referred to as a cone of depression. The localized and relatively minor decrease in groundwater levels resulting from groundwater extraction would not be expected to result in seawater intrusion from the Bay, which is located approximately 2,000 feet west of the FMW Site. Additionally, the GSP indicates that seawater intrusion would become significant and unreasonable if excessive regional groundwater pumping causes migration of saline Bay water into existing freshwater aquifers that are or could be developed for water supply, to the extent that increased groundwater salinity precludes beneficial use of groundwater for drinking water supply. As discussed above, the contaminated groundwater that would be extracted for treatment is not suitable for designated groundwater beneficial uses due to TCE contamination. Therefore, the potential for seawater intrusion to impact beneficial uses of groundwater as a result of groundwater extraction at the FMW Site would be less than significant.

As discussed under Section VII. GEOLOGY AND SOILS, groundwater extraction can result in subsidence; however, the localized and relatively minor decrease in groundwater levels resulting from proposed groundwater extraction would be within the range of historic groundwater level fluctuations that have been observed at the FMW Site[63] and a property located immediately west of the Site across the UPRR railroad tracks;[64] therefore, subsidence related to proposed groundwater extraction would not be expected to occur. Additionally, the GSP indicates that land subsidence generally does not occur in response to declines in shallow groundwater levels; therefore, no subsidence

[62] EKI, 2013. *Op. cit.*

[63] EKI, 2020.

[64] EKI, 2016a. *Op. cit.*

sustainable management criteria are established for the Shallow Aquifer Zone.[65] The project would not conflict with GSP and this impact would be less than significant.

XI. LAND USE AND PLANNING

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	❒	❒	❒	☑
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	❒	❒	❒	☑

Affected Environment

Information regarding land use and planning for the Project is based on the City of Emeryville Zoning and Zoning Overlay Maps and the Land Use and Housing analysis from the EIR prepared for the Emeryville General Plan.[66] The FMW Site is zoned for Public Use. Adjoining properties are zoned Light Industrial, Mixed Use with Residential, and Park/Open Space. The FMW Site is located within a Transit Hub (TH) zoning overlay, which permits use for bus/rail passenger stations and prohibits gasoline service stations. The FMW Site is not located within a Specific Plan area.

Impact Analysis

a) Would the project physically divide an established community?

No Impact. Project activities would be limited to the FMW Site and would not have the potential to physically divide an established community.

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

No Impact. The Project remedial goals were developed and adopted to accommodate and allow for the range of land use on the FMW Site consistent with the land uses that currently exist in and around the FMW Site. The Project is limited to remedial activities at the FMW Site and would not include land uses with the potential to conflict with applicable land use plans, policies, or regulation.

[65] EBMUD GSA and City of Hayward GSA, 2022. *Op. cit*

[66] City of Emeryville, 2009a, *op cit*.

XII. MINERAL RESOURCES

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☑

Affected Environment

No known mineral resources or locally-important mineral resource recovery sites are present at the FMW Site. During the most recent City of Emeryville General Plan Update process, after public workshops, review of background reports, and initial analysis of the environmental setting, the topic was not determined to have environmental issues or concerns requiring review in the General Plan EIR.[67]

Impact Analysis

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

No Impact. There are no known mineral resources in the City of Emeryville.

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. There are no known locally-important mineral resource recovery sites in the City of Emeryville.

XIII. NOISE

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☑	☐	☐

[67] *Ibid.*

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
b)	Generation of excessive ground borne vibration or ground borne 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?	❒	❒	❒	☑

Affected Environment

This section contains technical background related to noise and vibration, a description of surrounding noise receptors, and a summary of the existing noise environment.

Noise Concepts and Terminology

Noise is commonly defined as unwanted sound that annoys or disturbs people and can have an adverse psychological or physiological effect on human health. Sound is measured in decibels (dB), which is a logarithmic scale. Decibels describe the purely physical intensity of sound based on changes in air pressure, but they cannot accurately describe sound as perceived by the human ear since the human ear is only capable of hearing sound within a limited frequency range. For this reason, a frequency-dependent weighting system is used and monitoring results are reported in A-weighted decibels (dBA). Technical terms used to describe noise are defined in Table XIII-1.

Table XIII-1. Definition of Acoustical Terms

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound on a logarithmic scale. Sound described in decibels is usually referred to as sound or noise "level." This unit is not used in this analysis because it includes frequencies that the human ear cannot detect.
Vibration Decibel (VdB)	A unit describing the amplitude of vibration on a logarithmic scale.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period. For this CEQA evaluation, L_{eq} refers to a one-hour period unless otherwise stated.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 PM to 10:00 PM and after addition of 10 decibels to sound levels during the night between 10:00 PM and 7:00 AM.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured during the night between 10:00 PM and 7:00 AM.
Maximum Sound Level (L_{max})	The maximum A-weighted sound level measured by the sound level meter over a given period of time.

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Peak Particle Velocity (PPV)	The maximum instantaneous peak of a vibration signal.
Root Mean Square (RMS) Velocity	The average of the squared amplitude of a vibration signal.

Source: Charles M. Salter Associates Inc., 1998.; Federal Transit Administration (FTA), 2018.

It should be noted that because decibels are based on a logarithmic scale, they cannot be added or subtracted in the usual arithmetical way. For instance, if one noise source emits a sound level of 90 dBA, and a second source is placed beside the first and also emits a sound level of 90 dBA, the combined sound level is 93 dBA, not 180 dBA. When the difference between two co-located sources of noise is 10 dBA or more, the higher noise source dominates and the lower noise source makes no perceptible difference in what people can hear or measure. For example, if the noise level is 95 dBA, and another noise source is added that produces 80 dBA noise, the noise level would still be 95 dBA.

In an unconfined space, such as outdoors, noise attenuates with distance according to the inverse square law. Noise levels at a known distance from point sources are reduced by 6 dBA for every doubling of that distance for hard surfaces such as cement or asphalt surfaces, and 7.5 dBA for every doubling of distance for soft surfaces such as undeveloped or vegetative surfaces.[68] Noise levels at a known distance from line sources (e.g., roads, highways, and railroads) are reduced by 3 dBA for every doubling of the distance for hard surfaces and 4.5 dBA for every doubling of distance for soft surfaces.[69] A greater decrease in noise levels can result from the presence of intervening structures or buffers.

A typical method for determining a person's subjective reaction to a new noise is by comparing it to existing conditions. The following describes the general effects of noise on people:[70]

- A change of 1 dBA cannot typically be perceived, except in carefully controlled laboratory experiments;
- A 3-dBA change is considered a just-perceivable difference;
- A minimum of a 5-dBA change is required before any noticeable change in community response is expected; and
- A 10-dBA change is subjectively perceived as approximately a doubling (or halving) in loudness.

Groundborne Vibration Concepts and Terminology

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include structures (especially older masonry structures), people (especially

[68] California Department of Transportation ("Caltrans"), 1998. Technical Noise Supplement: A Technical Supplement to the Traffic Noise Analysis Protocol.

[69] *Ibid.*

[70] Charles M. Salter Associates Inc., 1998. Acoustics – Architecture, Engineering, the Environment. William Stout Publishers.

residents, the elderly, and sick), and vibration-sensitive equipment. Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal. PPV is appropriate for evaluating potential damage to buildings, but it is not suitable for evaluating human response to vibration because it takes the human body time to respond to vibration signals. The response of the human body to vibration is dependent on the average amplitude of a vibration. The RMS of a signal is the average of the squared amplitude of the signal and is more appropriate for evaluating human response to vibration. PPV and RMS are normally described in units of inches per second (in/sec), and RMS is also often described in vibration decibels (VdB).

Surrounding Receptors

The nearest residential receptors to the FMW Site are apartment buildings located approximately 130 feet to the west, across the Union Pacific Railroad (UPRR) tracks. Other nearby receptors to the FMW Site include a hotel located approximately 100 feet to the west of the FWM Site, across the UPRR tracks; office buildings and retail stores located to the north of the FMW Site, at distances ranging from adjacent to the northern boundary to approximately 400 feet; and a warehouse facility, which may contain offices, located approximately 50 feet east of the FMW Site, across Horton Street.

A commercial manufacturing facility for Grifols (a pharmaceutical company) is located approximately 100 feet southeast of the FMW Site and a parking garage is located approximately 60 feet south of the FMW Site, neither of which are considered sensitive noise receptors because neither noise-sensitive people nor noise-sensitive activities are expected to be located at a manufacturing facility or a parking garage; however, the commercial manufacturing facility may contain vibration-sensitive equipment. The fence line of the commercial manufacturing facility is located 100 feet southeast of the FMW Site, but the nearest buildings within the facility are located approximately 145 feet southeast of the FMW Site. Light industrial land uses are also located to the north, east, and south of the FMW Site.

Ambient Noise Environment

The primary noise source in the immediate vicinity of the FMW Site is the UPRR tracks, which run north to south immediately west of the FMW Site. Interstate Highway 80 is also located approximately 1,300 feet to the west of the FMW Site. Based on the existing noise contours in the City of Emeryville General Plan, noise levels from the UPRR tracks range from 65 to 70 dBA Ldn at the FMW Site and its vicinity.[71] Noise levels at the nearest residential and hotel receptors also range from 65 to 70 dBA Ldn due to the close proximity to the UPRR. Another noise source in the vicinity of the FMW Site is nearby industrial land uses. According to the General Plan, industrial land uses can have a varying degree of impact on adjacent uses. Because the FMW Site is surrounded by light industrial land uses, noise levels in the vicinity of the FMW Site may be also impacted by industrial operations, such as the use of mechanical equipment, generators, and haul trucks.

The primary vibration source in the vicinity of the project is the UPRR tracks. For this analysis, the vibration levels associated with UPRR operations are estimated to be similar to the measured vibration levels in the Draft Environmental Impact Report for a recent project (the 6701 Shellmound Street Project) in the City of Emeryville,[72] which ranged from 63 VdB to 76 VdB at 90 feet.

[71] City of Emeryville, 2009b. Emeryville General Plan, Chapter 6, Conservation, Safety, and Noise.

[72] Urban Planning Partners Inc., 2015. 6701 Shellmound Street Project Draft Environmental Impact Report. November.

Impact Evaluation

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially Significant Unless Mitigation Incorporated. The primary noise impacts from the proposed project would occur from noise generated by: 1) the operation of heavy equipment on the FMW Site during demolition of the existing building, excavation of soils across the FMW Site, remediation activities, and paving/site stabilization; 2) haul trucks arriving to and departing from the FMW Site for importing and exporting soil and other materials; and 3) thermal treatment with MPE and associated post-thermal treatment activities. Discussion of each potential noise source is provided below.

Demolition, excavation, and installation of the Thermal Treatment with MPE remediation system, are expected to occur over a period of approximately 18 months and would involve operation of heavy equipment. Following the completion of thermal treatment (which is anticipated to last for one year), paving/site restoration would occur, which would involve operation of heavy equipment over an approximately 20-day period. Noise levels would vary from day to day, depending on the amount and condition of the equipment being used, the types and duration of activity being performed, and the distance between the noise source and the receptor.

Table XIII-2 shows the typical noise levels associated with various types of heavy equipment that could be used for the proposed project during demolition, excavation, remediation activities, and paving/site stabilization. Noise levels at 10 feet, 50 feet, 100 feet, and 130 feet are presented in Table XIII-2 to characterize the noise impact from the proposed project at the nearest office buildings to the north and east, and at the hotel and residential receptors to the west, respectively. Based on Federal Transit Administration (FTA) guidance, construction noise impacts were evaluated by quantifying the maximum noise levels that would result from the simultaneous operation of the two noisiest pieces of equipment near the perimeter of the project site closest to a sensitive receptor.

The project could generate noise levels of up to 74 dBA Leq at the nearest residential receptors, 76 dBA Leq at the hotel, and 84 dBA Leq and 102 dBA Leq at the nearest office buildings to the east and north, respectively (Table XIII-2). Because the ambient noise levels in the vicinity of the FMW Site range from 65 to 70 dBA, construction of the proposed project would have the potential to increase noise levels by 10-dBA or more at the nearest receptors within 100 feet. As discussed above, an increase in 10-dBA is subjectively perceived as approximately a two-fold magnitude increase in loudness and is therefore a ***potentially significant*** impact.

However, interior noise levels would be substantially lower than exterior noise levels at each of these receptors. The façades of the office buildings to the north and residences and hotel to the west could reduce noise by about 25 dBA with windows closed, while the façade of the office building to the east, which does not contain windows that face the FMW Site, could reduce noise by about 40 dBA.[73] Accordingly, because of the attenuation afforded by the buildings, the increase in noise as perceived by occupants inside the buildings would remain well below the exterior ambient noise levels. Also, it should be noted that the use of heavy construction equipment would occur at different locations across the FMW Site.

[73] Charles M. Salter Associates Inc., 1998, *op cit.*

Table XIII-2. Reference and Calculated Noise Levels from Heavy Equipment (dBA Leq)

Construction Phase	Equipment	Noise Level at 10 Feet (office buildings to the north)	Noise Level at 50 Feet (office buildings to the east)	Noise Level at 100 Feet (hotel to the west)	Noise Level at 130 Feet (residences to the west)
Demolition	Excavator	98	81	73	71
	Water Truck	97	80	72	70
	Haul Truck	97	80	72	70
	Dozer	98	81	73	71
	Hoe Ram (Impact Hammer)	97	80	72	70
	Jackhammer	95	78	70	68
	Maximum Noise Level	**101**	**84**	**76**	**74**
Excavation and Treatment System Installation	Excavator	98	81	73	71
	Tractors/Loaders/Backhoes	97	80	72	70
	Roller/Compactor	95	78	70	68
	Drill Rig[a]	95	78	70	68
	Dump Truck	97	80	72	70
	Haul Truck	97	80	72	70
	Water Truck	97	80	72	70
	Maximum Noise Level	**101**	**82**	**75**	**72**
Thermal Treatment and Multi-Phase Extraction Operation	SVE System Blower	72	54	47	44
	SVE System Chiller Fan	85	68	60	57
	Air Stripper Blower	69	51	44	41
	Power Control Unit	82	64	57	54
	Blower/Cooling Tower Fan	77	59	52	49
	Maximum Noise Level	**87**	**69**	**62**	**59**
Paving/Site Stabilization	Roller	95	78	70	68
	Tractors/Loaders/Backhoes	97	80	72	70
	Paving Equipment	99	82	74	72
	Haul Truck	97	80	72	70
	Maximum Noise Level	**102**	**82**	**75**	**72**

Notes: -- Not calculated

Reference noise levels used for calculations were based on the maximum noise specifications and equipment usage factors reported by the U.S. Department of Transportation, 2006, FHWA Highway Construction Noise Handbook, August.

The following propagation adjustment was applied to estimate maximum noise levels at 10 feet, 50 feet, 100 feet, and 130 feet:

dBA2 = dBA1 + 10 Log*10(D1/D2)^2.5

Where:

dBA1 is the reference noise level at 50 feet.

dBA2 is the calculated noise level.

D1 is the reference distance (50 feet).

D2 is the distance from the equipment to the receiver.

(Source of the equation: FTA, 2018, Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123, September.)
[a] Two sonic or hollow stem auger drill rigs would be used for installing thermal treatment wells. An injection rig would be used for in-situ groundwater polishing. Both of the rigs are assumed to generate noise levels similar to auger drill rigs.

Although the northern boundary of the FMW Site is located adjacent to office buildings, the southern boundary of the FMW Site is located more than 200 feet from these buildings. Due to the size of the FMW Site, the duration and frequency that heavy construction equipment would operate within 10 feet of the adjacent receptors to the north would be limited on any given day and would not be expected to persist more than a few days at a time.

The potential temporary noise impacts of construction activities at the nearest residential receptors would be mitigated in part by the project's compliance with the limitations on construction hours in the City of Emeryville Noise Ordinance. Section 5-13.05 of the Noise Ordinance specifically regulates construction noise. General construction noise and preconstruction noise is limited to weekdays from 7:00 a.m. to 6:00 p.m. Use of impact tools (e.g., hoe ram and jack hammers) and similarly loud activities shall be limited to weekdays from 8:00 a.m. to 5:00 p.m. A developer, owner or contractor must request a waiver for construction work to extend beyond these hours. Compliance with these limitations on construction hours would prevent construction from disturbing occupants of the nearest residences and hotels during the nighttime and early morning hours when people typically rest.

The General Plan includes the following policies that would apply to the proposed project:

> Policy CSN-P-51: Noise impacts should be controlled at the noise source where feasible, as opposed to the receptor end. This includes measures to buffer, dampen or actively cancel noise sources.
>
> Policy CSN-P-57: The City shall require noise buffering, dampening, or active cancellation, on roof-top or other outdoor mechanical equipment located near residences, parks, and other noise sensitive land uses.
>
> Policy CSN-P-58: The City shall limit the potential noise impacts of construction activities on surrounding land uses through Noise Ordinance regulations that address allowed days and hours of construction, types of work, construction equipment, notification of neighbors, and sound attenuation devices.

Full compliance with the General Plan policies, above, would be achieved by the implementation of Mitigation Measure NOISE-1, below, which would reduce the ***potentially significant*** noise impact at the nearest residential receptors and office buildings to a *less-than-significant* level.

> ***Mitigation Measure NOISE-1:*** At a minimum, the following measures shall be included in the RDIP and implemented to minimize potential noise impacts during the Project:
>
> - The construction contractor shall designate a "Noise Disturbance Coordinator," who would be responsible for responding to any local complaints about construction noise. The Noise Disturbance Coordinator shall determine the cause of all noise complaints (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures warranted to correct the problem be implemented. The Noise Disturbance Coordinator shall record all noise complaints received and actions taken in response. The Noise Disturbance Coordinator shall be trained to use a sound level meter and shall be available during all construction hours to respond to complaints.
> - Signs shall be conspicuously posted at the FMW Site that include permitted construction days and hours consistent with Section 5-13.05 of the Noise Ordinance, and the name and telephone number of the Noise Disturbance Coordinator.

- All internal combustion engine-driven equipment shall be fitted with intake and exhaust mufflers that are in good condition in order that non-impact equipment generate a maximum noise level of 80 dBA when measured at a distance of 50 feet.
- Use of impact tools (e.g., jack hammers, pavement breakers, and rock drills) and similarly loud construction equipment shall be limited to weekdays (i.e., Monday through Friday) between the hours of 8:00 am to 5:00 pm, and shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used to lower noise levels from the exhaust by up to 10 dBA. External jackets on the tools themselves shall be used where feasible, to achieve a reduction of 5 dBA.
- Construction equipment idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes.
- All stationary noise-generating equipment, such as air compressors, portable power generators, other thermal and MPE treatment system equipment (e.g. power control unit, blowers, cooling tower fans, pumps, air stripper), and on-site equipment staging areas, shall be located so as to maximize the distance between the equipment and the nearest receptors to the FMW Site or noise mitigation measures, such as noise reduction equipment, noise barriers, or partial enclosures, shall be designed and installed to limit noise from the equipment as measured at the nearest receptors at or below ambient noise levels in the vicinity of the FMW site (65 to 75 dBA).
- The entrance to the FMW Site shall be located so as to maximize the distance from the adjacent office buildings to the north of the FMW Site, to the extent feasible based on access conditions.
- Temporary noise barriers (such as plywood noise barriers or noise control blankets) or partial enclosures shall be constructed to provide acoustical shielding for outdoor construction areas, if practicable.
- Whenever feasible, temporary noise barriers or partial enclosures shall be constructed to provide acoustical shielding for stationary noise-generating equipment, such as air compressors and portable power generators.
- Whenever feasible, a noise barrier will be kept between heavy construction equipment that is in operation and the offices to the north. The noise barrier may be constructed from plywood and installed on top of a portable concrete K-Rail system to be able to move and/or adjust the wall location during construction activities. A sound blanket system hung on scaffolding, or other noise reduction materials that result in an equivalent or greater noise reduction than plywood, may also be used.
- If deemed necessary after implementation of other noise and vibration mitigation measures set forth herein and NOISE-3b, in order to minimize disturbances to occupants of the buildings immediately adjacent to the north, excavation activities and use of drill rigs in connection with installation of wells conducted within 50 feet of the buildings immediately adjacent to the north may be conducted on weekends between 9:00 am and 6:00 pm, or as otherwise determined, if approval is granted by the City Council pursuant to Chapter 13 of Title 5 of the City of Emeryville Municipal Code.

In addition to the potential noise impacts associated with the use of heavy construction equipment, noise would be generated by haul trucks importing and exporting soil to and from the FMW Site. Up to 160 truck trips per day would be needed during implementation of the project. Because the FMW Site and its vicinity is surrounded by light industrial land uses, periodic exposure to industry-related noise sources, such as mechanical equipment, generators,

and haul trucks, is an existing condition. In addition, haul trucks arriving to and departing from the FMW Site would be expected to follow the existing truck routes along Powell Street to access and exit Interstate 80.[74]

Noise levels on Powell Street and Interstate 80 are generally over 70 dBA Ldn.[75] Therefore, additional truck traffic would occur in areas with high traffic noise levels. Based on the properties of noise, traffic along the truck routes would have to nearly double for noise levels to increase. Since these are major roadways, the additional truck trips would not be anticipated to generate a perceptible increase in noise levels. For these reasons, the potential for project truck traffic to generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, is ***less than significant***.

Noise would also be generated by thermal treatment with MPE and associated post-thermal activities. Thermal treatment with MPE is expected to occur over a period of one year and associated post-thermal activities may continue for another 27 years depending on the results of groundwater monitoring. Equipment such as pumps, air compressors, power control unit (PCU), cooling tower fans, and blowers are expected to be used for these activities. As shown in Table XIII-2, operation and maintenance of this equipment could potentially increase ambient noise levels by 10 dBA or more at the office buildings adjacent to the north of the FMW Site, and therefore has the potential to create a ***potentially significant impact***. Locating the thermal treatment and MPE equipment at least 50 feet away from nearby receptors would result in a maximum noise level of 69 dBA (Table XIII-2), which is within the existing range of ambient noise levels in the vicinity of the FMW site (65 to 75 dBA). The implementation of Mitigation Measure NOISE-2, below, would reduce the potential of thermal treatment with MPE and post-thermal activities to expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies to a *less-than-significant* level.

> ***Mitigation Measure NOISE-2***: Operation and maintenance of the equipment for thermal treatment with MPE and associated post-thermal activities shall be located at least 50 feet away from the adjoining office buildings to the north of the FMW Site. Further, said equipment shall be located within an insulated enclosure or other sufficient barrier designed and installed to limit noise from the equipment as measured at the nearest receptor at or below ambient noise levels in the vicinity of the FMW site (65 to 75 dBA).

Noise conditions at the FMW Site would return to existing conditions after demolition, excavation, thermal treatment with MPE, paving/site restoration, and post-thermal MPE activities. Therefore, the proposed project would not have the potential to result in a permanent increase in ambient noise levels.

b) Would the project result in generation of excessive ground borne vibration or ground borne noise levels?

Potentially Significant Unless Mitigation Incorporated. The primary vibration impacts from the proposed project would occur from vibration generated by the operation of heavy equipment on the FMW Site during demolition, excavation, and paving/site stabilization (discussed in more detail below). Secondary sources of vibration include haul trucks used for the import and export of soil and other materials and operation of the treatment systems. Haul trucks, which are equipped with rubber tires which tend to significantly reduce the potential for the generation of vibration, would be considered unlikely to result in vibration impacts, except in unusual situations such as when FMW

[74] City of Emeryville, 2009c. Emeryville General Plan, Chapter 3, Transportation.

[75] City of Emeryville, 2009b. *Op. cit*.

Site is located near buildings containing vibration-sensitive equipment or near historical buildings.[76] Local transportation routes from the FMW Site to Interstate Highway 80 or 880 would likely be routed from the FMW Site to Powell Street or Hollis Street, approved truck routes within the City, depending on the location of potential off-site disposal and recycling facilities. Truck routes within the City are shown on Figure 3 of the Transportation Assessment presented in Appendix E. Local transportation routes would be subject to approval by the City. The commercial manufacturing facility southeast of the FMW Site could contain vibration sensitive equipment. However, because the use of haul trucks is an existing condition on the roads adjacent to the commercial manufacturing facility, the potential for the additional project-related haul trucks to expose potentially vibration-sensitive equipment in the commercial manufacturing facility to excessive vibration levels is *less than significant*. Thermal treatment with MPE and associated post-thermal activities would not involve the use of heavy equipment that would result in excessive groundborne vibration or groundborne noise levels.

Demolition, excavation, and paving/site stabilization activities can result in varying degrees of groundborne vibration, depending on the equipment, activity, and relative proximity to sensitive receptors. The types of equipment that would be used at the FMW Site includes drill rigs, sheepsfoot and smooth drum rollers (both of which can be vibratory or non-vibratory), excavators, hoe rams (impact hammers), jack hammers, bulldozers, a backhoe, and haul trucks. The vibration levels for construction equipment that could be used at the FMW Site are summarized in Table XIII-3 and Table XIII-4. Although the table provides one vibration level for each piece of equipment, it should be noted that there is considerable variation in reported ground vibration levels from construction activities, primarily due to variation in soil characteristics. Vibration levels are calculated at 10 feet, 50 feet, 100 feet, 130 feet, and 145 feet based on the reference levels at 25 feet to characterize the vibration impact from the proposed project at the nearest office buildings to the north and to the east, residential and hotel receptors to the west, and commercial manufacturing facility buildings to the southeast.

Table XIII-3 indicates that construction activities would not have the potential to generate vibration levels at the nearest residential receptor (130 feet west) and hotel receptor (100 feet west) that would exceed the 80 RMS VdB Infrequent Events threshold (Table XIII-5) to prevent disturbance of people. Therefore, the potential of construction generated vibration to disturb occupants of the nearby residences and hotel would be *less than significant*. Construction activities would also not have the potential to generate vibration levels that would exceed the 65 RMS VdB Infrequent Events threshold to prevent interference with interior operations at the nearest commercial manufacturing facility buildings (145 feet southeast), and therefore would not have to potential to interfere with any vibration sensitive equipment within these buildings.

However, Table XIII-3 indicates that vibration levels could reach up to 106 RMS VdB at the office buildings 10 feet to the north and up to 85 VdB at the office buildings 50 feet to the east of the FMW Site. These vibration levels would exceed the 83 RMS VdB Infrequent Events threshold (Table XIII-5) to potentially disturb people working in the office buildings (see Figure 10 for proximity of office buildings to the north and east of the FMW Site to remedial work areas). Therefore, the disturbance of people at nearby receptors is a ***potentially significant*** impact. The implementation of Mitigation Measure NOISE-1 that requires a maximal distance between the stationary equipment and the nearest receptors, a maximal distance between the FMW Site entrance and the nearest receptors, City council approval of any weekend work, and designates a Noise Disturbance Coordinator, would reduce the potential of construction vibration to disturb people who work in the nearby office buildings to a *less-than-significant* level.

[76] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual (FTA-VA-90-1003-06 Report No. 0123).

Table XIII-3. Reference and Calculated Vibration Levels from Heavy Construction Equipment in RMS (VdB)

Equipment	RMS at 25 Feet (VdB)	RMS at 10 Feet (VdB)	RMS at 50 Feet (VdB)	RMS at 100 Feet (VdB)	RMS at 130 Feet (VdB)	RMS at 145 Feet (VdB)
Vibratory Roller	94	106	85	76	73	71
Drill rig	87	99	78	69	66	64
Excavator	87	99	78	69	66	64
Dozer	87	99	78	69	66	64
Hoe Ram	87	99	78	69	66	64
Non-vibratory roller	86	98	77	68	65	63
Backhoe	87	99	78	69	66	64
Haul truck	86	98	77	68	65	63
Jackhammer	79	91	70	61	58	56

Notes:
Source of RMS vibration levels at 25 feet from FTA, 2018. Op. cit.
Sonic or hollow stem auger drill rigs would be used for thermal treatment. An injection rig would be used for in-situ groundwater polishing. Both of the rigs are assumed to generate vibration levels similar to a caisson drill rig.
Calculations to estimate RMS were calculated using standard propagation adjustments.
For RMS vibration levels at 10 feet, 50 feet, 100 feet, 130 feet, and 145 feet:

RMS2 = RMS1 – 30 Log10 (D2/D1)

Where:

RMS1is the reference vibration level at 25 feet.

RMS2 is the calculated vibration level.

D1 is the reference distance (25 feet).

D2 is the distance from the equipment to the receiver.

(Source of the equation: FTA, 2018. Op. cit.)

Table XIII-4. Reference and Calculated Vibration Levels from Heavy Construction Equipment in PPV (in/sec)

Equipment	PPV at 25 Feet (in/sec)	PPV at 10 Feet (in/sec)	PPV at 50 Feet (in/sec)	PPV at 100 Feet (in/sec)	PPV at 130 Feet (in/sec)	PPV at 145 Feet (in/sec)
Vibratory Roller	0.21	0.575	0.098	0.046	0.034	0.030
Drill rig	0.089	0.244	0.042	0.019	0.015	0.013
Excavator	0.089	0.244	0.042	0.019	0.015	0.013
Dozer	0.089	0.244	0.042	0.019	0.015	0.013
Hoe Ram	0.089	0.244	0.042	0.019	0.015	0.013
Non-vibratory roller	0.076	0.208	0.035	0.017	0.012	0.011
Backhoe	0.089	0.244	0.042	0.019	0.015	0.013
Haul truck	0.076	0.208	0.035	0.017	0.012	0.011
Jackhammer	0.035	0.096	0.016	0.008	0.006	0.005

Notes:
Source of PPV vibration levels at 25 feet from FTA, 2018. Op. cit.
Sonic or hollow stem auger drill rigs would be used for thermal treatment. An injection rig would be used for in-situ groundwater polishing. Both of the rigs are assumed to generate vibration levels similar to a caisson drill rig.
Calculations to estimate PPV were calculated using standard propagation adjustments.
For PPV vibration levels at 10 feet, 50 feet, 100 feet, 130 feet, and 145 feet:
PPV2 = PPV1 x (D1/D2)^1.1
Where:
PPV1 is the reference vibration level at a specified distance.
PPV2 is the calculated vibration level.
D1 is the reference distance (25 feet).
D2 is the distance from the equipment to the receiver.
(Source of the equation: Caltrans, 2020. Transportation and Construction Vibration Guidance Manual. April.)

Tables XIII-5 and XIII-6 summarize the vibration criteria to prevent disturbance of occupants and interference with interior operations, and to prevent damage to structures, respectively. In this analysis, the "Infrequent Events" criterion is applied to construction equipment.

Table XIII-5. Vibration Criteria to Prevent Disturbance – RMS (VdB)

Land Use Category	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Buildings where vibration would interfere with interior operations	65	65	65
Residences and buildings where people normally sleep	72	75	80
Institutional land uses with primarily daytime use	75	78	83

Source: FTA, 2018.
Notes:
[a] More than 70 vibration events of the same kind per day or vibration generated by a long freight train.
[b] Between 30 and 70 vibration events of the same kind per day.
[c] Fewer than 30 vibration events of the same kind per day.

Table XIII-6. Vibration Criteria to Prevent Damage to Structures

Structure and Condition	Continuous/ Frequent Intermittent Sources
New residential structures	0.5
Modern industrial/commercial buildings	0.5

Sources: Caltrans, 2020. Op. cit

Table XIII-4 indicates that vibration levels associated with the use of a vibratory roller (e.g., sheepsfoot or smooth drum roller in vibratory mode) within 10 feet of the commercial buildings north of the FMW Site could reach up to 0.575 PPV in/sec, which is above the 0.5 PPV in/sec threshold (Table XIII-6) to prevent damage to the office buildings. At a distance of 25 feet, the vibrations generated by a vibratory roller would be well below the 0.5 PPV in/sec threshold. The vibration levels from all other equipment associated with the project would be below the 0.5 PPV in/sec threshold at all the nearby receptors. Therefore, the use of a vibratory roller is considered a ***potentially significant*** impact to the commercial buildings immediately north of the FMW Site. The following two-part mitigation measure would reduce the potential of damage to adjacent buildings to occur as a result of construction vibration to a *less-than-significant* level.

Mitigation Measure NOISE-3a: The structural/geotechnical investigation conducted for the Project prior to completion of the RDIP shall include a structural evaluation of the buildings immediately north of the FMW Site (on APN 49-1319-1-6 and 49-1319-1-11), if access is granted by the respective property owners. The evaluation shall include a baseline survey of cracks and other pre-existing structural damage on adjoining buildings and determine a site-specific vibration performance standard (PPV in in/sec) for Project excavation activities to be protective of adjoining buildings. This performance standard will be incorporated into vibration monitoring for the project.

Mitigation Measure NOISE-3b: The following measures shall be included in the RDIP and implemented to minimize potential vibration impacts during excavation activities on the parking lot parcel (APN 49-1319-1-20) of the FMW site:

- Excavators and other equivalent equipment shall be operated to avoid scraping or hitting the foundation of adjacent buildings. If appropriate and subject to DTSC approval, the limits of excavation may exclude areas within close proximity of foundations of adjacent buildings.
- Rollers (e.g., sheepsfoot or smooth drum) shall not be used in vibratory mode within 25 feet of the commercial buildings to the north of the FMW Site.
- To the extent practical, large concrete subsurface obstacles uncovered on the parking lot parcel shall be dragged/moved at least 10 feet away from northern perimeter of the FMW Site to be broken down to avoid generating potentially excessive vibration near the adjacent commercial buildings to the north.
- Heavy construction equipment shall be operated to avoid the generation of high levels of vibration to the extent feasible.
- Vibration monitoring shall be performed during all earthmoving activities within the parking lot parcel. Should vibration (measured as PPV in in/sec) exceed the performance standard identified in the pre-construction structural survey (Mitigation Measure NOISE-3a), work shall be halted and alternative methods of construction implemented, if feasible. If vibration exceeding the performance standard is unavoidable, the nature and extent of the exceedance shall be logged. These logs shall be maintained as part of the Project record.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The FMW Site is not located within an airport land use plan or in the vicinity of a private airstrip. In addition, the proposed project would not introduce new residents or users to the FMW Site. Therefore, the proposed project would not expose people in the project area to excessive noise from any public use airport or any private airstrip.

XIV. POPULATION AND HOUSING

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	❒	❒	❒	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	❒	❒	❒	☑

Affected Environment

Information regarding population and housing for the Project is based on information from the EIR prepared for the Emeryville General Plan.[77] In 2008, the City of Emeryville had a population of 9,727, with 5,988 housing units. By 2030, assuming full development permitted under the current General Plan occurs, the City would have a population of 16,600, with 9,800 housing units. This represents an annual growth rate of 2.7% for population and 2.6% for housing units.

Impact Analysis

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

No Impact. The Project does not propose any new homes, businesses, or infrastructure with the potential to induce population growth.

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

[77] City of Emeryville, 2009a, *op cit*.

No Impact. The FMW Site currently contains a vacant warehouse building and is not used for housing. No people or housing would be displaced as a result of the Project.

XV. PUBLIC SERVICES

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

Affected Environment

Public services for the City of Emeryville, including the FMW Site, are provided by the Emeryville Police Department, Emeryville Public Works Department, Emeryville Community Services Department, Alameda County Fire Department and Emery Unified School District.

Impact Analysis

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

No Impact. The Project would be limited to remedial activities at the FMW Site. This would include building demolition, excavation, backfill, paving, and groundwater treatment activities. The Project would not alter or provide new governmental facilities and would not require new government facilities. The Project would not increase demand for public services or affect the performance objectives of public services. Therefore, the Project would have no impact related to public services.

XVI. RECREATION

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	❒	❒	❒	☑
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	❒	❒	❒	☑

Affected Environment

Information regarding recreation for the Project is based on the Parks, Open Space, and Recreation analysis from the EIR prepared for the Emeryville General Plan.[78] As of the date of preparation of that EIR, the City of Emeryville had 15 acres of public open space in eight City-owned parks. The nearest park to the FMW Site is Horton Landing Park, a City-owned open space area along a former rail spur which extends from just south of the FMW Site to Temescal Creek, approximately 800 feet south of the FMW Site. Horton Landing Park was currently redeveloped; the improvements included site cleanup, landscaping, and construction of a pedestrian/bicycle bridge over the railroad tracks between the park and the Bay Street Center. Horton Landing Park forms part of the Emeryville Greenway, a network of bike paths, walking trails, and parks/open space throughout the City.

Impact Analysis

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. The Project is limited to remedial activities at the FMW Site and does not include any elements that would increase the use of recreational facilities.

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

No Impact. The Project does not include recreational facilities or include any elements that would require construction or expansion of recreational facilities.

[78] *Ibid.*

XVII. TRANSPORTATION

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

Affected Environment

The analysis of potential transportation impacts is based on technical analysis prepared by Fehr & Peers as documented in the 5679 Horton Remediation Transportation Assessment, dated 25 October 2021, which is included as Appendix E. The assessment estimated the amount of vehicle traffic that could be generated by the Project during the different phases, including trips for remediation workers to and from the site, as well as truck trips for the disposal of building debris and contaminated soils and the import of clean backfill and paving materials. CEQA impacts were assessed based on the impact analysis discussed below, and non-CEQA effects were also evaluated, including the potential for vehicle queue spillback to worsen as a result of the Project and potentially block intersections on a transit street. Mitigation measures were identified for the CEQA impacts and conditions of approval were identified for other effects.

During demolition, maximum daily trip generation was estimated to be 60 two-way trips, including 40 truck trips and 20 passenger vehicle trips. During remediation, maximum daily trip generation was estimated to be 200 two-way trips, including 160 truck trips and 40 passenger vehicle trips. During paving, maximum daily trip generation was estimated to be 84 two-way trips, including 64 truck trips and 20 passenger vehicle trips. In total, throughout the entire remediation, approximately 4,500 truck trips are expected to be generated. (Appendix E).

At Project completion, the site would be vacant and not generate any traffic. Therefore, no future year analysis was conducted. Potential impacts to bicycle, pedestrian, transit, and emergency access were also evaluated, in addition to a vehicle miles of travel assessment.

Impact Analysis

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

Potentially Significant Unless Mitigation Incorporated. The level of vehicle trip generation was estimated based on the detailed construction program, and the effect that this additional vehicle traffic would have on bicycle boulevards in the vicinity of the Project was assessed. A potentially significant impact to bicycle movement on a

designated "bicycle boulevard" was identified by Fehr and Peers, described in more detail below and in the Transportation Assessment (Appendix E).

The City of Emeryville *Pedestrian and Bicycle Plan* designates Horton Street as a bicycle boulevard. Suggested guidelines in the City of Emeryville *Pedestrian and Bicycle Plan* indicates that traffic volumes on bicycle boulevards should be below 1,500 vehicles per day (VPD) for bicycle boulevards east of Hollis Street, and west of Hollis Street traffic volumes should be less than 3,000 VPD. Higher volumes can be permitted for short segments with additional treatments. A potentially significant impact could occur if a Project increases daily vehicle volumes on a bicycle boulevard by more than 2 percent.

Existing traffic volumes on Horton Street are 3,030 along the Project frontage, which exceeds the desired volume threshold for bicycle boulevard designation (3,000 VPD) and the addition of Project traffic could temporarily increase daily traffic volumes by more than 10 percent. This is considered a ***potentially significant impact***. Implementation of the mitigation measure below would minimize potential effects of this additional traffic on the bicycle boulevard and reduce this impact to a *less-than-significant* level.

Mitigation Measure TRANS-1: As a condition of approval for the RDIP, a construction management plan shall be developed for the Project that includes:

- A set of comprehensive traffic control measures, including scheduling of trips to be staggered throughout the day with the last site arrivals prior to 4 p.m.; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes
- Use of driveway flaggers for inbound and outbound truck trips
- Permitted construction hours consistent with Section 5-13.05 of the Noise Ordinance.
- Identification of parking areas for construction employees, site visitors, and inspectors
- Provisions for street sweeping to remove construction related debris on public streets
- Provision for pedestrian detour signage if temporary sidewalk closures are necessary; signage would need to be placed at the mid-block crossing under the Powell Street bridge and at the Horton Street and Stanford Avenue intersection.
- Provision for cyclist detour signage if temporary bicycle lane closures are necessary; signage would need to be placed at the Horton Street and Haruff Street intersection and at the Horton Street and Stanford Avenue intersection.

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

Less-than-Significant. In response to SB 743, the Office of Planning and Research (OPR) updated the CEQA guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014, and after several rounds of public review and feedback, final proposed Guidelines were published on November 27, 2017, with an associated Technical Advisory Document on Evaluating Transportation Impacts in CEQA dated December 2018. That process identified vehicle miles of travel or VMT as the most appropriate metric to evaluate the environmental effects of a project from a transportation perspective and prohibited the use of delay-based metrics for the purposes of identifying transportation impacts under CEQA.

The updated guidelines were finalized in December 2018 by the Natural Resources Agency, including a new Section 15064.3 on VMT analysis for land use developments. The new guidelines took effect July 1, 2020. .

OPR guidance, as documented in the December 2018 Technical Advisory,[79] has been reviewed and concepts presented in the Technical Advisory have been applied to this project, considering the intent of SB 743 which is to "*promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses*."

The OPR Technical Advisory suggests certain numerical VMT thresholds for common land use categories, including residential, office, industrial, and retail. The OPR Technical Advisory suggests the use of "screening criteria" that can be applied to a project to determine whether that project can be presumed to cause a less-than-significant amount of VMT, in which case the project could be screened out of doing further VMT analysis. The guidelines specify that the VMT assessment only applies to automobile travel generated by a project, which is defined as on-road passenger vehicles and light-trucks. While heavy duty truck VMT can be included in the calculations for modeling convenience and ease of calculations, SB 743 does not specially apply to heavy-duty truck travel such as the truck trips that would haul soil and other materials to and from the FMW Site. The exclusion of truck trips is a practical one, as it recognizes that there are limited mitigation strategies that could change truck travel, and the most effective strategies to reduce the environmental impacts of truck travel are the California Air Resource Board heavy vehicle regulations that require equipment upgrades or replacement to meet particulate matter standards. These regulations allow for the phasing out of older equipment that will, over time, decrease the harmful emissions and particulate matters from heavy duty trucks. Since heavy truck trips are not included in the SB 743 evaluation, only trips from site workers, inspectors, and others were considered.

One of the criteria in the Technical Advisory is to screen out small projects, which OPR has defined as projects that generate fewer than 110 vehicle trips per day. The proposed project is expected to generate less than 50 passenger vehicle or light-duty truck trips per day, which is within the OPR definition of a small project.

Based on review of the OPR screening criteria, the intent of SB 743 and the types of trips being generated by the project during the site remediation, the VMT impact is considered *less-than-significant*, and no further analysis is required.

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

Potentially Significant Unless Mitigation Incorporated. The Project would not substantially increase hazards due to a design feature, as it does not propose to alter the roadway design in the Project vicinity. Further, the Project would not introduce incompatible uses. However, while public streets are available for use by truck traffic as required for implementation of the Project, the temporary increase in truck traffic has the potential to be incompatible with existing uses in the area (e.g., Horton Street bicycle boulevard), resulting in a temporary ***potentially significant impact***. Implementation of Mitigation Measure TRANS-1 would reduce any perceived temporary impact to a *less-than-significant* level. No additional mitigation is required.

d) Would the project result in inadequate emergency access?

No Impact. The Project would not result in inadequate emergency access as the Project would not alter the roadway design in the Project vicinity and emergency vehicle access to the FMW Site would not change from the current condition.

[79] https://www.opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

XVIII. TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	❒	❒	❒	☑
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe	❒	☑	❒	❒

Affected Environment

This analysis is based on the Cultural Resources Study Report (Cultural Report), dated May 13, 2022, prepared for the Project, which is enclosed as Appendix D.[80] The Cultural Report included discussion and evaluation of cultural resources that: (1) may meet the CEQA definition of historical or unique archaeological resources (as defined at California Public Resources Code, Section 21084.1 and 21083.2); and (2) may be disturbed, and potentially impacted, by Project implementation. The Cultural Report is discussed in detail under Cultural Resources, Section V, above. The scope of the Cultural Report included identification of tribal cultural resources at the Project site that are listed or eligible for listing in the California Register of Historical Resources or that may be significant tribal cultural resources pursuant to criteria set forth in Public Resources Code Section 5024.1(c). Information in this section is from the Cultural Report unless otherwise indicated.

The Cultural Report includes an evaluation of potential historical and archaeological resources at the FMW Site and the potential for disturbance of human remains during development of the Project. The FMW Site is located near previously mapped prehistoric archaeological cultural resources associated with the Emeryville Shellmound and other shellmounds. Human remains and cultural artifacts have been encountered at these shellmound sites.

The Cultural Report also includes a discussion of consultation for the project required by AB 52. AB 52 requires notification of Native American tribes as part of the CEQA process when a proposed project may affect tribal cultural

[80] LSA Associates, 2022, *op cit.*

resources. Once appropriate tribal representatives are notified, those representatives have 30 days to request consultation, and the lead agency, which is DTSC for the Project, must begin that process within 30 days of the request. Lead agencies have the obligation under AB 52 to avoid damaging effects to tribal cultural resources, when feasible, and mitigation measures agreed upon during the AB 52 consultation shall be recommended for inclusion in the CEQA document.

In accordance with AB 52 guidance, the DTSC Office of Environmental Justice and Tribal Affairs Office issued outreach letters for the Project to tribal representatives on 22 November 2016. No responses were received during the comment period and the DTSC closed the consultation in an email dated 9 January 2017. The DTSC conducted additional outreach to tribal governments[81] in December 2021 and received a response from a representative of the Nototomne Cultural Preservation, who requested a site visit and tribal oversight during ground disturbing activities. DTSC's tribal liaison coordinated the site visit, which was held on 3 February 2022 at the FMW Site. During the site visit, the Nototomne Cultural Preservation representatives expressed concerns in regard to a high potential for encountering buried tribal cultural resources (including human remains) within the project site during project-related, ground-disturbing activities and requested tribal monitoring of all ground-disturbing activities. The Successor Agency has agreed to Nototomne Cultural Preservation's request to provide for tribal oversight during ground disturbing activities at the FMW Site as identified in Mitigation Measure CULT-2.

Impact Analysis

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

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

No Impact. As noted in the Cultural Resources section of this Initial Study, above, there are no historical resources within the Project site that are listed or considered eligible for listing in the California Register of Historical Resources or in a local register.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Potentially Significant Unless Mitigation Incorporated. As noted in the Cultural Resources section of this Initial Study, above, the Cultural Report concluded that the FMW Site is located in the midst of a cluster of shellmounds, the most prominent of which is the Emeryville Shellmound. Soil borings from beneath the buried Marchant building features at the FMW Site are black to very dark brown, indicating the potential presence of midden soils associated with the shellmound sites. Accordingly, the Cultural Report concluded that there is a potential for significant tribal

[81] Tribal governments that were sent engagement letters included: (1) Amah Mutsun Tribal Band of Mission San Juan Bautista; (2) Costanoan Rumsen Carmel Tribe; (3) Guidiville Indian Rancheria; (4) Indian Canyon Mutsun Band of Costanoan; (5) Indian Canyon Mutsun Band of Costanoan; (6) Muwekma Ohlone Indian Tribe of the San Francisco Bay Area; (7) North Valley Yokuts Tribe; (8) Rumsen Am:a Tur:ataj Ohlone; (9) Tamien Nation; (10) The Confederated Villages of Lisjan; (11) The Ohlone Indian Tribe, (12) Tule River Indian Tribe, (13) Wilton Rancheria; and (14) Wuksache Indian Tribe/Eshom Valley Band.

cultural resources, potentially including intact subsurface prehistoric archaeological deposits and human remains, to be encountered during excavation activities for the Project. This is a ***potentially significant*** impact.

Mitigation Measure CULT-1 requires an Archaeological Monitoring Plan be implemented during earthmoving activities at the FMW site to ensure any unique archaeological resources encountered are preserved to the extent feasible. Mitigation Measure CULT-2 requires additional provisions in the Archaeological Monitoring Plan (Appendix G) to ensure that if human remains are encountered, they are not disturbed by Project workers. If the remains are of Native American origin, the Native American Most Likely Descendent must be identified by the Native American Heritage Commission and allowed to inspect the site and make recommendations before the vicinity is disturbed and the remains are removed. Together, these two mitigation measures, CULT-1 and CULT-2, would reduce potential impacts to tribal cultural resources to a *less-than-significant* level.

XIX. UTILITIES AND SERVICE SYSTEMS

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

Affected Environment

Information regarding utilities and service systems for the Project is based on the Public Services and Utilities analysis from the EIR prepared for the Emeryville General Plan.[82] Water and wastewater services at the FMW Site are provided by the EBMUD. Wastewater from the City of Emeryville is collected and treated at EBMUD's wastewater treatment plant, which treats an annual daily flow of approximately 80 million gallons per day (mgd) and can provide

[82] City of Emeryville, 2009a, *Op. cit.*

primary treatment for a maximum flow of 320 mgd and secondary treatment for a maximum flow of 168 mgd. Municipal solid waste is managed by the City Public Works Department, which oversees a contract with Waste Management Inc. (WM) to provide waste disposal and recycling service. Solid waste is sent to several landfills, but primarily to the Altamont Landfill in Livermore, which has sufficient remaining capacity to remain open through 2029, based on predicted waste volumes.

Contaminated soils excavated during Project activities would require testing to determine the appropriate facility for disposal. Soils that contain contaminants at concentrations that exceed California or federal hazardous waste thresholds would require disposal at a Class I hazardous waste landfill. Soils with contaminants at concentrations below hazardous waste thresholds may be disposed of at a Class II nonhazardous waste landfill. It is anticipated that demolition of the building would generate 1,400 tons of building debris and asphalt, 370 cubic yards of above grade concrete debris, and 1,630 cubic yards of below grade concrete debris (e.g., floor slab and buried Marchant building features). Above grade demolition debris would be managed in accordance with the City's Municipal Code Title 8 Chapter 26 – Construction and Demolition Waste Requirements. Below grade concrete debris in contact with contaminated soil would be managed in accordance with procedures that will be specified in the RDIP. Approximately 27,200 tons of soil would be excavated from the FMW site, and transported to either a Class I hazardous waste or a Class II non-hazardous waste landfills (it is likely that some soils would go to each type of landfill) pending final characterization of excavated soil.

The landfills chosen for soil disposal, and the quantities transported, would depend on Site conditions and the concentrations of COCs present in the excavated soils. Based on existing data it is estimated that approximately half of soil excavated for the Project (approximately 13,500 tons) would be disposed of as non-RCRA hazardous waste and approximately 2,300 tons of soil would be disposed of as RCRA hazardous waste at a Class I hazardous waste landfill, such as the Waste Management Kettleman Hills facility in Kettleman City, California. Approximately 10,700 tons of soil is considered likely to be eligible for disposal at a Class II non-hazardous waste landfill, such as the Recology Hay Road in Vacaville, California. It is estimated that 700 tons of soil would require disposal as RCRA hazardous waste through incineration at a facility such as the Clean Harbors Argonite Incineration Facility in Utah. The Project RDIP, which will be reviewed and approved by DTSC after approval of the Final RAP, will include detailed information regarding disposal of contaminated soil and demolition debris as a result of Project activities.

Impact Analysis

a) *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electrical power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects??*

Less-than-Significant. Water use for the Project would be limited to dust control during demolition and excavation/backfilling activities and other minor uses, and impact on overall water demand for the City would be negligible. Should treated and dewatered groundwater be discharged under an EBMUD permit, the volumes of groundwater requiring disposal would be temporary and insignificant compared to the capacity of the EBMUD wastewater treatment plant, and the EBMUD discharge permit would include requirements related to the allowable rate and volume of discharge based on the capacities of the existing sewer system and wastewater treatment facility. As noted in the Hydrology and Water Quality Analysis (Section X), there would be no significant change in areas of impervious surfaces at the FMW Site as a result of the Project. Accordingly, there would be no increases in stormwater runoff from the FMW Site, and no requirement for construction of new or expanded stormwater drainage facilities but replacement of existing storm drain laterals along the driveway access for the FMW Site would likely occur as a result of sitewide excavation to 5 feet bgs.

As described above, the stormwater treatment design would be reviewed by DTSC to ensure that it would not promote migration of contamination or interfere with remediation, and it would also be reviewed by the City to ensure that it complies with the Provision C.3 requirement of the of MRP. During the operation of MPE and thermal treatment, either a temporary power drop or permanent power supply from PG&E would be installed, and if temporary, the high-power overhead line would be abandoned or removed following the thermal service operation. During thermal service operation, the thermal remediation contractor would operate the PCU and a field transformer to access the power supplied by the high-power overhead line, and this equipment would be removed from the FMW Site following the thermal service operation. For post-thermal operation of the MPE system, it is anticipated that a permanent power supply would be installed that is comparable to the current power supply at the FMW Site. A new transformer would be installed as the current below grade transformer would be removed by PG&E prior to sitewide excavation. If natural gas would be utilized during the operation of MPE and thermal treatment, a temporary or permanent natural gas supply from PG&E would be installed. The electrical and natural gas needs of the Project would be met by existing utility facilities. No construction or relocation of utility facilities would be required or result due to the Project. This would be a *less-than-significant* impact.

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

Less-than-Significant. Water supply at the site is provided by EBMUD. As noted in Item a), above, water use for the Project would be limited to dust control during demolition and excavation/backfilling activities, mixing of ERD amendments for in-situ groundwater polishing, and other minor uses and impact on overall water demand for the City would be negligible. This would be a *less-than-significant* impact.

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

Less-than-Significant. As noted in Item a), above, should treated and dewatered groundwater be discharged under EBMUD permit, the volumes of groundwater requiring disposal would be insignificant compared to the capacity of the EBMUD wastewater treatment plant, and the EBMUD discharge permit would include requirements related to the allowable rate and volume of discharge based on the capacities of the existing sewer system and wastewater treatment facility. This would be a *less-than-significant* impact.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

No Impact. Although the specific landfills for excavated soils and demolition debris have not been designated, more than sufficient capacity exists at appropriate landfills to accept the volumes of solid waste generated by the Project. Prior to the transportation and disposal of demolition debris and excavated soil from the FMW Site, the contractor would be required to provide the landfill facilities with information regarding the quantities and waste classifications of the materials to be disposed of.

e) Would the project comply with federal, State, and local management and reduction statutes and regulations related to solid waste?

No Impact. The Project RDIP, which will be reviewed and approved by DTSC after approval of the Final RAP, will include detailed information regarding disposal of contaminated soil and demolition debris as a result of Project activities. The Project would comply with all federal, State, and local solid waste statutes and regulations, inclusive of the requirements set forth in Chapter 26 of Title 8 of the Emeryville Municipal Code regarding Construction

Demolition and Waste Requirements and preparation of a waste management plan designed to divert 100% of all Portland cement concrete and asphalt concrete, and nonhazardous excavated soil and land-clearing debris. Below grade concrete debris in contact with contaminated soil would be managed in accordance with procedures that would be specified in the RDIP. All material for disposal would be handled, managed, transported, and disposed of in accordance with applicable requirements.

XX. WILDFIRE

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

Affected Environment

The FMW Site is located within an urbanized area and is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones as mapped by the California Department of Forestry and Fire Protection (Cal Fire).[83]

Impact Evaluation

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The FMW Site is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones. Potential impacts related to emergency response and evacuation are discussed in more detail under Section IX, Hazards and Hazardous Materials.

[83] Cal Fire, 2008. Alameda County Very High Fire Hazard Severity Zones in LRA,

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

No Impact. The FMW Site is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones.

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

No Impact. The FMW Site is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones.

d) Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. The FMW Site is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	❒	☑	❒	❒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	❒	❒	☑	❒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	❒	☑	❒	❒

Impact Evaluation

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare

or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Potentially Significant Unless Mitigation Incorporated. The Biological Resources analysis (Section IV) identified a potential for Project building demolition activities to adversely affect nesting birds protected under the Migratory Bird Treaty Act. The Cultural Resources analysis (Section V) and Tribal Cultural Resource (Section XVIII) identified the potential for Project excavation activities to disturb archaeological resources related to Native American shellmound sites. No other potentially significant impacts were identified to fish or wildlife habitat, plant or animal communities, rare or endangered plants or animals, or historical and archeological resources. Mitigation Measures BIO-1, CULT-1, and CULT-2 include modifications to the Project to reduce the identified potentially significant impacts to a *less-than-significant* level.

b) *Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)*

Less-Than-Significant Impact. Project impacts identified in this document for biological resources, cultural resources, hazards and hazardous materials, noise, transportation, and tribal cultural resources are all site-specific temporary impacts primarily related to Project demolition, excavation/backfilling, installation of remediation systems, and paving activities. After incorporation of mitigation measures, all Project impacts would be reduced to a less-than-significant level.

Current major development projects in the Project vicinity are shown on Table XXI-1. As demolition, excavation/backfilling, installation of remediation systems, and paving activities for the Project would be completed in approximately 3 years, these mitigated, less-than-significant impacts would not have the potential to significantly contribute to longer-term cumulative impacts viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. Therefore, cumulative impacts for the Project would be considered less-than-significant.

Table XXI-1. City of Emeryville Major Development Projects in the Project Vicinity

Project Name, Address/Location	Project Description
Emeryville Center of Innovation Vicinity of 53rd, Hollis, and Horton Streets	Build-out of former Novartis portion of Chiron Life Sciences Center Planned Unit Development, consisting of four new lab buildings totaling approximately 911,800 square feet and a parking structure with approximately 1,991 spaces.
Sherwin Williams Existing Building, New Buildings, and Park/Open Space, 1450 Sherwin Avenue	Final Development Plan for reuse of existing "Building 1-31" for approximately 74,000 square feet of office/research and development (R&D) space, including pedestrian and bicycle "pass through" from 45th and Horton Streets to new City park. Final Development Plan for four new buildings accommodating 500 residential units and 2,000 to 8,000 square feet of ground floor retail/ commercial space. Final Development Plan for 3.53 acres of new public park, greenway, and other open spaces, plus new 46th Street and extension of Hubbard Street.
Public Market Parcels A, B, and F Shellmound Street between Shellmound Way and 63rd Street	New Final Development Plan for Parcels A, B, and F. Parcels A and B are proposed for 396,724 square feet of office/R&D space, 6,100 square feet of retail and a 953-space parking garage. Parcel F is proposed for 18 affordable housing units consisting of 10 multistory townhouses and 8 apartment flats.
EmeryStation Overland 1580 62nd Street	New 300,000 square foot lab building and 450 space parking garage.
Life Sciences Tower 5850 Shellmound Way	Construction of new 265-foot tall 388,090 square foot life science office building with podium parking structure and ground floor retail.

Project Name, Address/Location	Project Description
Bay Street Grocery Store 5615 Bay Street	Construction of new 48,500 square foot grocery store with rooftop parking to replace former Old Navy/Elephant Bar building on Bay Street Parcel B.
New Residential Unit 5876 Beaudry Street	One new residential unit for a total of three units on the lot.
Group Residential 5876 Doyle Street	Renovation of former single-family residential unit into Group Residential facility with 12 rooms.

Source: City of Emeryville, 2021. Status of Major Development Projects, August (table and map). Website: https://www.ci.emeryville.ca.us/ArchiveCenter/ViewFile/Item/5218, Accessed October 1.

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

Potentially Significant Unless Mitigation Incorporated. The Project is designed to remediate subsurface contamination at the FMW Site, which would provide a beneficial impact on human beings. As noted under Item b), potentially significant impacts were identified for biological resources, cultural resources, hazards and hazardous materials, noise, and transportation related to Project demolition, excavation/backfill, installation of remediation systems, and paving activities. The following mitigation measures have been incorporated into the Project to reduce direct and impact adverse effects on human beings:

- Mitigation Measure BIO-1 requires measures to avoid the inadvertent take of nesting birds protected under the Migratory Bird Treaty Act that could potentially nest at the Project building.
- Mitigation Measure CULT-1 requires an Archaeological Monitoring Plan be implemented during earthmoving activities at the FMW site to ensure any unique archaeological resources encountered are preserved to the extent feasible.
- Mitigation Measure CULT-2 requires additional provisions in the Architectural Monitoring Plan to ensure that if human remains are encountered they are not disturbed by Project workers. If the remains are of Native American origin, the Native American Most Likely Descendent must be identified by the Native American Heritage Commission and allowed to inspect the site and make recommendations before the vicinity is disturbed and the remains are removed.
- Mitigation Measure HAZARDS-1 requires a Health and Safety Plan be implemented for the Project to protect remedial workers, the general public, and the environment from releases of hazardous materials during remedial activities.
- Mitigation Measure HAZARDS-2 requires a Perimeter Air Monitoring Plan be implemented for the project to require real-time air monitoring for organic vapor and fugitive dust at the perimeter of the FMW site and modifications to remedial activities in the event that monitoring results exceed health-risk based action levels.
- Mitigation Measure NOISE-1 requires noise mitigation measures to be implemented to reduce the effects of noise generated by Project building demolition, excavation, backfilling, and paving activities on nearby noise receptors.
- Mitigation Measure NOISE-2 requires that groundwater treatment equipment be located as far as practical from adjoining commercial properties.
- Mitigation Measures NOISE-3a and NOISE-3b require measures to minimize potential vibration impacts to adjoining properties to the extent feasible, including construction vibration monitoring and work rules to reduce vibration near adjoining properties, such as avoiding scraping adjoining foundations and minimizing the hammering of concrete or other hard materials with excavators near potentially sensitive structures.

- Mitigation Measure TRANS-1 requires a construction management plan containing traffic control measures to ensure Project building demolition, excavation, backfilling, and paving activities are consistent with City policies, including the Bicycle and Pedestrian Plan.

These mitigation measures would reduce the environmental effects which could cause substantial adverse effects on human beings, either directly or indirectly, to a *less-than-significant* level.

APPENDIX A
MITIGATION MEASURES

***Mitigation Measure BIO-1*:** Adequate measures to avoid inadvertent take of nesting birds protected under the Migratory Bird Treaty Act during the Project shall include at a minimum:

- If vegetation removal and initial Project activities are proposed during the nesting season (March through August), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 14 days prior to the onset of vegetation removal or other Project work, in order to identify any active nests on the FMW Site and in the vicinity of proposed construction. The FMW Site shall be resurveyed to confirm that no new nests have been established if building demolition has not been completed or if Project activities have been delayed or curtailed for more than 14 days during the nesting season.
- If no active nests are identified during the pre-Project survey period, or if Project activities are initiated during the non-breeding season (September through February), vegetation removal and building demolition may proceed with no restrictions.
- If bird nests are found, an adequate setback shall be established around the nest location and vegetation removal and other Project activities restricted within this no-disturbance zone until the qualified biologist has confirmed that any young birds have fledged and are able to function outside the nest location. Required setback distances for the no-disturbance zone shall be based on input received from the CDFW, and may vary depending on species and sensitivity to disturbance. As necessary, the no-disturbance zone shall be fenced with temporary orange construction fencing if Project activities are to be initiated on the remainder of the FMW Site.
- A report of findings shall be prepared by the qualified biologist and submitted to DTSC prior to initiation of demolition, excavation, or paving activities within the no-disturbance zone during the nesting season (March through August). The report shall either confirm absence of any active nests or should confirm that any young are located within a designated no-disturbance zone and Project activities can proceed.

Mitigation Measure CULT-1: An Archaeological Monitoring Plan (Plan) shall be developed and implemented for the Project. The Plan shall require that a qualified archaeologist be present to monitor ground disturbing Project activities. The monitoring archaeologist shall have expertise in California prehistory as well as Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) certification. Monitoring should occur after demolition of the building when soils beyond the building's footprint will be disturbed and when the concrete slabs are removed. Monitoring should continue during ground disturbing activities that occur after the slabs have been removed and during well-drilling and soil removal activities.

If intact archaeological deposits are encountered or other evidence of cultural resources (such as unusual amounts of bone or shell, artifacts, human remains, or architectural archaeological remains) all work within 25 feet of the deposit shall cease or be diverted until the deposit is evaluated. The monitoring archaeologist shall immediately notify the Successor Agency and DTSC of the encountered archaeological deposit.

The monitoring archaeologist shall conduct a preliminary assessment to make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit in accordance with CEQA guidelines and other established criteria. If it is determined that the identified archaeological deposit is not significant, the deposit may be removed and work in the area may resume. If it is determined that the archaeological deposit is significant, work affecting the deposit will be avoided. Within 10 calendar days, the monitoring archaeologist will submit to the Successor Agency and DTSC a preliminary assessment report describing the potential significance of the resource and recommendations regarding appropriate and feasible avoidance measures and/or other appropriate mitigation measures to preserve the status of the resource as a unique archaeological resource.

The presence of hazardous materials at the FMW site could interfere with avoidance of potential cultural resources encountered during excavation. If the Successor Agency, in consultation with the monitoring archaeologist, determines that a unique archaeological resource is present and that the resource could be adversely affected by the proposed remediation project, the Successor Agency shall consult with DTSC to determine how to avoid any significant adverse effects on the unique archaeological resource.

If the Successor Agency determines that avoidance of a unique archaeological resource is not feasible, DTSC shall direct the qualified archaeologist to develop and implement a plan to mitigate the effect of the Project on the qualities which make the resource unique. As specified in CEQA Guidelines (Section 15126.4 (b)), preservation of the archaeological resource in place is the preferred manner of mitigating potential impacts to the resource. If this is not possible, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information should be prepared and adopted prior to the disturbance of that resource. Any scientifically consequential information from the data recovery plan must be submitted to the appropriate California Historical Resources Information System information center. The Archaeological Monitoring Plan prepared by the Successor Agency to be implemented during the Project is appended to this IS/MND as Appendix G.

Mitigation Measure CULT-2: The Archaeological Monitoring Plan (Mitigation Measure CULT-1) (Appendix G) requires that if human remains are uncovered during work at the FMW Site, all work within 25 feet shall be redirected and the County Coroner notified immediately. At the same time, the monitoring archaeologist shall assess the situation and consult with agencies, as appropriate. Project workers should not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Native American Most Likely Descendant (MLD) to inspect the site within 48 hours of being granted access to the site and provide recommendations for the proper treatment of the remains and associated grave goods. The MLD recommendations may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials, preservation of Native American human remains and associated items in place, relinquishment of Native American human remains and associated items to the descendants for treatment, or any other culturally appropriate treatment. Work within 25 feet of the discovery may resume after the MLD has inspected the site, provided recommendations, and either the remains and associated grave goods are preserved in place or removed from the FMW Site by a qualified archaeologist in consultation with the MLD. Any remains and associated grave goods shall thereafter be reinterned at the FMW Site or other appropriate location in consultation with the MLD. The Successor Agency has also agreed to Nototomne Cultural Preservation's request to provide for tribal oversight during ground disturbing activities at the FMW Site. The Nototomne Cultural Preservation's representative performing monitoring activities shall have OSHA HAZWOPER certification.

Mitigation Measure HAZARDS-1: As a condition of approval, the Project RDIP shall include a Health and Safety Plan (HSP) prepared by a Certified Industrial Hygienist and reviewed by DTSC. The HSP shall include measures designed to protect remedial workers, the general public, and the environment from releases of hazardous materials that may occur during each phase of Project activities. The HSP shall include the use of Personal Protective Equipment (PPE) to address potential exposures to FMW Site contaminants for workers, in accordance with OSHA worker safety requirements. The HSP shall include training requirements, including requirements for remedial workers and on-site monitors/observers of remedial work to be trained in HAZWOPER in accordance with Title 8, Section 5192 of California Code of Regulations. The HSP shall include measures to minimize the potential for hazardous emissions that could affect off-site receptors, including BAAQMD dust control Best Management Practices. In addition, the Project RDIP will include a dust, vapor, and odor control plan and a perimeter air monitoring plan that will be reviewed and approved by DTSC. The perimeter air monitoring plan will develop human health risk-based airborne action levels for dust and COCs protective of off-site receptors, will describe air monitoring procedures, and will specifies contingency measures to be undertaken if airborne action levels are exceeded. The dust, vapor, and odor control plan will specify measures to be undertaken to limit generation of dust, vapors, and

odors in accordance with airborne action levels specified in the perimeter air monitoring plan. The HSP shall include emergency response procedures for remedial site workers, as well as procedures for the investigation and safe removal of previously unknown sources of contamination, such as underground tanks, that may be encountered during remedial excavation activities. The HSP shall also include soil and groundwater management procedures designed to ensure handling of those materials in accordance with regulatory requirements and prevent migration of contaminants off-site through trackout, runoff, or dust.

Mitigation Measure HAZARDS-2: As a condition of approval, the Project RDIP shall include a Perimeter Air Monitoring Plan (Plan) for remedial activities to be reviewed by DTSC. The Plan shall require real time air monitoring at the perimeter of the FMW Site during earthmoving activities. The Plan shall establish health risk-based action levels for organic vapor and fugitive dust and the air monitor personnel designated in the Plan shall have the authority to stop work at the FMW Site if these action levels are exceeded. The Plan shall include remedial measures to be implemented in the event of action level exceedances, prior to the restart of work, such as a temporary work stoppage during windy conditions, additional dust and vapor control measures, the use of non-toxic VOC vapor suppressants, and/or tenting of excavation activities.

Mitigation Measure NOISE-1: At a minimum, the following measures shall be included in the RDIP and implemented to minimize potential noise impacts during the Project:

- The construction contractor shall designate a "Noise Disturbance Coordinator," who would be responsible for responding to any local complaints about construction noise. The Noise Disturbance Coordinator shall determine the cause of all noise complaints (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures warranted to correct the problem be implemented. The Noise Disturbance Coordinator shall record all noise complaints received and actions taken in response. The Noise Disturbance Coordinator shall be trained to use a sound level meter and shall be available during all construction hours to respond to complaints.
- Signs shall be conspicuously posted at the FMW Site that include permitted construction days and hours consistent with Section 5-13.05 of the Noise Ordinance, and the name and telephone number of the Noise Disturbance Coordinator.
- All internal combustion engine-driven equipment shall be fitted with intake and exhaust mufflers that are in good condition in order that non-impact equipment generate a maximum noise level of 80 dBA when measured at a distance of 50 feet.
- Use of impact tools (e.g., hoe rams, jack hammers, pavement breakers, and rock drills) and similarly loud construction equipment shall be limited to weekdays (i.e. Monday through Friday) between the hours of 8:00 am to 5:00 pm, and shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used to lower noise levels from the exhaust by up to 10 dBA. External jackets on the tools themselves shall be used where feasible, to achieve a reduction of 5 dBA.
- Construction equipment idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes.
- All stationary noise-generating equipment, such as air compressors, portable power generators, other thermal and MPE treatment system equipment (e.g. power control unit, blowers, cooling tower fans, pumps, air stripper), and on-site equipment staging areas, shall be located so as to maximize the distance between the equipment and the nearest receptors to the FMW Site or noise mitigation measures, such as noise reduction equipment, noise barriers, or partial enclosures, shall be designed and installed to limit noise from the equipment as measured at the nearest receptors at or below ambient noise levels in the vicinity of the FMW site (65 to 75 dBA).

- The entrance to the FMW Site shall be located so as to maximize the distance from the adjacent office buildings to the north of the FMW Site, to the extent feasible based on access conditions.
- Temporary noise barriers (such as plywood noise barriers or noise control blankets) or partial enclosures shall be constructed to provide acoustical shielding for outdoor construction areas, if practicable.
- Whenever feasible, temporary noise barriers or partial enclosures shall be constructed to provide acoustical shielding for stationary noise-generating equipment, such as air compressors and portable power generators.
- Whenever feasible, a noise barrier will be kept between heavy construction equipment that is in operation and the offices to the north. The noise barrier may be constructed from plywood and installed on top of a portable concrete K-Rail system to be able to move and/or adjust the wall location during construction activities. A sound blanket system hung on scaffolding, or other noise reduction materials that result in an equivalent or greater noise reduction than plywood, may also be used.
- If deemed necessary after implementation of other noise and vibration mitigation measures set forth herein and NOISE-3b, in order to minimize disturbances to occupants of the buildings immediately adjacent to the north, excavation activities and use of drill rigs in connection with installation of wells conducted within 50 feet of the buildings immediately adjacent to the north may be conducted on weekends between 9:00 am and 6:00 pm, or as otherwise determined, if approval is granted by the City Council pursuant to Chapter 13 of Title 5 of the City of Emeryville Municipal Code.

Mitigation Measure NOISE-2: Operation and maintenance of the equipment for thermal treatment with MPE and associated post-thermal activities shall be located at least 50 feet away from the adjoining office buildings to the north of the FMW Site. Further, said equipment shall be located within an insulated enclosure or other sufficient barrier designed and installed to limit noise from the equipment as measured at the nearest receptor at or below ambient noise levels in the vicinity of the FMW site (65 to 75 dBA).

Mitigation Measure NOISE-3a: The structural/geotechnical investigation conducted for the Project prior to completion of the RDIP shall include a structural evaluation of the buildings immediately north of the FMW Site (on APN 49-1319-1-6 and 49-1319-1-11), if access is granted by the respective property owners. The evaluation shall include a baseline survey of cracks and other pre-existing structural damage on adjoining buildings and determine a site-specific vibration performance standard (PPV in in/sec) for Project excavation activities to be protective of adjoining buildings. This performance standard will be incorporated into vibration monitoring for the project.

Mitigation Measure NOISE-3b: The following measures shall be included in the RDIP and implemented to minimize potential vibration impacts during excavation activities on the parking lot parcel (APN 49-1319-1-20) of the FMW site:

- Excavators and other equivalent equipment shall be operated to avoid scraping or hitting the foundation of adjacent buildings. If appropriate and subject to DTSC approval, the limits of excavation may exclude areas within close proximity of foundations of adjacent buildings.
- Rollers (e.g., sheepsfoot or smooth drum) shall not be used in vibratory mode within 25 feet of the commercial buildings to the north of the FMW Site.
- To the extent practical, large concrete subsurface obstacles uncovered on the parking lot parcel shall be dragged/moved at least 10 feet away from northern perimeter of the FMW Site to be broken down to avoid generating potentially excessive vibration near the adjacent commercial buildings to the north .
- Heavy construction equipment shall be operated to avoid the generation of high levels of vibration to the extent feasible.

- Vibration monitoring shall be performed during all earthmoving activities within the parking lot parcel. Should vibration (measured as PPV in in/sec) exceed the performance standard identified in the pre-construction structural survey (Mitigation Measure NOISE-3a), work shall be halted and alternative methods of construction implemented, if feasible. If vibration exceeding the performance standard is unavoidable, the nature and extent of the exceedance shall be logged. These logs shall be maintained as part of the Project record.

Mitigation Measure TRANS-1: As a condition of approval for the RDIP, a construction management plan shall be developed for the Project that includes:

- A set of comprehensive traffic control measures, including scheduling of trips to be staggered throughout the day with the last site arrivals prior to 4 p.m.; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes
- Use of driveway flaggers for inbound and outbound truck trips
- Permitted construction hours consistent with Section 5-13.05 of the Noise Ordinance
- Identification of parking areas for construction employees, site visitors, and inspectors
- Provisions for street sweeping to remove construction related debris on public streets
- Provision for pedestrian detour signage if temporary sidewalk closures are necessary; signage would need to be placed at the mid-block crossing under the Powell Street bridge and at the Horton Street and Stanford Avenue intersection.
- Provision for cyclist detour signage if temporary bicycle lane closures are necessary; signage would need to be placed at the Horton Street and Haruff Street intersection and at the Horton Street and Stanford Avenue intersection.

This is to acknowledge that we have agreed to incorporate the above mitigation measures as part of the FMW Site RAP Project.

APPENDIX B
AIR QUALITY AND GREENHOUSE GAS EMISSIONS SUPPORTING INFORMATION

Off-Road Equipment Summary

Phase	Equipment	Fuel	Specifications	Total hours of operation
Demolition	Excavators	Diesel	CalEEMod default Tier III engine	320
	Skid Steer	Diesel	CalLEEMod default Tier III engine	160
	Water Truck	Diesel	CalEEMod default	160
Site Preparation, Excavation, Remediation Activities	Excavator	Diesel	CalLEEMod default Tier III engine	320
	Tractors/Loaders/Back hoes	Diesel	CalLEEMod default Tier III engine	240
	Roller/Compactor	Diesel	CalLEEMod default Tier III engine	192
	Skid Steer	Diesel	CalLEEMod default Tier III engine	48
	Drill Rig	Diesel	CalEEMod default	1376
	Water Truck	Diesel	CalLEEMod default Tier III engine	320
Paving/Site Stabilization	Rollers	Diesel	CalEEMod default	16
	Tractors/Loaders/Back hoes	Diesel	CalLEEMod default Tier III engine	24
	Paving Equipment	Diesel	CalEEMod default	24
Thermal Remediation	Energy Use Option 1	Electricity	13100000 kWh	--
	Energy Use Option 2	Electricity and Natural Gas	6991000 kWh and 10850 MM Btu	--
	Backup generator	Diesel	1 piece, Assume 5,100 kW, 50 hours/year	50 hours per year
	Electrodes	Electricity	1 piece, 3,500kW, power factor os 0.95	--
	Condensers	Electricity	2 piece, 15hp, continuous	--
	Blowers	Electricity	3 piece, 40hp, continuous	--
	Groundwater pump	Electricity	1 piece, CalEEMod default	--
Post-Thermal Treatment	backup generator	Diesel	1 piece, Assume 5,100 kW, 50 hours/year	50 hours per year
	Blowers	Electricity	1 piece, 40hp, continuous	--
	Condenser	Electricity	1 piece, 15hp, continuous	--
	backup generator	Electricity	1 piece, CalEEMod default	--

Truck Trip Summary

Phase	Type	Total Trips	Total Miles
Demolition (Export)	Debris	162	4860
	Concrete	222	3996
Site Preparation, Excavation, Remediation Activities	Soil Export non-RCRA Hazardous	590	241900
	Soil Export non-haz Class II	470	49820
	Soil Export RCRA Haz Landfill	100	41000
	Soil Export RCRA Haz Incineration	40	53200
	Import Soils	1200	72000
Paving/Site Stabilization	Paving Materials	156	6240

Carbon Trips

Phase	Frequency	Total Trips	Total Miles
MPE Pilot	assume 1 load	1	1200
Thermal	assume 1 load every 90 days	4	4800
Post Thermal MPE	1 load per year for 27 years	27	10800

Worker Trip Summary

Phase	Maximum Worker Per Day
Demolition	8
Site Preparation, Excavation, Re	16
Paving/Site Stabilization	8

Paving phase - Alameda County, Annual

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

Paving phase

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.75	76,230.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2025
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 - This CalEEMod run is for Paving/Site Stabilization Phase only.

Land Use - Acreage based on Project description. User Defined Industrial land use selection is arbitrary and does not affect final emissions.

Construction Phase - Based on information provided by project applicant.

Off-road Equipment - CalEEMod phase for haul trucks only

Off-road Equipment - Information provided by project applicant and adjusted for CalEEMod. Hours per day were calculated by quantity*total days of operation*hours of operation per day divided by duration (20 days).

Grading - Material imported calculated from the 2,496 haul trips for paving materials

Construction Off-road Equipment Mitigation - According to project applicant, Tractors/Loaders/Backhoes would be using Tier 3 engines.

Demolition -

Trips and VMT -

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

Paving phase - Alameda County, Annual

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

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	2.00	20.00
tblGrading	MaterialImported	0.00	2,496.00
tblLandUse	LandUseSquareFeet	0.00	76,230.00
tblLandUse	LotAcreage	0.00	1.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.20
tblOffRoadEquipment	UsageHours	7.00	0.80
tblOffRoadEquipment	UsageHours	8.00	1.20

2.0 Emissions Summary

Paving phase - Alameda County, Annual

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	1.0600e-003	0.0260	0.0152	1.1000e-004	3.4200e-003	4.3000e-004	3.8400e-003	9.2000e-004	4.0000e-004	1.3200e-003	0.0000	10.4310	10.4310	5.9000e-004	1.4000e-003	10.8634
Maximum	**1.0600e-003**	**0.0260**	**0.0152**	**1.1000e-004**	**3.4200e-003**	**4.3000e-004**	**3.8400e-003**	**9.2000e-004**	**4.0000e-004**	**1.3200e-003**	**0.0000**	**10.4310**	**10.4310**	**5.9000e-004**	**1.4000e-003**	**10.8634**

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					
2025	9.7000e-004	0.0266	0.0154	1.1000e-004	3.4200e-003	5.3000e-004	3.9500e-003	9.2000e-004	5.1000e-004	1.4200e-003	0.0000	10.4310	10.4310	5.9000e-004	1.4000e-003	10.8634
Maximum	**9.7000e-004**	**0.0266**	**0.0154**	**1.1000e-004**	**3.4200e-003**	**5.3000e-004**	**3.9500e-003**	**9.2000e-004**	**5.1000e-004**	**1.4200e-003**	**0.0000**	**10.4310**	**10.4310**	**5.9000e-004**	**1.4000e-003**	**10.8634**

	ROG	NOx	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	**8.49**	**-2.31**	**-1.12**	**0.00**	**0.00**	**-23.26**	**-2.86**	**0.00**	**-27.50**	**-7.58**	**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)

Paving phase - Alameda County, Annual

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

		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

	ROG	NOx	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	Arbitrary phase for haul trips	Site Preparation	11/13/2025	12/10/2025	5	20	
2	Paving	Paving	11/13/2025	12/10/2025	5	20	

Paving phase - Alameda County, Annual

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

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
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	6.00	130	0.42
Paving	Paving Equipment	1	1.20	132	0.36
Paving	Rollers	1	0.80	80	0.38
Paving	Tractors/Loaders/Backhoes	1	1.20	97	0.37
Arbitrary phase for haul trips	Graders	0	8.00	187	0.41
Arbitrary phase for haul trips	Rubber Tired Dozers	0	7.00	247	0.40
Arbitrary phase for haul trips	Tractors/Loaders/Backhoes	0	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
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Arbitrary phase for haul trips	0	0.00	0.00	312.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Paving phase - Alameda County, Annual

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

3.2 Arbitrary phase for haul trips - 2025

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					1.4000e-004	0.0000	1.4000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	3.2000e-004	0.0205	4.6800e-003	9.0000e-005	2.6400e-003	1.8000e-004	2.8200e-003	7.3000e-004	1.7000e-004	9.0000e-004	0.0000	8.7924	8.7924	2.0000e-004	1.3900e-003	9.2113
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.2000e-004**	**0.0205**	**4.6800e-003**	**9.0000e-005**	**2.6400e-003**	**1.8000e-004**	**2.8200e-003**	**7.3000e-004**	**1.7000e-004**	**9.0000e-004**	**0.0000**	**8.7924**	**8.7924**	**2.0000e-004**	**1.3900e-003**	**9.2113**

Paving phase - Alameda County, Annual

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

3.2 Arbitrary phase for haul trips - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4000e-004	0.0000	1.4000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	3.2000e-004	0.0205	4.6800e-003	9.0000e-005	2.6400e-003	1.8000e-004	2.8200e-003	7.3000e-004	1.7000e-004	9.0000e-004	0.0000	8.7924	8.7924	2.0000e-004	1.3900e-003	9.2113
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.2000e-004**	**0.0205**	**4.6800e-003**	**9.0000e-005**	**2.6400e-003**	**1.8000e-004**	**2.8200e-003**	**7.3000e-004**	**1.7000e-004**	**9.0000e-004**	**0.0000**	**8.7924**	**8.7924**	**2.0000e-004**	**1.3900e-003**	**9.2113**

Paving phase - Alameda County, Annual

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

3.3 Paving - 2025

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	5.6000e-004	5.3400e-003	9.0100e-003	1.0000e-005		2.5000e-004	2.5000e-004		2.3000e-004	2.3000e-004	0.0000	1.1781	1.1781	3.8000e-004	0.0000	1.1876
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-004**	**5.3400e-003**	**9.0100e-003**	**1.0000e-005**		**2.5000e-004**	**2.5000e-004**		**2.3000e-004**	**2.3000e-004**	**0.0000**	**1.1781**	**1.1781**	**3.8000e-004**	**0.0000**	**1.1876**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.2000e-004	1.5500e-003	1.0000e-005	6.3000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.4606	0.4606	1.0000e-005	1.0000e-005	0.4645
Total	**1.8000e-004**	**1.2000e-004**	**1.5500e-003**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**6.4000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.4606**	**0.4606**	**1.0000e-005**	**1.0000e-005**	**0.4645**

Paving phase - Alameda County, Annual

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

3.3 Paving - 2025

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	4.7000e-004	5.9400e-003	9.1800e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.4000e-004	3.4000e-004	0.0000	1.1781	1.1781	3.8000e-004	0.0000	1.1876
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.7000e-004**	**5.9400e-003**	**9.1800e-003**	**1.0000e-005**		**3.5000e-004**	**3.5000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**1.1781**	**1.1781**	**3.8000e-004**	**0.0000**	**1.1876**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.2000e-004	1.5500e-003	1.0000e-005	6.3000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.4606	0.4606	1.0000e-005	1.0000e-005	0.4645
Total	**1.8000e-004**	**1.2000e-004**	**1.5500e-003**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**6.4000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.4606**	**0.4606**	**1.0000e-005**	**1.0000e-005**	**0.4645**

Paving phase - Alameda County, Annual

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	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	0.570753	0.056481	0.179220	0.111941	0.020784	0.005211	0.013984	0.013033	0.000790	0.000560	0.024477	0.000343	0.002423

Paving phase - Alameda County, Annual

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

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

Paving phase - Alameda County, Annual

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

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**

Paving phase - Alameda County, Annual

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

5.3 Energy by Land Use - Electricity

Unmitigated

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

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

Paving phase - Alameda County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Paving phase - Alameda County, Annual

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

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

Paving phase - Alameda County, Annual

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	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

Paving phase - Alameda County, Annual

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
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

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

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

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

Demolition, excavation, and installation of remediation sys

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.75	76,230.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Picked arbitrary land use which does not affect construction equipment list. Site dimensions based no project description.

Construction Phase - Information provided by project applicant. Days per phase are arbitrary as long as total hours of operation are conserved.

Off-road Equipment - Information provided by project applicant and adjusted for CalEEMod. Hours per day were calculated by quantity*total days of opereation*hours of operation per day divided by duration

Off-road Equipment - All on-site equipment set to zero because this is a proxy phase

Off-road Equipment - Information provided by project applicant and adjusted for CalEEMod. Bore/Drill Rigs are for both Thermal and Insitu ERD polishing. Off-Highway Trucks are for both dump trucks and water truck.

Trips and VMT - Trip lengths modified to conserve with the total miles per phase provided by project applicant. Assume maximum workers for site prep phase.

Demolition - Demolition tonnage is calculated using demolition trips and default haul truck capacity.

Grading - Material imported and exported converted from information provided by project applicant using default haul truck volume.

Energy Use -

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

Construction Off-road Equipment Mitigation - According to the information provided by project applicant, all on-site equipment except for drill rigs will have Tier 3

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	150.00
tblConstructionPhase	NumDays	2.00	460.00
tblGrading	MaterialExported	0.00	19,200.00
tblGrading	MaterialImported	0.00	19,200.00
tblLandUse	LandUseSquareFeet	0.00	76,230.00
tblLandUse	LotAcreage	0.00	1.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Site preparation, excavation, install remediation sys
tblOffRoadEquipment	PhaseName		Site preparation, excavation, install remediation sys
tblOffRoadEquipment	PhaseName		Site preparation, excavation, install remediation sys
tblOffRoadEquipment	PhaseName		Site preparation, excavation, install remediation sys
tblOffRoadEquipment	PhaseName		Site preparation, excavation, install remediation sys
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	23.00
tblTripsAndVMT	HaulingTripLength	20.00	191.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00

2.0 Emissions Summary

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0120	0.1390	0.1237	5.0000e-004	0.0824	3.7100e-003	0.0861	0.0137	3.4400e-003	0.0172	0.0000	46.4225	46.4225	7.0400e-003	3.7600e-003	47.7199
2023	0.0504	1.6512	0.5197	8.0200e-003	0.2326	0.0229	0.2555	0.0623	0.0216	0.0838	0.0000	774.1664	774.1664	0.0424	0.1072	807.1683
2024	0.0436	1.4770	0.4552	7.1300e-003	0.2007	0.0199	0.2206	0.0548	0.0188	0.0736	0.0000	688.3888	688.3888	0.0377	0.0955	717.7963
Maximum	**0.0504**	**1.6512**	**0.5197**	**8.0200e-003**	**0.2326**	**0.0229**	**0.2555**	**0.0623**	**0.0216**	**0.0838**	**0.0000**	**774.1664**	**774.1664**	**0.0424**	**0.1072**	**807.1683**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	8.7300e-003	0.1729	0.1696	5.0000e-004	0.0824	5.5200e-003	0.0879	0.0137	5.4900e-003	0.0192	0.0000	46.4225	46.4225	7.0400e-003	3.7600e-003	47.7198
2023	0.0425	1.7528	0.6529	8.0200e-003	0.2326	0.0276	0.2602	0.0623	0.0268	0.0891	0.0000	774.1663	774.1663	0.0424	0.1072	807.1682
2024	0.0372	1.5733	0.5711	7.1300e-003	0.2007	0.0243	0.2251	0.0548	0.0236	0.0784	0.0000	688.3887	688.3887	0.0377	0.0955	717.7962
Maximum	**0.0425**	**1.7528**	**0.6529**	**8.0200e-003**	**0.2326**	**0.0276**	**0.2602**	**0.0623**	**0.0268**	**0.0891**	**0.0000**	**774.1663**	**774.1663**	**0.0424**	**0.1072**	**807.1682**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**16.63**	**-7.10**	**-26.85**	**0.00**	**0.00**	**-23.51**	**-1.94**	**0.00**	**-27.61**	**-6.93**	**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	**6-1-2022**	**8-31-2022**	0.0503	0.0606
2	**9-1-2022**	**11-30-2022**	0.0750	0.0902
3	**12-1-2022**	**2-28-2023**	0.2109	0.2303
4	**3-1-2023**	**5-31-2023**	0.4518	0.4758
5	**6-1-2023**	**8-31-2023**	0.4449	0.4689
6	**9-1-2023**	**11-30-2023**	0.4536	0.4774
7	**12-1-2023**	**2-29-2024**	0.4586	0.4843
8	**3-1-2024**	**5-31-2024**	0.4491	0.4760
9	**6-1-2024**	**8-31-2024**	0.4422	0.4691
10	**9-1-2024**	**9-30-2024**	0.1442	0.1530
		Highest	0.4586	0.4843

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

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	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2022	1/26/2023	5	150	
2	Site preparation, excavation, install remediation sys	Site Preparation	1/27/2023	10/31/2024	5	460	

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

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	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	1	2.10	158	0.38
Demolition	Off-Highway Trucks	1	1.10	402	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Skid Steer Loaders	1	1.10	65	0.37
Demolition	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site preparation, excavation, install remediation sys	Bore/Drill Rigs	1	3.00	221	0.50
Site preparation, excavation, install remediation sys	Excavators	1	0.70	158	0.38
Site preparation, excavation, install remediation sys	Graders	0	8.00	187	0.41
Site preparation, excavation, install remediation sys	Off-Highway Trucks	1	2.10	402	0.38
Site preparation, excavation, install remediation sys	Rollers	1	0.40	80	0.38
Site preparation, excavation, install remediation sys	Rubber Tired Dozers	0	8.00	247	0.40
Site preparation, excavation, install remediation sys	Skid Steer Loaders	1	0.10	65	0.37
Site preparation, excavation, install remediation sys	Tractors/Loaders/Backhoes	1	0.50	97	0.37

Trips and VMT

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

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	3	8.00	0.00	759.00	10.80	7.30	23.00	LD_Mix	HDT_Mix	HHDT
Site preparation, excavation, install rem	6	16.00	0.00	4,800.00	10.80	7.30	191.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0718	0.0000	0.0718	0.0109	0.0000	0.0109	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8700e-003	0.0751	0.0987	2.3000e-004		3.1000e-003	3.1000e-003		2.8500e-003	2.8500e-003	0.0000	19.8862	19.8862	6.4300e-003	0.0000	20.0470
Total	**8.8700e-003**	**0.0751**	**0.0987**	**2.3000e-004**	**0.0718**	**3.1000e-003**	**0.0749**	**0.0109**	**2.8500e-003**	**0.0137**	**0.0000**	**19.8862**	**19.8862**	**6.4300e-003**	**0.0000**	**20.0470**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-003	0.0628	0.0124	2.4000e-004	6.4600e-003	5.9000e-004	7.0400e-003	1.7800e-003	5.6000e-004	2.3400e-003	0.0000	23.2062	23.2062	5.0000e-004	3.6700e-003	24.3110
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	1.4700e-003	1.0600e-003	0.0126	4.0000e-005	4.1400e-003	2.0000e-005	4.1700e-003	1.1000e-003	2.0000e-005	1.1200e-003	0.0000	3.3301	3.3301	1.1000e-004	1.0000e-004	3.3619
Total	**3.1700e-003**	**0.0639**	**0.0250**	**2.8000e-004**	**0.0106**	**6.1000e-004**	**0.0112**	**2.8800e-003**	**5.8000e-004**	**3.4600e-003**	**0.0000**	**26.5363**	**26.5363**	**6.1000e-004**	**3.7700e-003**	**27.6729**

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					0.0718	0.0000	0.0718	0.0109	0.0000	0.0109	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5600e-003	0.1090	0.1446	2.3000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003	0.0000	19.8862	19.8862	6.4300e-003	0.0000	20.0470
Total	**5.5600e-003**	**0.1090**	**0.1446**	**2.3000e-004**	**0.0718**	**4.9100e-003**	**0.0767**	**0.0109**	**4.9100e-003**	**0.0158**	**0.0000**	**19.8862**	**19.8862**	**6.4300e-003**	**0.0000**	**20.0470**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-003	0.0628	0.0124	2.4000e-004	6.4600e-003	5.9000e-004	7.0400e-003	1.7800e-003	5.6000e-004	2.3400e-003	0.0000	23.2062	23.2062	5.0000e-004	3.6700e-003	24.3110
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	1.4700e-003	1.0600e-003	0.0126	4.0000e-005	4.1400e-003	2.0000e-005	4.1700e-003	1.1000e-003	2.0000e-005	1.1200e-003	0.0000	3.3301	3.3301	1.1000e-004	1.0000e-004	3.3619
Total	**3.1700e-003**	**0.0639**	**0.0250**	**2.8000e-004**	**0.0106**	**6.1000e-004**	**0.0112**	**2.8800e-003**	**5.8000e-004**	**3.4600e-003**	**0.0000**	**26.5363**	**26.5363**	**6.1000e-004**	**3.7700e-003**	**27.6729**

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0104	0.0000	0.0104	1.5800e-003	0.0000	1.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2100e-003	9.6500e-003	0.0142	3.0000e-005		4.0000e-004	4.0000e-004		3.6000e-004	3.6000e-004	0.0000	2.8856	2.8856	9.3000e-004	0.0000	2.9090
Total	**1.2100e-003**	**9.6500e-003**	**0.0142**	**3.0000e-005**	**0.0104**	**4.0000e-004**	**0.0108**	**1.5800e-003**	**3.6000e-004**	**1.9400e-003**	**0.0000**	**2.8856**	**2.8856**	**9.3000e-004**	**0.0000**	**2.9090**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.2 Demolition - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	7.1300e-003	1.5400e-003	3.0000e-005	9.4000e-004	6.0000e-005	1.0000e-003	2.6000e-004	6.0000e-005	3.2000e-004	0.0000	3.2032	3.2032	7.0000e-005	5.1000e-004	3.3558
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	1.4000e-004	1.6900e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4679	0.4679	1.0000e-005	1.0000e-005	0.4722
Total	**3.1000e-004**	**7.2700e-003**	**3.2300e-003**	**4.0000e-005**	**1.5400e-003**	**6.0000e-005**	**1.6000e-003**	**4.2000e-004**	**6.0000e-005**	**4.8000e-004**	**0.0000**	**3.6711**	**3.6711**	**8.0000e-005**	**5.2000e-004**	**3.8279**

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					0.0104	0.0000	0.0104	1.5800e-003	0.0000	1.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.1000e-004	0.0158	0.0210	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.8856	2.8856	9.3000e-004	0.0000	2.9090
Total	**8.1000e-004**	**0.0158**	**0.0210**	**3.0000e-005**	**0.0104**	**7.1000e-004**	**0.0111**	**1.5800e-003**	**7.1000e-004**	**2.2900e-003**	**0.0000**	**2.8856**	**2.8856**	**9.3000e-004**	**0.0000**	**2.9090**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.2 Demolition - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	7.1300e-003	1.5400e-003	3.0000e-005	9.4000e-004	6.0000e-005	1.0000e-003	2.6000e-004	6.0000e-005	3.2000e-004	0.0000	3.2032	3.2032	7.0000e-005	5.1000e-004	3.3558
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	1.4000e-004	1.6900e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4679	0.4679	1.0000e-005	1.0000e-005	0.4722
Total	**3.1000e-004**	**7.2700e-003**	**3.2300e-003**	**4.0000e-005**	**1.5400e-003**	**6.0000e-005**	**1.6000e-003**	**4.2000e-004**	**6.0000e-005**	**4.8000e-004**	**0.0000**	**3.6711**	**3.6711**	**8.0000e-005**	**5.2000e-004**	**3.8279**

3.3 Site preparation, excavation, install remediation sys - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1700e-003	0.0000	2.1700e-003	3.3000e-004	0.0000	3.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0298	0.2439	0.2603	9.4000e-004		9.0100e-003	9.0100e-003		8.2900e-003	8.2900e-003	0.0000	82.7593	82.7593	0.0268	0.0000	83.4284
Total	**0.0298**	**0.2439**	**0.2603**	**9.4000e-004**	**2.1700e-003**	**9.0100e-003**	**0.0112**	**3.3000e-004**	**8.2900e-003**	**8.6200e-003**	**0.0000**	**82.7593**	**82.7593**	**0.0268**	**0.0000**	**83.4284**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.3 Site preparation, excavation, install remediation sys - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0140	1.3869	0.1991	6.8800e-003	0.2033	0.0133	0.2166	0.0559	0.0128	0.0687	0.0000	672.9807	672.9807	0.0143	0.1063	705.0251
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	3.4600e-003	0.0429	1.3000e-004	0.0152	8.0000e-005	0.0153	4.0600e-003	7.0000e-005	4.1300e-003	0.0000	11.8697	11.8697	3.5000e-004	3.3000e-004	11.9779
Total	**0.0191**	**1.3903**	**0.2420**	**7.0100e-003**	**0.2185**	**0.0134**	**0.2319**	**0.0600**	**0.0128**	**0.0728**	**0.0000**	**684.8504**	**684.8504**	**0.0146**	**0.1067**	**717.0030**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1700e-003	0.0000	2.1700e-003	3.3000e-004	0.0000	3.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.3394	0.3867	9.4000e-004		0.0134	0.0134		0.0132	0.0132	0.0000	82.7592	82.7592	0.0268	0.0000	83.4283
Total	**0.0223**	**0.3394**	**0.3867**	**9.4000e-004**	**2.1700e-003**	**0.0134**	**0.0156**	**3.3000e-004**	**0.0132**	**0.0135**	**0.0000**	**82.7592**	**82.7592**	**0.0268**	**0.0000**	**83.4283**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.3 Site preparation, excavation, install remediation sys - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0140	1.3869	0.1991	6.8800e-003	0.2033	0.0133	0.2166	0.0559	0.0128	0.0687	0.0000	672.9807	672.9807	0.0143	0.1063	705.0251
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	3.4600e-003	0.0429	1.3000e-004	0.0152	8.0000e-005	0.0153	4.0600e-003	7.0000e-005	4.1300e-003	0.0000	11.8697	11.8697	3.5000e-004	3.3000e-004	11.9779
Total	**0.0191**	**1.3903**	**0.2420**	**7.0100e-003**	**0.2185**	**0.0134**	**0.2319**	**0.0600**	**0.0128**	**0.0728**	**0.0000**	**684.8504**	**684.8504**	**0.0146**	**0.1067**	**717.0030**

3.3 Site preparation, excavation, install remediation sys - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1700e-003	0.0000	2.1700e-003	3.3000e-004	0.0000	3.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0265	0.2065	0.2357	8.6000e-004		7.6100e-003	7.6100e-003		7.0000e-003	7.0000e-003	0.0000	75.2924	75.2924	0.0244	0.0000	75.9012
Total	**0.0265**	**0.2065**	**0.2357**	**8.6000e-004**	**2.1700e-003**	**7.6100e-003**	**9.7800e-003**	**3.3000e-004**	**7.0000e-003**	**7.3300e-003**	**0.0000**	**75.2924**	**75.2924**	**0.0244**	**0.0000**	**75.9012**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.3 Site preparation, excavation, install remediation sys - 2024

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	0.0128	1.2677	0.1831	6.1500e-003	0.1847	0.0122	0.1969	0.0508	0.0117	0.0625	0.0000	602.6592	602.6592	0.0131	0.0952	631.3664
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2800e-003	2.8000e-003	0.0363	1.1000e-004	0.0139	7.0000e-005	0.0139	3.6900e-003	6.0000e-005	3.7500e-003	0.0000	10.4372	10.4372	2.9000e-004	2.8000e-004	10.5287
Total	**0.0171**	**1.2705**	**0.2194**	**6.2600e-003**	**0.1986**	**0.0123**	**0.2109**	**0.0545**	**0.0118**	**0.0663**	**0.0000**	**613.0964**	**613.0964**	**0.0133**	**0.0955**	**641.8951**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1700e-003	0.0000	2.1700e-003	3.3000e-004	0.0000	3.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0201	0.3028	0.3516	8.6000e-004		0.0120	0.0120		0.0118	0.0118	0.0000	75.2923	75.2923	0.0244	0.0000	75.9011
Total	**0.0201**	**0.3028**	**0.3516**	**8.6000e-004**	**2.1700e-003**	**0.0120**	**0.0142**	**3.3000e-004**	**0.0118**	**0.0122**	**0.0000**	**75.2923**	**75.2923**	**0.0244**	**0.0000**	**75.9011**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

3.3 Site preparation, excavation, install remediation sys - 2024

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	0.0128	1.2677	0.1831	6.1500e-003	0.1847	0.0122	0.1969	0.0508	0.0117	0.0625	0.0000	602.6592	602.6592	0.0131	0.0952	631.3664
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2800e-003	2.8000e-003	0.0363	1.1000e-004	0.0139	7.0000e-005	0.0139	3.6900e-003	6.0000e-005	3.7500e-003	0.0000	10.4372	10.4372	2.9000e-004	2.8000e-004	10.5287
Total	**0.0171**	**1.2705**	**0.2194**	**6.2600e-003**	**0.1986**	**0.0123**	**0.2109**	**0.0545**	**0.0118**	**0.0663**	**0.0000**	**613.0964**	**613.0964**	**0.0133**	**0.0955**	**641.8951**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	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	0.569121	0.056513	0.180870	0.112593	0.021111	0.005121	0.013190	0.012692	0.000800	0.000580	0.024593	0.000331	0.002484

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

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**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

5.3 Energy by Land Use - Electricity

Unmitigated

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

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

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	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**

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
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

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
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

Demolition, excavation, and installation of remediation sys - Alameda County, Annual

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

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

Emergency generator run - Alameda County, Annual

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

Emergency generator run

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.75	76,230.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - This CalEEMod run is to calculate criteria pollutants and GHG emisisons and energy consumption of the emergency generator only.

Land Use - Land use input is arbitrary

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps - Conservatively assume that the standby generator would supply all the power needed during blackout (e.g, 5,100kW)

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	0.00	76,230.00
tblLandUse	LotAcreage	0.00	1.75
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	6,839.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00

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

tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00

2.0 Emissions Summary

Emergency generator run - Alameda County, Annual

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0529	0.4580	0.3715	6.9000e-004	0.0263	0.0228	0.0491	0.0115	0.0216	0.0330	0.0000	59.0662	59.0662	0.0118	6.4000e-004	59.5525
2022	0.5538	1.1785	1.2318	2.3900e-003	0.0293	0.0535	0.0828	7.9500e-003	0.0516	0.0595	0.0000	202.2469	202.2469	0.0300	3.6500e-003	204.0868
Maximum	**0.5538**	**1.1785**	**1.2318**	**2.3900e-003**	**0.0293**	**0.0535**	**0.0828**	**0.0115**	**0.0516**	**0.0595**	**0.0000**	**202.2469**	**202.2469**	**0.0300**	**3.6500e-003**	**204.0868**

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	0.0529	0.4580	0.3715	6.9000e-004	0.0263	0.0228	0.0491	0.0115	0.0216	0.0330	0.0000	59.0662	59.0662	0.0118	6.4000e-004	59.5524
2022	0.5538	1.1785	1.2318	2.3900e-003	0.0293	0.0535	0.0828	7.9500e-003	0.0516	0.0595	0.0000	202.2467	202.2467	0.0300	3.6500e-003	204.0866
Maximum	**0.5538**	**1.1785**	**1.2318**	**2.3900e-003**	**0.0293**	**0.0535**	**0.0828**	**0.0115**	**0.0516**	**0.0595**	**0.0000**	**202.2467**	**202.2467**	**0.0300**	**3.6500e-003**	**204.0866**

Emergency generator run - Alameda County, Annual

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

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-19-2021**	**1-18-2022**	0.5985	0.5985
2	**1-19-2022**	**4-18-2022**	0.4823	0.4823
3	**4-19-2022**	**7-18-2022**	0.4863	0.4863
4	**7-19-2022**	**9-30-2022**	0.6731	0.6731
		Highest	0.6731	0.6731

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	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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
Stationary	0.2805	1.2547	0.7154	1.3500e-003		0.0413	0.0413		0.0413	0.0413	0.0000	130.2136	130.2136	0.0183	0.0000	130.6700
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	**0.6180**	**1.2547**	**0.7154**	**1.3500e-003**	**0.0000**	**0.0413**	**0.0413**	**0.0000**	**0.0413**	**0.0413**	**0.0000**	**130.2136**	**130.2136**	**0.0183**	**0.0000**	**130.6700**

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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
Stationary	0.2805	1.2547	0.7154	1.3500e-003		0.0413	0.0413		0.0413	0.0413	0.0000	130.2136	130.2136	0.0183	0.0000	130.6700
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	**0.6180**	**1.2547**	**0.7154**	**1.3500e-003**	**0.0000**	**0.0413**	**0.0413**	**0.0000**	**0.0413**	**0.0413**	**0.0000**	**130.2136**	**130.2136**	**0.0183**	**0.0000**	**130.6700**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/19/2021	11/15/2021	5	20	
2	Site Preparation	Site Preparation	11/16/2021	11/17/2021	5	2	

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

3	Grading	Grading	11/18/2021	11/23/2021	5	4	
4	Building Construction	Building Construction	11/24/2021	8/30/2022	5	200	
5	Paving	Paving	8/31/2022	9/13/2022	5	10	
6	Architectural Coating	Architectural Coating	9/14/2022	9/27/2022	5	10	

Acres of Grading (Site Preparation Phase): 1.88

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 114,345; Non-Residential Outdoor: 38,115; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37

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

Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	32.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 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	0.0199	0.1970	0.1449	2.4000e-004		0.0104	0.0104		9.7100e-003	9.7100e-003	0.0000	21.0713	21.0713	5.3900e-003	0.0000	21.2060
Total	**0.0199**	**0.1970**	**0.1449**	**2.4000e-004**		**0.0104**	**0.0104**		**9.7100e-003**	**9.7100e-003**	**0.0000**	**21.0713**	**21.0713**	**5.3900e-003**	**0.0000**	**21.2060**

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

3.2 Demolition - 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	3.9000e-004	3.0000e-004	3.3900e-003	1.0000e-005	1.0300e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.8517	0.8517	3.0000e-005	3.0000e-005	0.8603
Total	**3.9000e-004**	**3.0000e-004**	**3.3900e-003**	**1.0000e-005**	**1.0300e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.8517**	**0.8517**	**3.0000e-005**	**3.0000e-005**	**0.8603**

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	0.0199	0.1970	0.1449	2.4000e-004		0.0104	0.0104		9.7100e-003	9.7100e-003	0.0000	21.0713	21.0713	5.3900e-003	0.0000	21.2060
Total	**0.0199**	**0.1970**	**0.1449**	**2.4000e-004**		**0.0104**	**0.0104**		**9.7100e-003**	**9.7100e-003**	**0.0000**	**21.0713**	**21.0713**	**5.3900e-003**	**0.0000**	**21.2060**

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

3.2 Demolition - 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	3.9000e-004	3.0000e-004	3.3900e-003	1.0000e-005	1.0300e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.8517	0.8517	3.0000e-005	3.0000e-005	0.8603
Total	**3.9000e-004**	**3.0000e-004**	**3.3900e-003**	**1.0000e-005**	**1.0300e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.8517**	**0.8517**	**3.0000e-005**	**3.0000e-005**	**0.8603**

3.3 Site Preparation - 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					6.2700e-003	0.0000	6.2700e-003	3.0000e-003	0.0000	3.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0174	7.5600e-003	2.0000e-005		7.7000e-004	7.7000e-004		7.0000e-004	7.0000e-004	0.0000	1.5118	1.5118	4.9000e-004	0.0000	1.5241
Total	**1.5600e-003**	**0.0174**	**7.5600e-003**	**2.0000e-005**	**6.2700e-003**	**7.7000e-004**	**7.0400e-003**	**3.0000e-003**	**7.0000e-004**	**3.7000e-003**	**0.0000**	**1.5118**	**1.5118**	**4.9000e-004**	**0.0000**	**1.5241**

Emergency generator run - Alameda County, Annual

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

3.3 Site Preparation - 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-005	2.0000e-005	2.1000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0524	0.0524	0.0000	0.0000	0.0529
Total	**2.0000e-005**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0524**	**0.0524**	**0.0000**	**0.0000**	**0.0529**

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					6.2700e-003	0.0000	6.2700e-003	3.0000e-003	0.0000	3.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0174	7.5600e-003	2.0000e-005		7.7000e-004	7.7000e-004		7.0000e-004	7.0000e-004	0.0000	1.5118	1.5118	4.9000e-004	0.0000	1.5241
Total	**1.5600e-003**	**0.0174**	**7.5600e-003**	**2.0000e-005**	**6.2700e-003**	**7.7000e-004**	**7.0400e-003**	**3.0000e-003**	**7.0000e-004**	**3.7000e-003**	**0.0000**	**1.5118**	**1.5118**	**4.9000e-004**	**0.0000**	**1.5241**

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

3.3 Site Preparation - 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-005	2.0000e-005	2.1000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0524	0.0524	0.0000	0.0000	0.0529
Total	**2.0000e-005**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0524**	**0.0524**	**0.0000**	**0.0000**	**0.0529**

3.4 Grading - 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					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6500e-003	0.0404	0.0195	4.0000e-005		1.8300e-003	1.8300e-003		1.6800e-003	1.6800e-003	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501
Total	**3.6500e-003**	**0.0404**	**0.0195**	**4.0000e-005**	**0.0142**	**1.8300e-003**	**0.0160**	**6.8500e-003**	**1.6800e-003**	**8.5300e-003**	**0.0000**	**3.6208**	**3.6208**	**1.1700e-003**	**0.0000**	**3.6501**

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

3.4 Grading - 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	6.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1310	0.1310	0.0000	0.0000	0.1324
Total	**6.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1310**	**0.1310**	**0.0000**	**0.0000**	**0.1324**

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					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6500e-003	0.0404	0.0195	4.0000e-005		1.8300e-003	1.8300e-003		1.6800e-003	1.6800e-003	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501
Total	**3.6500e-003**	**0.0404**	**0.0195**	**4.0000e-005**	**0.0142**	**1.8300e-003**	**0.0160**	**6.8500e-003**	**1.6800e-003**	**8.5300e-003**	**0.0000**	**3.6208**	**3.6208**	**1.1700e-003**	**0.0000**	**3.6501**

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

3.4 Grading - 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	6.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1310	0.1310	0.0000	0.0000	0.1324
Total	**6.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1310**	**0.1310**	**0.0000**	**0.0000**	**0.1324**

3.5 Building Construction - 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	0.0254	0.1909	0.1806	3.1000e-004		9.5800e-003	9.5800e-003		9.2500e-003	9.2500e-003	0.0000	25.4167	25.4167	4.5400e-003	0.0000	25.5301
Total	**0.0254**	**0.1909**	**0.1806**	**3.1000e-004**		**9.5800e-003**	**9.5800e-003**		**9.2500e-003**	**9.2500e-003**	**0.0000**	**25.4167**	**25.4167**	**4.5400e-003**	**0.0000**	**25.5301**

Emergency generator run - Alameda County, Annual

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

3.5 Building Construction - 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	5.3000e-004	0.0109	3.0400e-003	4.0000e-005	1.1000e-003	1.7000e-004	1.2800e-003	3.2000e-004	1.7000e-004	4.8000e-004	0.0000	3.4753	3.4753	6.0000e-005	5.2000e-004	3.6320
Worker	1.3600e-003	1.0300e-003	0.0117	3.0000e-005	3.5400e-003	2.0000e-005	3.5600e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.9351	2.9351	1.0000e-004	9.0000e-005	2.9646
Total	**1.8900e-003**	**0.0119**	**0.0147**	**7.0000e-005**	**4.6400e-003**	**1.9000e-004**	**4.8400e-003**	**1.2600e-003**	**1.9000e-004**	**1.4400e-003**	**0.0000**	**6.4105**	**6.4105**	**1.6000e-004**	**6.1000e-004**	**6.5967**

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	0.0254	0.1909	0.1806	3.1000e-004		9.5800e-003	9.5800e-003		9.2500e-003	9.2500e-003	0.0000	25.4166	25.4166	4.5400e-003	0.0000	25.5301
Total	**0.0254**	**0.1909**	**0.1806**	**3.1000e-004**		**9.5800e-003**	**9.5800e-003**		**9.2500e-003**	**9.2500e-003**	**0.0000**	**25.4166**	**25.4166**	**4.5400e-003**	**0.0000**	**25.5301**

Emergency generator run - Alameda County, Annual

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

3.5 Building Construction - 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	5.3000e-004	0.0109	3.0400e-003	4.0000e-005	1.1000e-003	1.7000e-004	1.2800e-003	3.2000e-004	1.7000e-004	4.8000e-004	0.0000	3.4753	3.4753	6.0000e-005	5.2000e-004	3.6320
Worker	1.3600e-003	1.0300e-003	0.0117	3.0000e-005	3.5400e-003	2.0000e-005	3.5600e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.9351	2.9351	1.0000e-004	9.0000e-005	2.9646
Total	**1.8900e-003**	**0.0119**	**0.0147**	**7.0000e-005**	**4.6400e-003**	**1.9000e-004**	**4.8400e-003**	**1.2600e-003**	**1.9000e-004**	**1.4400e-003**	**0.0000**	**6.4105**	**6.4105**	**1.6000e-004**	**6.1000e-004**	**6.5967**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1418	1.0753	1.0945	1.9000e-003		0.0506	0.0506		0.0489	0.0489	0.0000	156.1562	156.1562	0.0272	0.0000	156.8361
Total	**0.1418**	**1.0753**	**1.0945**	**1.9000e-003**		**0.0506**	**0.0506**		**0.0489**	**0.0489**	**0.0000**	**156.1562**	**156.1562**	**0.0272**	**0.0000**	**156.8361**

Emergency generator run - Alameda County, Annual

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

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1000e-003	0.0565	0.0159	2.2000e-004	6.7800e-003	5.7000e-004	7.3500e-003	1.9600e-003	5.5000e-004	2.5100e-003	0.0000	20.8363	20.8363	3.1000e-004	3.1200e-003	21.7749
Worker	7.7400e-003	5.5700e-003	0.0661	1.9000e-004	0.0218	1.2000e-004	0.0219	5.7900e-003	1.1000e-004	5.9000e-003	0.0000	17.4893	17.4893	5.6000e-004	5.1000e-004	17.6562
Total	**9.8400e-003**	**0.0621**	**0.0820**	**4.1000e-004**	**0.0285**	**6.9000e-004**	**0.0292**	**7.7500e-003**	**6.6000e-004**	**8.4100e-003**	**0.0000**	**38.3256**	**38.3256**	**8.7000e-004**	**3.6300e-003**	**39.4311**

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	0.1418	1.0753	1.0945	1.9000e-003		0.0506	0.0506		0.0489	0.0489	0.0000	156.1560	156.1560	0.0272	0.0000	156.8359
Total	**0.1418**	**1.0753**	**1.0945**	**1.9000e-003**		**0.0506**	**0.0506**		**0.0489**	**0.0489**	**0.0000**	**156.1560**	**156.1560**	**0.0272**	**0.0000**	**156.8359**

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

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1000e-003	0.0565	0.0159	2.2000e-004	6.7800e-003	5.7000e-004	7.3500e-003	1.9600e-003	5.5000e-004	2.5100e-003	0.0000	20.8363	20.8363	3.1000e-004	3.1200e-003	21.7749
Worker	7.7400e-003	5.5700e-003	0.0661	1.9000e-004	0.0218	1.2000e-004	0.0219	5.7900e-003	1.1000e-004	5.9000e-003	0.0000	17.4893	17.4893	5.6000e-004	5.1000e-004	17.6562
Total	**9.8400e-003**	**0.0621**	**0.0820**	**4.1000e-004**	**0.0285**	**6.9000e-004**	**0.0292**	**7.7500e-003**	**6.6000e-004**	**8.4100e-003**	**0.0000**	**38.3256**	**38.3256**	**8.7000e-004**	**3.6300e-003**	**39.4311**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9315
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.4400e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9315**

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

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	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	1.8000e-004	1.3000e-004	1.5600e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4131	0.4131	1.0000e-005	1.0000e-005	0.4170
Total	**1.8000e-004**	**1.3000e-004**	**1.5600e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4131**	**0.4131**	**1.0000e-005**	**1.0000e-005**	**0.4170**

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	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9314
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.4400e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9314**

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

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	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	1.8000e-004	1.3000e-004	1.5600e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4131	0.4131	1.0000e-005	1.0000e-005	0.4170
Total	**1.8000e-004**	**1.3000e-004**	**1.5600e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4131**	**0.4131**	**1.0000e-005**	**1.0000e-005**	**0.4170**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3975					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.3985**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

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

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	7.2000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1907	0.1907	1.0000e-005	1.0000e-005	0.1925
Total	**8.0000e-005**	**6.0000e-005**	**7.2000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1907**	**0.1907**	**1.0000e-005**	**1.0000e-005**	**0.1925**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3975					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.3985**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

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

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	7.2000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1907	0.1907	1.0000e-005	1.0000e-005	0.1925
Total	**8.0000e-005**	**6.0000e-005**	**7.2000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1907**	**0.1907**	**1.0000e-005**	**1.0000e-005**	**0.1925**

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	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	0.569121	0.056513	0.180870	0.112593	0.021111	0.005121	0.013190	0.012692	0.000800	0.000580	0.024593	0.000331	0.002484

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

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

Emergency generator run - Alameda County, Annual

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

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**

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

5.3 Energy by Land Use - Electricity

Unmitigated

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

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

Emergency generator run - Alameda County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.3375	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.3375**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

Emergency generator run - Alameda County, Annual

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	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

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
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

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	6839	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.2805	1.2547	0.7154	1.3500e-003		0.0413	0.0413		0.0413	0.0413	0.0000	130.2136	130.2136	0.0183	0.0000	130.6700
Total	**0.2805**	**1.2547**	**0.7154**	**1.3500e-003**		**0.0413**	**0.0413**		**0.0413**	**0.0413**	**0.0000**	**130.2136**	**130.2136**	**0.0183**	**0.0000**	**130.6700**

11.0 Vegetation

Summary of Energy Use Model Parameters and Emission Estimates

Phase	Equipment	Quantit	Rating	Energy Use Input Parameters				Emission Factors (lb/Mwh for electricty and lb/MMBTU for natural gas)							Criteria Air Pollutant Emissions (lb)				GHG Emissions (lb)
			kW	Energy Use Scenario	Energy Source	Annual Energy Use	Units	ROG	NOx	PM10	PM2.5	CO2	CH4	N2O	ROG	NOx	Exhaust PM10	Exhaust PM2.5	CO2eq
Thermal Remediation	Thermal remediation system	1	--	Energy Use Option 1	Eletricity	13,100	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	2,698,561
				Energy Use Option 2	Eletricity	6,991	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	1,440,125
					Natural Gas	10,850	MMBTU	0.0108	0.0980	0.0075	0.0075	117.6	0.0023	0.0023	117	1064	80.8	80.8	1,284,373
	Electrodes	1	3500		Electricity	30,660	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	6,315,868
	Condensers	2	11		Electricity	193	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	39,700
	Blowers	3	30		Electricity	788	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	162,408
	Groundwater pump	1	62		Electricity	543	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	111,881
	Emergency Generator (	1	5,100	--	Diesel	5.8		--	--	--	--	--	--	--	0.2805	1.2547	0.0413	0.041	131
Post-Thermal Treatment	Blowers	1	30		Electricity	263	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	54,136
	Condensers	1	11		Electricity	96	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	19,850
	Groundwater pump	1	62		Electricity	543	Mwh	NA	NA	NA	NA	203.98	0.0330	0.0040	NA	NA	NA	NA	111,881
	Emergency Generator (	1	5,100		Diesel	5.8		--	--	--	--	--	--	--	0.2805	1.2547	0.0413	0.041	131

Notes:

Energy use scenarios are for approximately one year of thermal remediation.

Eletricty emissions factor (also known as intensity factor) for CO2 based on the 2013 emission factor reported in PG&E's (2015) *Greenhouse Gas Emission Factors: Guidance for PG&E Customers* .

Eletricty emissions factors (also known as intensity factors) for CH4 and N20 based on 2012 E-Grid for California (2009 inventory).

Natural gas emissions factors derived from CalEEMod .

CalEEMod = California Emissions Estimator Model (Version 2016.3.1)
lb = pounds
Mwh = megawatt hour
MMBTU = million British Thermal Units
NA = not applicable
GHG = greenhouse gas
CO2 = carbon dioxide
CO2eq = carbon dioxide equivalent
ROG = reactive organic gases
NOx = nitrogen oxides
PM10 = particulate matter less than 10 microns in diameter
PM2.5 = particulate matter less than 2.5 microns in diameter

Global Warming Potentials

CO2	1
CH4	25
N2O	298

Source: Title 40 Code of Federal Regulations, Chapter I, Subchapter C, Part 98, Subpart A, Table A-1.

Diesel Emissions Factors (kg per litre)

CO2	2.6765
CH4	0.0003612
N2O	0.000021672

Source: WRI GHG Emission Factors Compilation, Stationary Combustion, Gas/Diesel Oil

Link: https://ghgprotocol.org/sites/default/files/Emission_Factors_from_Cross_Sector_Tools_March_2017.xlsx

Summary of ISCST3 Model Parameters, Assumptions, and Results for DPM and PM2.5 Emissions during Construction

ISCST3 Model Parameters and Assumptions			
Source Type	**Units**	**Value**	**Notes**
Volume Source: Off-Road Equipment Exhaust			
Hours/Work Day	hours/day	8	
DPM Emission Rate	gram/second	0.00161	Exhaust PM10 from off-road equipment
Number of Sources	count	56	SMAQMD, 2015
Emission Rate/Source	gram/second	0.000029	
Release Height	meters	5.0	SMAQMD, 2015
Length of Side	meters	10.0	SMAQMD, 2015
Initial Lateral Dimension	meters	4.7	USEPA, 1995
Initial Vertical Dimension	meters	1.0	SMAQMD, 2015
Line-Area Source: On-Road Vehicle Exhaust			
Hours/Work Day	hours/day	8	
Length of segment	miles	0.1	Access from Stanford Avenue
Total DPM emissions	grams/day	8.2	Exhaust PM10 from on-road vehicles for all miles travelled
DPM Emission Rate	gram/second	0.00027	Exhaust PM10 from on-road vehicles on Stanford Ave
Number of Sources	count	2	Based on maximum 1 width:10 length ratio
Length of Side	meters	9.0	ISCST3 Haul Road Calculator
Release Height	meters	3.0	BAAQMD, 2012
Initial Vertical Dimension	meters	2.8	ISCST3 Haul Road Calculator

ISCST3 Model Results			
Emissions Source	**Pollutant**	**Annual Average Concentration**	**Notes**
Off-Road Equipment and On-Road Vehicles	DPM ($\mu g/m^{3)}$	0.0032	At maximum exposed individual resident (MEIR) location
	PM2.5 ($\mu g/m^{3)}$	0.0031	At maximum exposed individual resident (MEIR) location

Notes:

DPM = diesel particulate matter

PM10 = particulate matter with aerodynamic resistance diameters equal to or less than 10 microns

PM2.5 = particulate matter with aerodynamic resistance diameters equal to or less than 2.5 microns

$\mu g/m^3$ = micrograms per cubic meter

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2015. *Guide to Air Quality Assessment in Sacramento County* . June.

Bay Area Air Quality Management District (BAAQMD), 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards* .

U.S. Environmental Protection Agency (USEPA), 1995. *User's Guide for the Industrial Source Complex (ISC3) Dispersion Models; Volume I - User Instructions* . September.

Summary of Health Risk Assessment for DPM Emissions during Construction

Health Risk Assessment Parameters and Results				
Inhalation Cancer Risk Assessment for DPM	**Units**	**Age Group**		**Notes**
		3rd Trimester	**0-2 Years**	
DPM Concentration (C)	$\mu g/m^3$	0.0032	0.0032	ISCST3 Annual Average
Daily Breathing Rate (DBR)	L/kg-day	361	1090	95th percentile under age of 2 (OEHHA, 2015)
Inhalation absorption factor (A)	unitless	1.0	1.0	OEHHA, 2015
Exposure Frequency (EF)	unitless	0.96	0.96	350 days/365 days in a year (OEHHA, 2015)
Dose Conversion Factor (CF_D)	$mg\text{-}m^3/\mu g\text{-}L$	0.000001	0.000001	Conversion of µg to mg and L to m^3
Dose	mg/kg/day	0.000001	0.000003	$C*DBR*A*EF*CF_D$ (OEHHA, 2015)
Cancer Potency Factor (CPF)	$(mg/kg/day)^{-1}$	1.1	1.1	OEHHA, 2015
Age Sensitivity Factor (ASF)	unitless	10	10	OEHHA, 2015
Annual Exposure Duration (ED)	years	0.25	0.63	Based on total construction period of 18 months
Averaging Time (AT)	years	70	70	70 years for residents (OEHHA, 2015)
Fraction of time at home (FAH)	unitless	0.85	0.85	OEHHA, 2015
Cancer Risk Conversion Factor (CF)	m^3/L	1000000	1000000	Chances per million (OEHHA, 2015)
Cancer Risk	per million	0.04	0.28	At MEIR location
Total Cancer Risk	per million	0.32		At MEIR location
Hazard Index for DPM	**Units**	**Value**		**Notes**
Chronic REL	$\mu g/m^3$	5.0		OEHHA, 2015
Chronic Hazard Index for DPM	unitless	0.0006		At MEIR location

Notes:

Conservatively included an additional 0.25 years of exposure for an infant during the 3rd trimester of pregnancy.

DPM = diesel particulate matter

REL = reference exposure level

$\mu g/m^3$ = micrograms per cubic meter

L/kg-day = liters per kilogram-day

m^3/L = cubic meters per liter

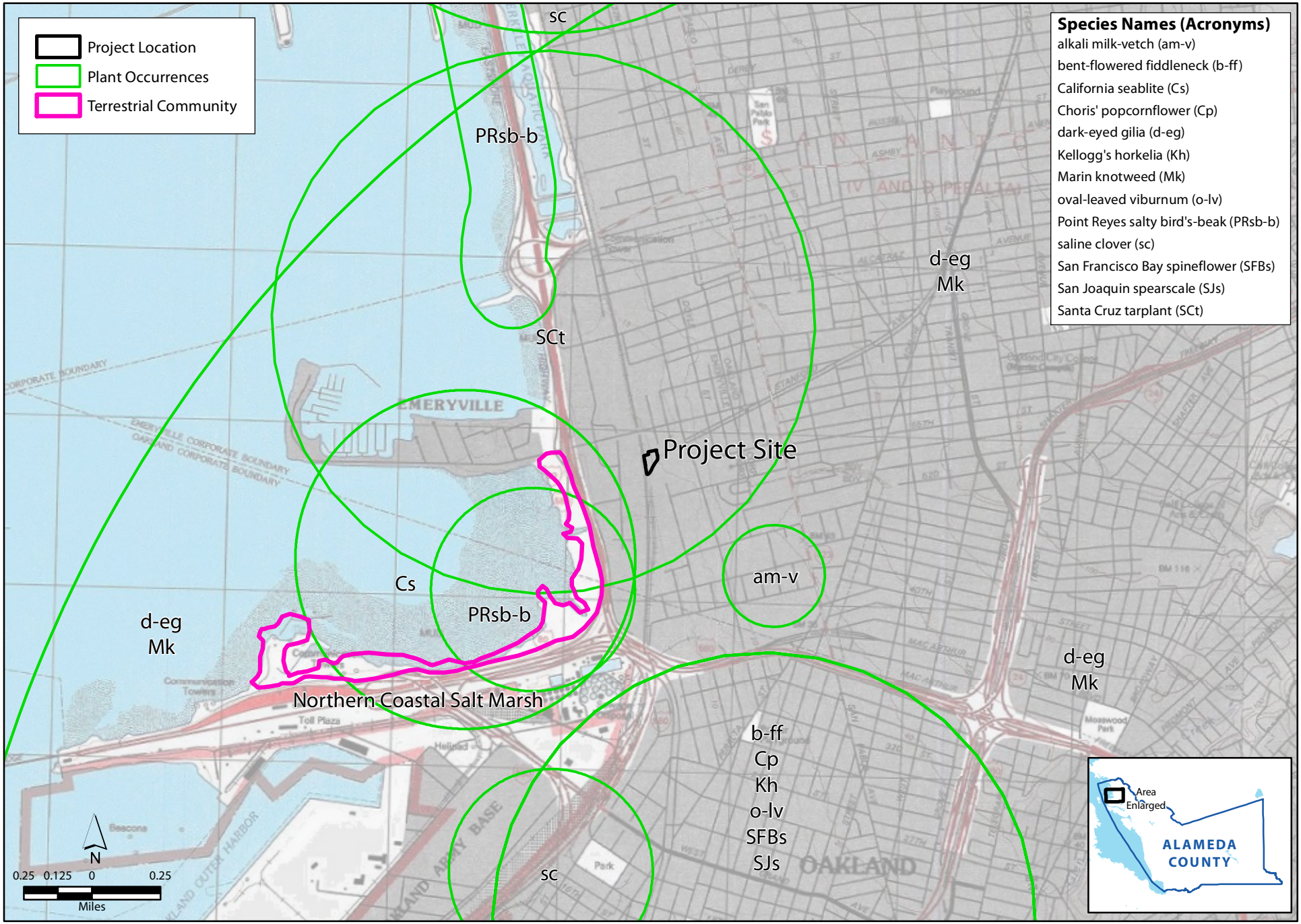
$(mg/kg/day)^{-1}$ = 1/milligrams per kilograms per day

MEIR = maximum exposed individual resident

Office of Environmental Health Hazard Assessment (OEHHA), 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February.*

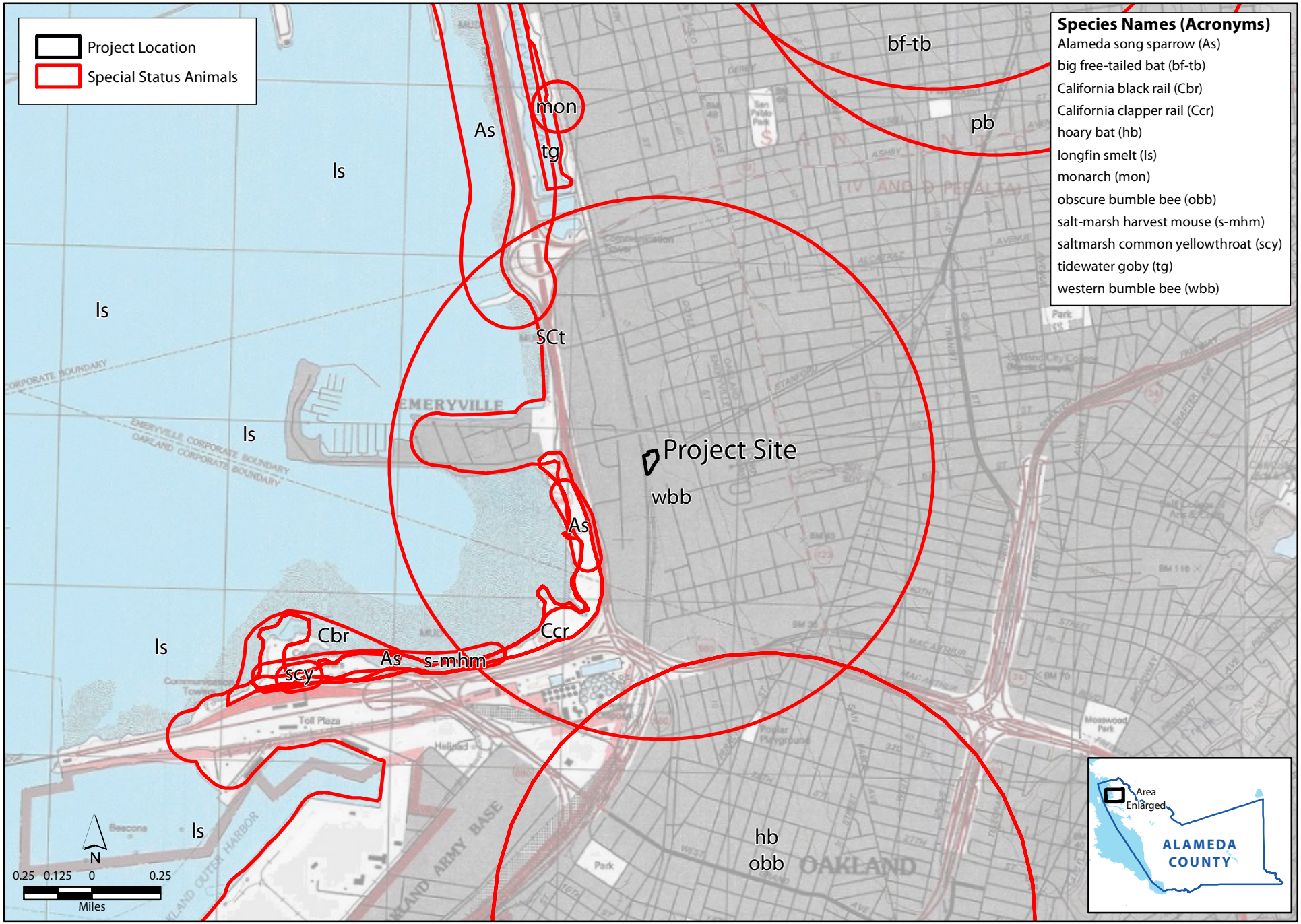
APPENDIX C
SPECIAL STATUS SPECIES MAPPING

Figure 1. Special-Status Plants and Sensitive Natural Communities



SOURCE: California Natural Diversity Database accessed on October 11th, 2016; Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed.

Figure 2. Special-Status Animal Species



SOURCE: California Natural Diversity Database accessed on October 11th, 2016; Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed.

APPENDIX D
CULTURAL RESOURCES REPORT
(Confidential Due to Sensitive Cultural Resources Information)

APPENDIX E
TRANSPORTATION ASSESSMENT

FEHR PEERS

Draft Memorandum

Date: October 25, 2021

To: Cem Atabek, Baseline Environmental

From: Kathrin Tellez and Gaby Picado-Aguilar

Subject: 5679 Horton Remediation Transportation Assessment

OK21-0436

This memorandum presents the results of a transportation assessment evaluating proposed remediation activities at 5679 Horton Street in Emeryville (project site), including the project description, analysis parameters, existing conditions, and project conditions. The assessment evaluates operations of intersections in proximity to the project site as well as potential bicycle boulevard effects and forms the basis of the transportation and circulation section of the Initial Study/Mitigated Negative Declaration prepared for the project. A vehicle miles of travel (VMT) assessment was also conducted. Based on the results of the analysis, the transportation related environmental impacts of the project are expected to be less-than-significant with the implementation of a construction management plan, which all projects in Emeryville are required to develop and implement. One condition of approval was identified related to vehicle queues.

Project Description

The project site is located at 5679 Horton Street in Emeryville, north of Stanford Avenue, and is bound by railroad tracks to the west, buildings and a parking area to the north, Horton Street to the east, and Stanford Avenue to the southeast, as shown on **Figure 1** (all figures are provided at the end of this memorandum). The immediate site vicinity is shown on **Figure 2**. The former rail spur adjacent to the southeast of the project site has been incorporated into Horton Landing Park. Prior site uses resulted in soil and groundwater contamination, which must be remediated prior to new uses being considered. The proposed project is site-remediation only and new development on the site would be subject to separate environmental review. The proposed construction activities for the remediation project are proposed to occur in three phases based on a preliminary schedule provided by the project applicant on October 12th, 2021.

Demolition Phase would demolish the existing building and remove site debris. This phase is scheduled over a 6-month period assuming an 8-hour workday with up to eight workers per day on site. This phase includes the removal of an estimated 1,400 tons of debris and 2,000 cubic yards of concrete. From a trip generation perspective, the most active period of this phase would be the off hauling of building materials, including wood and concrete from existing structures on the site, which is expected to take approximately 20-days which will generally occur on non-consecutive days.

Remediation Phase includes all site preparation, excavation/backfill, and installation of remediation systems. This phase is scheduled over an 18-month period assuming an 8-hour workday with up to sixteen workers within the most intensive periods of remediation (excavation/backfill activities). Fewer workers (typically 3-workers per day) would be on-site during installation of the remediation systems. This phase includes all soil exportation and importation, expected to be around 27,200 tons each. The exported soil destination is based on its contamination type, as summarized in **Table 1**. From a trip generation perspective, the most active period of this phase would be the off hauling of contaminated soil, and the delivery of clean soil, which is expected to take about 40 non-consecutive days.

Paving Phase is defined as site paving and restoration. This phase is scheduled over a month, assuming an 8-hour workday and up to eight workers. Approximately 1,400 cubic yards of paving materials are anticipated to be delivered to the project site during this phase. From a trip generation perspective, the most active period of this phase would be the delivery of material, which is expected to take about 5-days.

Table 1. Remediation Phase: Soil Types and Destinations

Export/Import	Soil Type	Tonnage	Origin/Destination
Export	Non-RCRA Hazardous	13,500	Chemical Waste Management - Kettleman City, CA
Export	Non-Hazardous Class II	10,700	Recology - Hay Road Landfill - Vacaville, CA
Export	RCRA Hazardous Landfill	2,300	Chemical Waste Management - Kettleman City, CA
Export	RCRA Hazardous Incineration	700	Aragonite/Grassy Mountain, Utah
Import	Clean Fill	27,200	Unknown

Source: Baseline Environmental, October 2021.

Analysis Parameters

Study Area and Analysis Scenarios

Based on the project location and designated truck routes in the area, the following three intersections were selected for evaluation as the truck trips generated by the project would be concentrated through these intersections:

1. Horton Street/Stanford Avenue
2. Hollis Street/Stanford Avenue
3. Hollis Street/Powell Street

Weekday PM peak hour operations were evaluated for all study locations as this is when traffic volumes are highest. At the intersections of Horton Street at Stanford Avenue and Hollis Street at Powell Street, weekday morning peak hour operations were also evaluated.

An assessment of bicycle boulevard impacts to three bicycle boulevards in the vicinity was conducted:

1. Horton Street, north of Stanford Avenue
2. Horton Street, south of Stanford Avenue
3. Stanford Avenue, east of Horton Street

All project traffic would travel on Horton Street, north of Stanford Avenue and Stanford Avenue between Horton Street and Hollis Street, to access the site. Truck trips would not travel on other bicycle boulevards in Emeryville, but employee trips could be added to other facilities.

For this assessment, the following conditions were evaluated:

- ***Existing***: Existing traffic volumes.
- ***Existing plus Background Project***: Existing conditions plus traffic that could be generated by approved projects in the immediate study area, including Sherwin-Williams and the Center of Innovation.
- ***Existing plus Background with Project***: Existing conditions plus traffic that could be generated by approved projects in the immediate study area, including Sherwin-Williams and the Center of Innovation, plus traffic generated by the proposed project during the remediation phase with the most activity.

At project completion, the site would be vacant and not generate any traffic. Therefore, no future year analysis was conducted. Any future site development would be subject to a separate environmental review process.

Significance Criteria

For this study, based on the updated Appendix G Environmental Checklist Form, a significant transportation-related impact could occur if the project would:

1. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit roadway, bicycle and pedestrian facilities.
2. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
4. Result in inadequate emergency access.

Although CEQA exclusively uses VMT methodology and no longer recognizes delay for people driving as an environmental impact, intersection and roadway levels of service are evaluated in this study to identify potential temporary transportation improvements that could be implemented as part of the project to improve the overall operations of the transportation system for all travel modes. Some of the thresholds used to identify recommendations in this analysis were previously used by the City of Emeryville as CEQA thresholds of significance. However, as vehicle operations are not considered a CEQA issue based on the updated CEQA guidelines per Senate Bill 743, recommendations identified from this analysis would be strictly informational in nature. Recommendations could be implemented as part of the project to improve the overall transportation system, but they are not required to mitigate impacts under CEQA.

Recommendations will be designed to enhance mobility for all travel modes, including transit vehicles, without degrading or precluding the provision of planned bicycle, pedestrian, and transit facilities. Intersection or roadway improvements may be recommended under the following circumstances and depending on the circumstances, these criteria may also be used to identify CEQA impacts:

- If a signalized intersection is projected to operate at LOS D or better without the project, and the project is expected to cause the facility to operate at LOS E or F.
- If an intersection is projected to operate at LOS E or F without the project, and the project is expected to increase the average control delay by more than 5 seconds.

- If the addition of project traffic at a study intersection would result in the 95th percentile vehicle queue exceeding the available storage or would increase 95th percentile queue by more than two vehicles where the queue already exceeds the available storage space.
- If the addition of project traffic at an unsignalized study intersection would warrant the installation of a traffic signal, based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3).
- If the addition of project traffic would increase daily vehicle traffic by 2 or more percent on bicycle boulevard segments that already exceed the traffic volume guidance outlined in the City of Emeryville Pedestrian and Bicycle Plan.
- If the project would add peak hour trips to a study intersection or road segment adjacent to the project that has a documented collision frequency higher than predicted by on the Highway Safety Manual (this is not assessed for this study as the project would not permanently change travel patterns through the study intersections).

For intersections or roadway segments that meet the above criteria, capacity-enhancing measures that would not degrade other modes of travel will be considered. Given the temporary nature of the potential transportation system impacts of this project, recommendations would likely include modifying traffic signal timings, providing manual intersection control during periods of peak project truck trip generation, or limiting the number of trucks that can leave the site during specific hours.

Existing Conditions

Regional access to the project site is provided by Interstates I-580, I-80, and State Route (SR) 123 (San Pablo Avenue). Local access to the site is provided by 40th Street, Hollis Street, Horton Street, Stanford Avenue and Powell Street.

Existing Roadway Network

I-80 is a freeway connecting San Francisco through the northern United States to the East Coast. The freeway is oriented in a northeast/southwest direction to the west of the project site. I-80 provides five lanes in each direction (four mixed-flow lanes and one high–occupancy vehicle lane) through the East Bay.

I-580 is an east-west freeway that extends from San Rafael to the San Joaquin Valley located south of the project site. It merges with I-80 west of the project site where it continues as I-80 along the bay until they separate in the City of Albany. I-580 provides 5 lanes in each direction south of the site. Trucks weighing over 4.5 tons are prohibited between Grand Avenue in Oakland and the border of the city of San Leandro.

San Pablo Avenue (SR 123*)* is a major north-south arterial located east of the project site, providing an important inter-city link between Oakland and Richmond. As a designated state route through Emeryville, Caltrans is responsible for roadway maintenance and signal operations. Closest to the site, San Pablo Avenue is median separated with two vehicular lanes and one bike lane in each direction. The street is a local commercial corridor, and on-street parking is permitted. San Pablo Avenue is also a local truck route. Sidewalks are continuous along San Pablo Avenue and the posted speed limit is 30 miles per hour (mph). San Pablo Avenue is a designated transit street in the *Emeryville General Plan*.

40th Street is located south of the project site and runs east-west through the cities of Emeryville and Oakland. 40th Street provides two vehicle lanes and a bike lane in each direction. It begins at Shellmound Street in Emeryville and continues east, ending at Howe Street in Oakland. The speed limit is 30 mph along 40th Street near the project site. 40th Street is a designated transit street and a designated truck route.

Powell Street is an east-west transit street located north of the project site. Powell Street provides two lanes in each direction with a speed limit of 30 mph. It begins at the Emeryville Marina and continues as Stanford Avenue at San Pablo Avenue. It is a designated truck route.

Stanford Avenue is an east-west oriented roadway that forms the southern boundary of the project site. Between Horton Street and Hollis Street, it accommodates two-way travel and is a designated transit street. Between Horton Street and Doyle Street, it is also a designated bicycle boulevard. East of Hollis Street, Stanford Avenue provides for eastbound travel only to Powell Street. Stanford Avenue is the continuation of Powell Street with two lanes in each direction until its terminus at Martin Luther King Junior Way in Oakland. On-street parking is permitted east of Doyle Street.

Horton Street is a north-south oriented street that begins at Mandela Parkway, south of 40th Street, and continues north to 62nd Street. Horton Street forms the eastern boundary of the project site and provides one travel lane in each direction with a speed limit of 25 mph. Horton Street is a designated a bicycle boulevard, with the portion between Stanford Avenue and 59th Street also designated as a transit street. On-street parking is allowed south of 53rd Street. North of 53rd Street, Class II bicycle facilities are provided on Horton Street.

Hollis Street is a north-south oriented street east of the project site. It typically provides one lane in each direction with a speed limit of 30 mph. Hollis Street begins at Peralta Street in the Oakland and continues north to Folger Avenue in Berkeley. Hollis Street is both a designated transit street and a truck route. On-street parking is allowed on portions of the roadway.

Truck routes in the area are shown on **Figure 3**.

Existing Pedestrian Facilities

Pedestrian facilities are comprised of sidewalks, crosswalks, and off-street paths. Sidewalks are provided along both sides of most streets in the project vicinity. Pedestrian access to the western side of the railroad tracks is provided by a pedestrian bridge at the Amtrak station, approximately one-quarter mile north of the project site, as well as from sidewalks on the 40th Street overcrossing. The South Bayfront Bridge, located about 800 feet south of the project site, is currently under construction, with its completion expected in Fall 2021, prior to the start of project construction. The completion of this bridge will provide improved bicycle and pedestrian connections across the railroad, improving accessibility for non-auto travel modes. The South Bayfront Bridge is restricted to people walking, people bicycling, and people using other low-speed mobility devices and the project is not expected to have an effect on its operations.

Crosswalks are provided at intersections analyzed in this assessment and are generally provided at all intersections in the area, and at several mid-block locations.

Existing Bicycle Facilities

Typical bicycle facilities include the following:

- Multi-Use Trails (Class I) – Off-street trails that can serve both bicyclists and pedestrians.
- Bike Lanes (Class II) – Lanes on roadways designated for exclusive use by bicycles through striping, pavement legends, and signs.
- Bike Routes (Class III) – Designated roadways for bicycle use, indicated by signage and/or pavement markings. These roadways may also include additional pavement width for bicycles.
- Separated Bikeways (Class IV) – Dedicated on-street lanes for bicyclists physically separated from vehicle traffic. Separation may include grade separation, flexible posts, physical barriers, or on-street parking.
- Bicycle Boulevards – Designated low-volume roadways for use by bicycles through signage, pavement markings, intersection crossing treatments, traffic calming, and traffic diversion.

Horton, 53rd and 45th streets are designated bicycle boulevards. A Class I bicycle path is located west of San Pablo Avenue between 45th Street and Park Avenue. The Bay Trail is also a Class I bicycle path that begins at the intersection of Powell Street and Christie Avenue and continues north along the Bay to the Berkeley Marina. Class II bicycle lanes are provided on Adeline Street, 40th Street, portions of Horton Street, and on a continuation of the Bay Trail on Shellmound Street. Class III bicycle routes are located on portions of Hollis Street, Yerba Buena Road, Halleck

Street, and Spur Alley. A north-south greenway connecting Sherwin Avenue to Stanford Avenue, referred to as the Horton Landing Park Paths, includes a segment adjacent to the south of the Project which has been completed. When complete, these new facilities with provide connections from the project area to the South Bayfront area via the South Bayfront Bridge. Although a designated bicycle boulevard, the portion of Horton Street north of Stanford Boulevard does provide bike lanes in each direction.

The City's 2012 Pedestrian and Bicycle Plan is currently being updated (and rebranded as an Active Transportation Plan) with new projects and programs expected to be developed and presented to the community in late 2021 or early 2022. The update is currently in the exploration phase (https://emeryville.altaplanning.cloud/). At the time of the 2012 Plan the community prioritized Bike Boulevards where bike riders shared the street with automobiles. The industry practice has undergone significant evolution since the 2012 Plan was adopted and now the priority has shifted to Class IV Bike Lanes which are physically separated from automobiles.

As the project is remediation of the site only and would not preclude the provision of bicycle facilities identified in the existing Bicycle Plan or updated Active Transportation plan, this assessment will review potentially temporary effects to existing bicycle facilities.

Existing Transit Service

Bus transit service is provided within the site vicinity by AC Transit and Emery-Go-Round. Rail transit is provided by Amtrak and the Bay Area Rapid Transit (BART) system. Each transit service is described below.

Emery-Go-Round

The Emery-Go-Round system is comprised of two routes, one which serves the project area, the Hollis Routes; prior to Covid-19 Emery-go-Round operated four routes. It is uncertain if or when Emery-go-Round would resume additional service, which was primarily focused on peak period travel between employment centers and the BART station.

Buses on the Hollis Route, which stop at the intersection of Stanford Avenue/Horton Street, at the Amtrak Station, and on Hollis at 59th and 53rd in the project area, operate on 15-minute headways during most of the day. Travel time to Stanford Avenue/Horton Street stop from the MacArthur BART station is approximately 10 minutes, and from the Hollis Street at 59th Street stop to MacArthur BART is about 10-minutes.

AC Transit

Several AC Transit Routes serve the area, with stops at the intersection Hollis Street at 59th Street, Hollis Street at Stanford Avenue, San Pablo Avenue at Stanford Street, and 40th Street at Horton

Street. AC Transit connects the study area to neighboring cities in the East Bay as well as the MacArthur BART Station and Downtown Oakland. AC Transit Routes 29 and H operate on Hollis Street, AC Transit Routes SP, F, 36 and 57 provide service along 40th Street, south of the project site. AC Transit Routes 802, 72, 72M, and 72R operate along San Pablo Avenue.

Amtrak

An Amtrak station, providing passenger rail service, is located approximately one-quarter mile north of the project site. Service from the Emeryville Amtrak station provides inter-regional travel to Sacramento, the Central Valley, Southern California, and Northern California.

BART

The Bay Area Rapid Transit (BART) system provides regional rail transit service connecting San Francisco, Alameda County, Contra Costa County, and parts of San Mateo County. The nearest BART station to the Project site is the MacArthur BART Station, which is approximately 2-miles to the southeast. From the MacArthur BART station, direct connections to San Francisco, destinations on the Richmond and Fremont lines, and the Pittsburgh Bay Point Line are provided. During the peak periods, trains operate on less than 10-minute headways to/from San Francisco. Trains run to/from San Francisco with 15 to 20-minute headways during the off-peak.

Existing Roadway Operations

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection vehicle turning movement counts, including a separate count of pedestrian and bicycle activity, were conducted at the Horton Street and Stanford Avenue on October 13, 2016. A 72-hour vehicle classification and speed count were performed October 12 through 14, 2016 on Horton Street north of Stanford Avenue. For the other study intersections, available data from recently completed studies in the area was reviewed, including data from 2019 and 2016. At the intersection of Powell Street at Hollis Avenue data from 2019 was compared to data from 2016, which indicates that traffic counts from 2016 are slightly higher than 2019. As it us uncertain how travel will return after Covid-19 (will more people drive as opposed to taking transit), the slightly higher 2016 data was used as the basis for this assessment.

The peak hour weekday morning and evening intersection turning movement volumes are shown on **Figure 4** along with existing lane configurations and traffic controls. Morning peak period counts were not available for the Hollis Street at Stanford Avenue intersection.

In the project area, there are several approved projects that could be under construction, constructed and/or occupied, or a combination of the two around the same time as the project remediation is occurring, including the Sherwin-Williams Mixed-Use project and the Emeryville Center of Innovation. As the construction activities for the project remediation would take place

over a few years, area traffic volumes are likely to be lower when remediation starts, and higher towards the ending phase. To account for the potential changes in traffic volume growth over the remediation horizon, the 2016 traffic volumes (which were higher than 2019) were increased by 10 percent to account for traffic volume growth in the immediate project vicinity. **Figure 5** shows the peak hour weekday morning and evening intersection turning movement volumes for existing conditions plus background traffic volume.

The operations of roadway facilities for vehicles are typically described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, represented by free-flow conditions, to LOS F or over capacity conditions. LOS E represents "at-capacity" operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions. The City of Emeryville does not have a level of service policy for vehicles but strives to achieve a Quality of Service. Quality of Service recognizes that people travel by a variety of modes, not just in vehicles, and that the use of an auto-focused level of service standard does not address the mobility needs for non-auto roadway users. **Appendix A** describes the LOS analysis methods for vehicles.

Results of the existing conditions intersection analysis are presented in **Table 4**, which shows that the intersections that provide access to the project site operate at LOS D or better during both peak hours for vehicles. Results of the existing condition roadway segment analysis is shown in **Table 5**, which indicates that traffic volumes on Horton Street along the project frontage already exceed the desired amount for a bicycle boulevard.

Project Conditions

Project Traffic Estimates

To estimate traffic conditions during the construction period, vehicle trips expected to be added to the roadway system were combined with existing traffic volumes through the following three step process:

1. Trip Generation is the process of estimating how much traffic is generated by the project. For this project, separate estimates were prepared for each project phase. Given the characteristics of the project, it is not expected that walking, bicycling and transit use would account for a significant amount of the travel mode share to the site as most of the travel to/from the site would be via trucks. Since the people conducting remediation activities typically work at temporary work sites such as this one, they have not selected

housing locations based on their permanent work location, and their ability to walk, bike or take transit to the site is expected to be limited.

2. Trip Distribution is defined by determining origins and destinations of vehicle trips. For this project, separate distributions were developed for truck trips and construction worker trips.

3. Trip Assignment is the process of assigning traffic to specific roadway segments and turning movements based on the trip distribution.

Trip Generation

Vehicle trips would be generated during the project duration by trucks exporting and importing materials and by workers traveling to/from the site. Baseline Environmental Consulting provided a preliminary construction work plan that identifies the number of trucks and workers anticipated for each phase. The estimates were based on the amount of material at the site that would require removal and disposal, and the import of new material. The following assumptions were used in the development of the trip generation estimates by phase:

- Each construction worker would make approximately 1.5 daily round trips, including the commute trip to/from the site during peak hours and some might make a mid-day trip. This likely overstates the level of worker activity as it does not account for carpooling, or the potential for site workers who are there for a temporary period to stay in close-by hotel accommodations and would account for other potential trips to the site such as from an inspector.

- Soil export and import would require 20 days each, resulting in 40-days during the Remediation Phase where the most intense level of site truck activity would occur.

- A truck size of 9 cubic yards would be utilized to haul approximately 1,400 cubic yards of paving material during the Paving Phase.

Based on the anticipated construction schedule summarized in **Table 2**, the expected maximum number of daily trips is 160 truck trips and 40 passenger vehicle trips[1] for a total of 200 trips. The expected maximum number of peak hour trips would be 21 truck trips and 16 passenger vehicle trips for a total of 37 trips.

[1] Calculated based on the maximum number of site workers, expected to be 16 assuming that some workers may leave and return thought the day, and that some additional trips cold be made by City inspectors or others.

Peak traffic volumes related to the individual phases do not extend over the entire duration of each phase. For example, peak traffic conditions associated with the Demolition Phase occur only for 20 days of the project phase duration.

Trucks behave differently than passenger vehicles as they take longer to accelerate, decelerate, and negotiate turns. Therefore, they also affect intersection and roadway operations differently. Truck behavior was accounted for in the assessment of roadway and intersection operations by using a Passenger Car Equivalency factor. For this analysis, all truck trips were considered two passenger car trips.

Table 2. Maximum Daily Trip Generation Estimates by Phase

Construction Phase	Total Duration (Days)[1]	Maximum Activity Duration (Days)[1]	Maximum Daily Two-Way Trips			Maximum Hourly Two-Way Trips[2]		
			Trucks[3]	Passenger Vehicles[4]	Total	Trucks[5]	Passenger Vehicles	Total[6]
Demolition	150	20	40	20	60	5	8	13
Remediation	460	40	160	40	200	20	16	36
Paving	20	5	64	20	84	8	8	16

Notes:

1. Construction Schedule deduced from Work Plan provided on October 12, 2021
2. Calculated for the average morning and evening peak hour, including both inbound and outbound trips.
3. Reflects maximum daily truck trip generation by phase. These trips do not reflect passenger car equivalency (PCE), which are considered in the analysis. For the roadway and intersection analysis, the number of truck trips was multiplied by a PCE of 2.
4. Assumes that some workers may leave and return thought the day, and that some additional trips cold be made by City inspectors or others.
5. Peak truck trips calculated assuming daily truck trips arrive and depart the site linearly throughout the workday with each phase consisting of an 8-hour workday.
6. Assumes all construction workers arrive and depart job site during peak hour between 7:00-9:00 AM and 4:00-6:00 PM. During AM peak hour, all trips assumed to be inbound and during PM peak hour, all trips assumed to be outbound.

Source: Baseline Environmental Consulting, Fehr & Peers.

At completion of the proposed project, no new trips to the project site are expected as the trip generation characteristics after the remediation would be similar to those before the remediation. Any planned development on the site would be subject to a separate review.

Trip Distribution and Assignment

Separate project trip distribution percentages were developed for construction worker and material trips.

Passenger Vehicle Trips

Based on existing travel patterns in the area and the expected commute patterns of site workers, it was estimated that 80 percent of site workers would access the site from the I-580 and I-80, while 20 percent would access the site from neighboring cities to the east during all phases of the project. Given the adjacent roadway network, it was assumed 80 percent of trips would travel through the intersections of Powell Street at Hollis Street, 90 percent would travel through Hollis Street at Stanford Avenue, and 100 percent would travel through Horton Street at Stanford Avenue to access the site.

Truck Trips

The truck distribution was assessed separately for the three project phases. During the Demolition Phase, it was assumed all demolition related truck trips would have an origin and destination of Vacaville, CA, the location of a landfill that is expected to be used; use of a different landfill for these materials during this phase would not change the overall conclusions of this assessment. During the Remediation Phase, the distribution was determined based on expected location materials would be sent considering their toxicity. The expected number of truck trips to any given location during the Remediation Phase is summarized on **Figure 6** and **Table 3**.

The level of trips generated by the project during the Remediation Phase was added to the existing traffic volumes as presented on **Figure 7**. Based on the truck routes in the area as well as the location origin/destination for material, all truck trips would travel to/from I-80 in the area via the Powell Street interchange.

Table 3. Truck Trip Generation and Distribution

Phase	Haul Type	Duration of Peak Truck Activity (in days)	Tonnage	Destination	Total Truck Trips[1]	Daily Truck Trips[2]
Demolition	Debris Removal	20	1,400	Unknown[4]	324	17
Demolition	Concrete Removal	20	2,000 (CY)	Unknown[4]	444	23
Remediation	Soil Export - non-RCRA Hazardous	40	13,500	Kettleman City, CA	1,180	40
Remediation	Soil Export - non-hazardous Class II	40	10,700	Vacaville, CA	940	32
Remediation	Soil Export - RCRA Hazardous Landfill	40	2,300	Kettleman City, CA	200	7
Remediation	Soil Export - RCRA Hazardous Incineration	40	700	Aragonite, UT	80	3
Remediation	Soil Import - Clean Fill	40	27,200	Unknown[5]	1,200	40
Paving	Paving Material	20	1,400 (CY)	Unknown[5]	100	6

Notes:

1. Total Truck Trips are calculated by: $\frac{Tonnage}{Truck\ Capacity} * 2$. Multiplied by two to account for inbound and outbound trips. Soil-carrying trucks assume a capacity of 23 tons per truck, while paving trucks assume a capacity of 9 cubic yards per truck.
2. Daily Truck Trips are calculated by assuming Total Truck Trips are spaced linearly through the Duration of Work; represents one inbound trip and one outbound trip per truck.
3. Assumed that the Remediation Phase duration would be split evenly amongst soil export and import.
4. Origin and destination of debris and concrete removal is unknown, but 100% assumed to use I-80 EB.
5. Origin of paving material and imported soil is unknown, but it is assumed 50% would use I-80 WB and 50% I-80 EB.

Source: Baseline Environmental Consulting and Fehr & Peers, October 2021.

Analysis Results

This section discusses the potential project transportation and circulation impacts. The duration of project impacts is limited to the duration of construction, as trip generation characteristics after remediation would be similar to those before construction.

The Remediation Phase was deemed to be the most impactful duration of the project, as it generates the highest number of daily and peak hour trips. Therefore, the intersection and roadway segment analyses are limited to the impacts of the Remediation Phase on the roadway network.

To account for the different behavior of trucks versus passenger cars, a Passenger Car Equivalency factor of 2 was used for the analysis.[2]

Intersection Operations

Intersection operations were evaluated using Synchro 11 software for the weekday morning and evening peak hours for analysis scenarios listed previously, based on the analysis methods outlined in **Attachment A**.

In the Existing and Near-term scenarios, the study intersections operate within the expected level of service range – LOS D – during the peak hours, as summarized on **Table 4**. The addition of project traffic would marginally increase delay at the study intersections, even considering the effects of truck traffic, with intersection operations expected to be similar to current conditions.

Table 4. Peak Hour Intersection Levels of Service

Intersection	Peak Hour	Existing		Existing plus Background		Existing plus Background with Project[1]	
		Delay	LOS[2]	Delay	LOS[2]	Delay	LOS[2]
1. Horton Street/ Stanford Avenue (all-way stop-controlled)[3]	AM	9	A	9	A	9	A
	PM	11	B	12	B	12	B
2. Hollis Street/ Stanford Avenue (signalized)[4]	AM[5]	N/A	N/A	N/A	N/A	N/A	N/A
	PM	8	A	8	A	9	A
3. Hollis Street/Powell Street (signalized)[4]	AM	45	D	45	D	45	D
	PM	47	D	50	D	51	D

Notes:
1. Existing with Project considers only the phase with the greatest daily trips added
2. LOS = Level of Service.
3. Average intersection delay and LOS based on the 2010 HCM method for an All-Way Stop Controlled Intersection.
4. Average intersection delay and LOS based on the 2010 HCM method for a Signalized Intersection.
5. Intersection 2 AM Peak Hour data is not available

Source: Fehr & Peers, October 2021.

A vehicle queue assessment was also conducted for the signalized intersections, as presented in **Table 5**. In conditions without the project, vehicle queues for some movements at the Powell Street at Hollis Street intersection exceed the available storage in the existing and near-term

[2] Passenger Car Equivalency is a standard analytical procedure used to capture the increased effects of heavy trucks.

condition. With the addition of project traffic during the morning and evening peak hour, project traffic could result in vehicle queues for the following movements to exceed the available storage:

- Hollis Street at Stanford Avenue – eastbound left-turn during PM peak hour

The addition of project traffic could also result in the queue for the following movement to increase by more than 50 vehicles:

- Hollis Street at Powell Street – northbound left-turn during PM peak hour

While these effects would be temporary, and only occur during the stages of each phase with the highest levels of truck traffic, the extent of the vehicle queue spillback could result in blockages of the intersection of Hollis Street at Stanford Avenue, as the northbound left-turn queue from Powell Street would extend through the Stanford Avenue intersection. The extent of queue spillback could affect transit travel along the Hollis Street corridor.

Table 5. Signalized Intersection Storage and Queue Lengths

Intersection	Approach	Storage	Peak Hour	Existing	Near-term	Near-term with Project
				Queue	Queue	Queue
2. Hollis Street/ Stanford Avenue (signalized)	EBL	70	AM	N/A	N/A	N/A
			PM	65	70	***75***
	EBT	190	AM	N/A	N/A	N/A
			PM	45	45	45
	WBT	460	AM	N/A	N/A	N/A
			PM	22	25	25
	NBT	850	AM	N/A	N/A	N/A
			PM	107	130	145
	SBT	340	AM	N/A	N/A	N/A
			PM	130	140	165
	SBR	40	AM	N/A	N/A	N/A
			PM	5	5	5
3. Hollis Street/Powell Street (signalized)	EBL	110	AM	180	200	200
			PM	150	160	160
	EBT	170	AM	**185**	**210**	**210**
			PM	**330**	**370**	**380**
	WBL	100	AM	100	**110**	**115**
			PM	85	95	95

Intersection	Approach	Storage	Peak Hour	Existing	Near-term	Near-term with Project
				Queue	Queue	Queue
	WBT	430	AM	300	350	350
			PM	230	255	255
	NBL	340	AM	190	210	210
			PM	**475**	**545**	***585***
	NBT	340	AM	120	135	135
			PM	**370**	**475**	**430**
	SBL	120	AM	35	40	40
			PM	**130**	**145**	**145**
	SBT	570	AM	160	180	180
			PM	280	325	325
	SBR	160	AM	22	30	30
			PM	115	145	145

Notes: Storage and queue lengths are reported in feet. Bolded values represent locations where queues exceed available storage; ***bold italics*** represent potential impacts.
Source: Fehr & Peers, 2021

Condition of Approval 1 – to address the potential temporary effects of vehicle queue spillback on Hollis Street at Powell Street and at Stanford Avenue, implement at least one of the following:

- Restrict large trucks exiting the site to no more than 10 after 4 PM
- Work with the City to evaluate and potentially adjust the traffic signal timings on Hollis Street at Powell Street and at Stanford Avenue, which could potentially include serving the northbound left-turn phase twice during the PM peak hour.

Bicycle Boulevard Analysis

Daily traffic counts for the three bicycle boulevards in the immediate project vicinity were obtained from prior studies in the area, generally reflecting 2016 conditions. As described previously, 2016 and 2019 vehicle counts from the same intersection in the study area were compared. As the 2016 vehicle count are slightly higher than the 2019 counts, the 2016 counts were used for the purposes of this assessment.

The average daily traffic volumes, as summarized in **Table 6**, show that existing daily vehicle volumes on Horton Street exceed the desired amount for a bicycle boulevard west of Hollis Street, while the vehicle volume on Stanford Avenue is within the established range for a bicycle boulevard. Trucks comprise approximately 3 to 4 percent of existing traffic volumes in this area.

Trips expected to be generated by the project during the Remediation Phase, when daily trip generation is expected to be the highest, were added to the existing traffic volumes. The results are presented in **Table 6**.

Table 6. Roadway Segment Analysis

Roadway Segment	Existing ADT[1]	Daily Project Traffic[2]	With Project ADT[3]	Percent Increase
Horton Street, North of Stanford Avenue	3,030	360	3,390	12%
Horton Street, South of Stanford Avenue	3,480	4	3,484	0.3%
Stanford Avenue, east of Horton Street	1,515	356	1,871	23%

Notes:
1. Data from Sherwin-Williams and Emeryville Center of Innovation studies, as well as traffic counts collected in October 2016; ADT = Average Daily Trips
2. ADT with Project considers only the phase with the greatest daily trips added, with truck trips converted to passenger car equivalents.
3. Existing ADT plus all added truck (considering PCE) and worker trips

Source: Fehr & Peers, October 2016 and October 2021.

The existing average daily vehicle traffic on Horton Street already exceeds the threshold set by the City of Emeryville for a bicycle boulevard. Based on the significance criteria, a project impact to a bicycle boulevard could be considered significant if the project increases average daily trips by more than two percent. The project is expected to result in a temporary daily traffic volume increase of twelve percent during the remediation phase on the segment north of Stanford Avenue, resulting in a potentially significant impact.

Although the project would increase vehicle traffic on Stanford Avenue by more than 20 percent, the total volume would remain within established levels for bicycle boulevards west of Hollis Street. Additionally, this segment of Stanford Avenue provides bicycle lanes which provide a degree of separation between vehicle travel and people on bicycles.

> ***Impact Statement:*** The City of Emeryville *Pedestrian and Bicycle Plan* designates Horton Street as a bicycle boulevard. Under non-Covid conditions, existing weekday daily traffic volumes on Horton Street north of Stanford Avenue are approximately 3,030 vehicles per day (VPD). With the Project, traffic volumes on Horton Street are expected to temporarily increase by approximately 374 vehicles per day. Guidelines in the City of Emeryville *Pedestrian and Bicycle Plan* indicates that traffic volumes on bicycle boulevards should be below 1,500 VPD for bicycle boulevards east of Hollis Street, and west of Hollis Street

traffic volumes should be less than 3,000 VPD. Higher volumes can be permitted for short segments with additional treatments.

Traffic volumes on Horton Street along the Project frontage already exceed the desired volume threshold for bicycle boulevard designation (3,000 VPD) and the addition of Project traffic could temporarily increase traffic volumes to approximately 3,400 VPD. This is considered a ***significant impact***.

Mitigation Measure TC-1: Implement a construction management plan that should include:

- A set of comprehensive traffic control measures, including scheduling of trips to be staggered throughout the day with the last site arrivals prior to 4 p.m.; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes
- Use of driveway flaggers for inbound and outbound truck trips
- Permitted construction hours
- Identification of parking areas for construction employees, site visitors, and inspectors
- Provisions for street sweeping to remove construction related debris on public streets
- Provision for pedestrian detour signage if temporary sidewalk closures are necessary; signage would need to be placed at the mid-block crossing under the Powell Street bridge and at the Horton Street and Stanford Avenue intersection.
- Provision for cyclist detour signage if temporary bicycle lane closures are necessary; signage would need to be placed at the Horton Street and Haruff Street intersection and at the Horton Street and Stanford Avenue intersection.

Implementation of this measure would reduce the construction impact to a ***less-than-significant*** level.

As a part of the construction of Emeryville Center of Innovation and the redevelopment of the Sherwin-Williams site, improvements would be implemented on Horton Street to improve the biking facility, including construction of a cycle track along a portion of the roadway, as well as turn restrictions to divert vehicle traffic to other routes that are not prioritized for bicycle travel. The proposed remediation project is not expected to conflict with improvement plans under consideration, especially with implementation of Mitigation Measure TC-1.

SB 743 VMT Screening Assessment

In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) updated the California Environmental Quality Act (CEQA) guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014, and after several rounds of public review and feedback, final proposed Guidelines were published on November 27, 2017, with an associated Technical Advisory Document on Evaluating Transportation Impacts in CEQA dated December 2018. That process identified vehicle miles of travel or VMT as the most appropriate metric to evaluate the environmental effects of a project from a transportation perspective and prohibited the use of delay-based metrics for the purposes of identifying transportation impacts under CEQA.

The updated guidelines were finalized in December 2018 by the Natural Resources Agency, including a new Section 15064.3 on VMT analysis for land use developments. The new guidelines took effect July 1, 2020. The City of Emeryville has not yet formally adopted VMT analysis guidelines or thresholds to apply to projects for which it serves as the CEQA lead agency. The Alameda County Transportation Commission (Alameda CTC) has not made any recommendations regarding VMT thresholds.

In the absence of more specific local guidance, OPR guidance, as documented in the December 2018 Technical Advisory[3], has been reviewed and concepts presented in the Technical Advisory have been applied to this project, considering the intent of SB 743 which is to "*promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses*."

The OPR Technical Advisory suggests certain numerical VMT thresholds for common land use categories, including residential, office, industrial, and retail. The OPR Technical Advisory suggests the use of "screening criteria" that can be applied to a project to determine whether that project can be presumed to cause a less-than-significant amount of VMT, in which case the project could be screened out of doing further VMT analysis. The guidelines specify that the VMT assessment only applies to automobile travel generated by a project, which is defined as on-road passenger vehicles and light-trucks. While heavy duty truck VMT can be included in the calculations for modeling convenience and ease of calculations, SB 743 does not specially apply to heavy-duty truck travel such as the truck trips that will haul waste material from the site and fill material to the site. The exclusion of truck trips is a practical one, as it recognizes that there are limited mitigation strategies that could change truck travel, and the most effective strategies to reduce the environmental impacts of truck travel are the California Air Resource Board heavy vehicle regulations that require equipment upgrades or replacement to meet particulate matter standards. These regulations allow for the phasing out of older equipment that will, over time,

[3] https://www.opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

decrease the harmful emissions and particulate matters from heavy duty trucks. Since heavy truck trips are not included in the SB 743 evaluation, only trips from site workers, inspectors, and others were considered.

One of the criteria in the Technical Advisory is to screen out small projects, which OPR has defined as projects that generate fewer than 110 vehicle trips per day. The proposed project is expected to generate approximately 50 passenger vehicle or light-duty truck trips per day, which is within the OPR definition of a small project.

Based on our review of the OPR screening criteria, the intent of SB 743 and the types of trips being generated by the project during the site remediation, the VMT impact is considered less-than-significant, and no further analysis is required.

Alameda CTC Land Use Monitoring Program

The Alameda CTC requires analysis of projects that are expected to generate more than 100-peak hour vehicle trips. As shown previously, the project could generate a maximum of approximately 40 PM peak hour trips that would be added to the roadway network, less than the 100 that could require the preparation of additional analysis.

Other Considerations

This section discusses other elements on the initial study checklist that were not evaluated in the previous section.

Emergency Access

Access to the site is provided from Horton Street, which can be access from the south via Stanford Avenue and from the north via Haruff Street and 59th Street. Should one roadway be blocked, the site could be accessed via other roadway facilities. As the project does not propose to change site access, the impact to emergency access is considered less-than-significant.

Transit

The project is not expected to result in an increase for transit service in the area, nor does it propose to change the roadway system in the project vicinity. However, the project would increase truck traffic on Stanford Avenue between Hollis and Horton streets, and on Hollis Street just north of Stanford Avenue, both designated transit streets. If truck arrivals are not distributed throughout the day and peak hour, and if sufficient on-site queueing space is not provided, trucks queued on public roadways could delay transit vehicles. Implementation of mitigation measure TC-1 and Condition of Approval 1 would reduce this potential impact to a ***less-than-significant*** level.

Pedestrian

Sidewalk closures are not expected along the Horton Street project frontage during the project. However, there may be unforeseen circumstances that could necessitate the temporary closure of the sidewalk along the project frontage. Implementation of mitigation measure TC-1 would reduce this potential impact to a ***less-than-significant*** level.

This concludes our assessment of the potential impacts during the remediation of the site located at 5679 Horton Street. Please call Kathrin at (925) 930-7100 if you have questions.

Figures:

Figure 1	Project Site Vicinity
Figure 2	Project Site Plan
Figure 3	City of Emeryville Truck Routes
Figure 4	Existing Peak Hour Intersection Traffic Volumes, Lane Configurations, and Traffic Controls
Figure 5	Existing plus Background Peak Hour Intersections Traffic Volumes, Lane Configurations, and Traffic Controls
Figure 6	Remediation Phase Off-Haul Truck Trips
Figure 7	Existing plus Background with Remediation Phase Peak Hour Intersections Traffic Volumes, Lane Configurations, and Traffic Controls

Attachments:

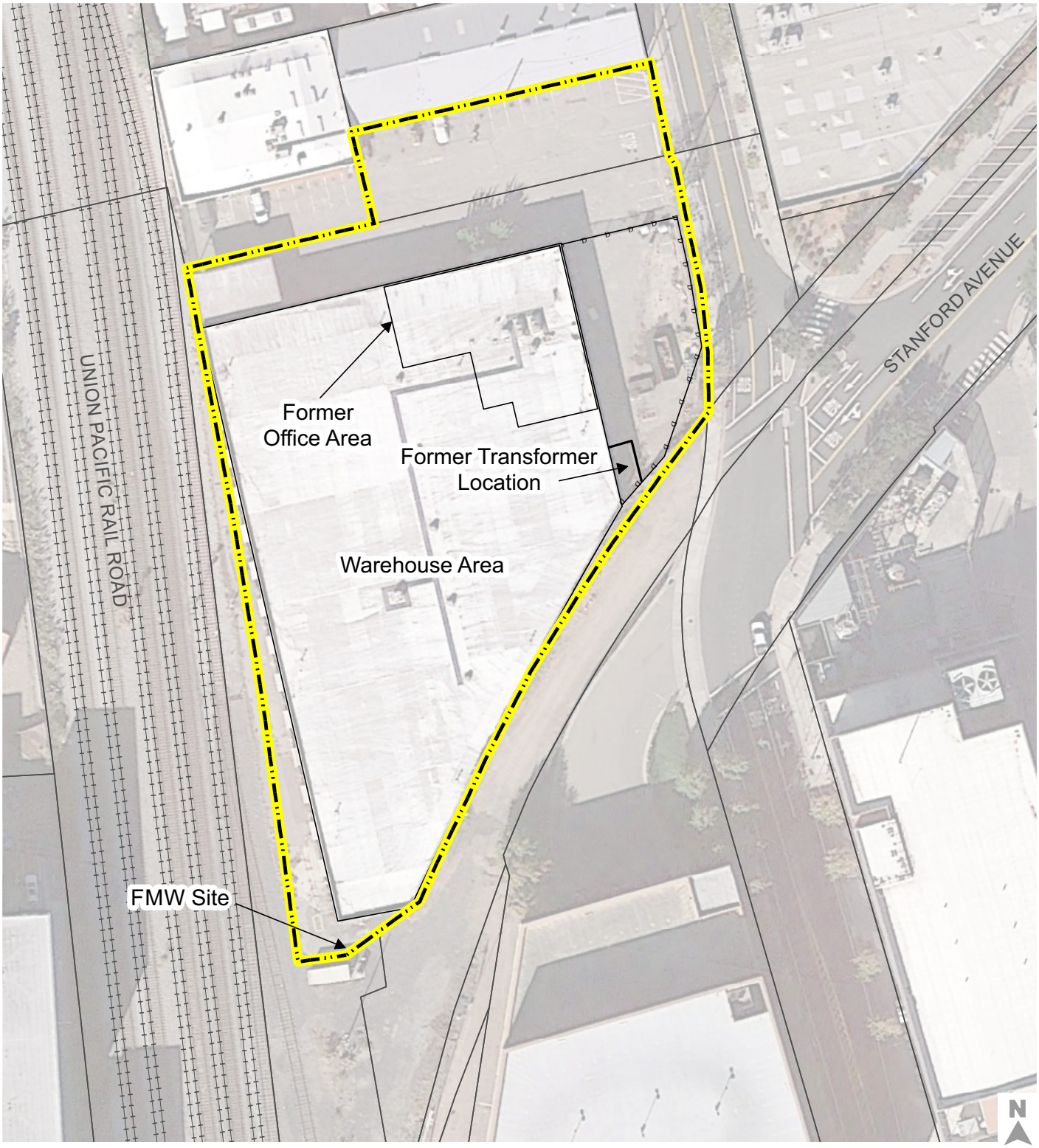
Attachment A	Level of Service Method
Attachment B	LOS Worksheets

Project Site # Study Intersection

Figure 1

Project Site Vicinity

OK16-0142_1_SiteVic



Site Plan Source: Erler & Kalinowski, Inc. (EKI), 10/12/21

Figure 2

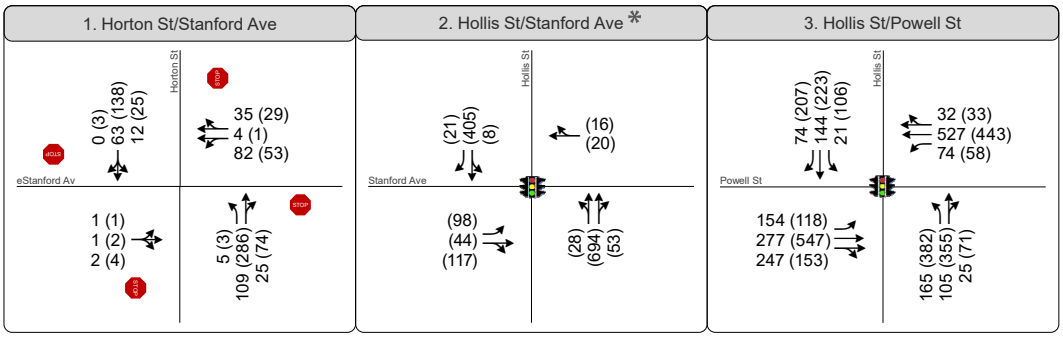
Project Site Plan

Project Site Truck Routes

Figure 3

City of Emeryville Truck Routes

OK21-0436_3_TruckRts



* *Only PM peak period analyzed, as this is when traffic volumes are highest.*

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

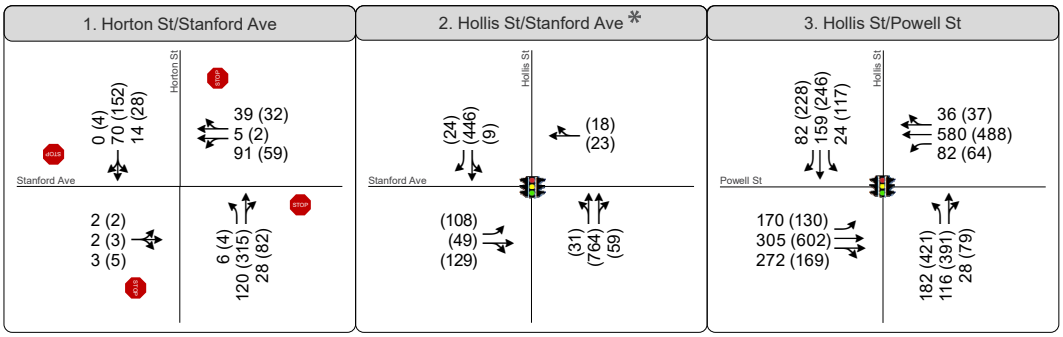
Stop Sign

Project Site

Study Intersection

Figure 4

Existing Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls



* *Only PM peak period analyzed, as this is when traffic volumes are highest.*

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Study Intersection

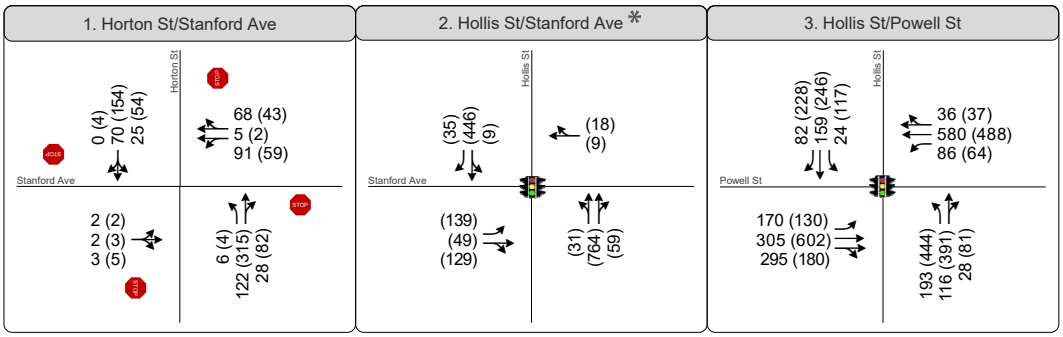
Figure 5

Existing Plus Background Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Figure 6

Remediation Phase Off-Haul One-Way Truck Trips

OK21-0436_6_OffHaulLoc



* *Only PM peak period analyzed, as this is when traffic volumes are highest.*

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Study Intersection

Figure 7

Existing plus Background with Remediation Phase Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

FEHR PEERS

ATTACHMENT A – INTERSECTION ANALYSIS METHODS

The operations of roadway facilities are for vehicles described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., free-flow operating conditions) to LOS F (over capacity operating conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F. The City of Emeryville does not have a level of service policy for vehicles but strives to achieve a Quality of Service for all modes of travel.

Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the method from Chapter 18 of the Transportation Research Board's 2010 *Highway Capacity Manual*. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. **Table A-1** summarizes the relationship between average delay per vehicle and LOS for signalized intersections.

Unsignalized Intersections

Traffic conditions at unsignalized intersections were evaluated using the method from Chapters 19 and 20 of the 2010 *Highway Capacity Manual*. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, as well as the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. **Table A-2** summarizes the relationship between delay and LOS for unsignalized intersections.

Table A1. Signalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10. 0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10. 0 to 20. 0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20. 0 to 35. 0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and/or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35. 0 to 55. 0
E	Operations with long delays indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55. 0 to 80. 0
F	Operations with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80. 0

Source: *Highway Capacity Manual (*Transportation Research Board, 2010).

Table A2. Unsignalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delays	≤ 10. 0
B	Short traffic delays	> 10. 0 to 15. 0
C	Average traffic delays	> 15. 0 to 25. 0
D	Long traffic delays	> 25. 0 to 35. 0
E	Very long traffic delays	> 35. 0 to 50. 0
F	Extreme traffic delays with intersection capacity exceeded	> 50. 0

Source: *Highway Capacity Manual* (Transportation Research Board, 2010)

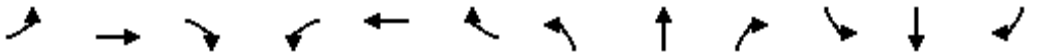
ATTACHMENT B LOS WORKSHEETS

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	2	82	4	35	5	109	25	12	63	0
Future Vol, veh/h	1	1	2	82	4	35	5	109	25	12	63	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	1	2	86	4	37	5	115	26	13	66	0
Number of Lanes	0	1	0	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	8	8.6	8.6	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	25%	98%	0%	16%
Vol Thru, %	0%	81%	25%	2%	5%	84%
Vol Right, %	0%	19%	50%	0%	95%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	134	4	84	37	75
LT Vol	5	0	1	82	0	12
Through Vol	0	109	1	2	2	63
RT Vol	0	25	2	0	35	0
Lane Flow Rate	5	141	4	88	39	79
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.008	0.188	0.006	0.136	0.048	0.111
Departure Headway (Hd)	5.423	4.79	4.982	5.556	4.402	5.051
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	662	752	719	647	815	711
Service Time	3.137	2.504	3.007	3.275	2.12	3.068
HCM Lane V/C Ratio	0.008	0.188	0.006	0.136	0.048	0.111
HCM Control Delay	8.2	8.6	8	9.2	7.3	8.7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0.7	0	0.5	0.2	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	277	247	74	527	32	165	105	25	21	144	74
Future Volume (veh/h)	154	277	247	74	527	32	165	105	25	21	144	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	177	318	0	77	549	33	170	108	26	23	158	81
Peak Hour Factor	0.87	0.87	0.87	0.96	0.96	0.96	0.97	0.97	0.97	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	415		297	612	37	195	494	119	628	769	830
Arrive On Green	0.20	0.21	0.00	0.35	0.38	0.37	0.19	0.60	0.61	0.19	0.43	0.43
Sat Flow, veh/h	1688	3455	0	1688	3227	194	1688	1380	332	1688	1772	1502
Grp Volume(v), veh/h	177	318	0	77	286	296	170	0	134	23	158	81
Grp Sat Flow(s),veh/h/ln	1688	1683	0	1688	1683	1737	1688	0	1712	1688	1772	1502
Q Serve(g_s), s	11.6	10.2	0.0	3.7	18.2	18.3	11.1	0.0	4.1	0.0	6.3	2.9
Cycle Q Clear(g_c), s	11.6	10.2	0.0	3.7	18.2	18.3	11.1	0.0	4.1	0.0	6.3	2.9
Prop In Lane	1.00		0.00	1.00		0.11	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	200	415		297	319	329	195	0	613	628	769	830
V/C Ratio(X)	0.89	0.77		0.26	0.90	0.90	0.87	0.00	0.22	0.04	0.21	0.10
Avail Cap(c_a), veh/h	340	1063		297	354	366	429	0	613	628	769	830
HCM Platoon Ratio	1.67	1.67	1.67	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	43.7	0.0	31.6	34.3	34.4	45.2	0.0	15.5	22.0	20.0	12.1
Incr Delay (d2), s/veh	13.6	3.0	0.0	0.5	22.8	22.7	11.3	0.0	0.8	0.0	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	4.1	0.0	1.5	8.0	8.3	4.9	0.0	1.7	0.4	2.7	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.6	46.7	0.0	32.1	57.1	57.1	56.5	0.0	16.3	22.0	20.6	12.3
LnGrp LOS	E	D		C	E	E	E	A	B	C	C	B
Approach Vol, veh/h		495	A		659			304			262	
Approach Delay, s/veh		51.0			54.2			38.8			18.2	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.9	45.0	25.1	18.0	17.2	53.7	17.5	25.6
Change Period (Y+Rc), s	3.7	* 3.7	4.5	* 4.5	3.5	3.7	3.5	4.5
Max Green Setting (Gmax), s	10.5	* 41	11.5	* 36	29.5	22.3	23.5	23.5
Max Q Clear Time (g_c+I1), s	2.0	6.1	5.7	12.2	13.1	8.3	13.6	20.3
Green Ext Time (p_c), s	0.0	0.5	0.1	1.4	0.5	0.8	0.4	0.8

Intersection Summary	
HCM 6th Ctrl Delay	45.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	177	602	77	582	170	134	23	158	81
v/c Ratio	0.72	0.70	0.30	0.82	0.71	0.16	0.05	0.25	0.10
Control Delay	62.4	31.2	44.7	53.1	61.3	20.8	30.5	31.0	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	31.2	44.7	53.1	61.3	20.8	30.5	31.0	3.0
Queue Length 50th (ft)	125	148	49	210	121	45	11	83	0
Queue Length 95th (ft)	182	186	97	#298	188	121	34	159	22
Internal Link Dist (ft)		1552		700		344		580	
Turn Bay Length (ft)	75		80				80		130
Base Capacity (vph)	338	1126	267	734	426	838	466	628	928
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.53	0.29	0.79	0.40	0.16	0.05	0.25	0.09

Intersection Summary

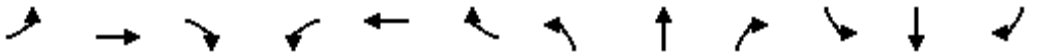
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	2	4	53	1	29	3	286	74	25	138	3
Future Vol, veh/h	1	2	4	53	1	29	3	286	74	25	138	3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	2	4	56	1	31	3	301	78	26	145	3
Number of Lanes	0	1	0	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	8.8	9.2	12.3	10.1
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	14%	99%	0%	15%
Vol Thru, %	0%	79%	29%	1%	2%	83%
Vol Right, %	0%	21%	57%	0%	98%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	360	7	54	30	166
LT Vol	3	0	1	53	0	25
Through Vol	0	286	2	1	1	138
RT Vol	0	74	4	0	29	3
Lane Flow Rate	3	379	7	56	31	175
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.005	0.504	0.012	0.099	0.044	0.254
Departure Headway (Hd)	5.433	4.787	5.696	6.354	5.158	5.229
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	659	754	625	563	691	687
Service Time	3.162	2.516	3.765	4.11	2.914	3.267
HCM Lane V/C Ratio	0.005	0.503	0.011	0.099	0.045	0.255
HCM Control Delay	8.2	12.3	8.8	9.8	8.2	10.1
HCM Lane LOS	A	B	A	A	A	B
HCM 95th-tile Q	0	2.9	0	0.3	0.1	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	547	153	58	443	33	382	355	71	106	223	207
Future Volume (veh/h)	118	547	153	58	443	33	382	355	71	106	223	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	136	629	0	60	461	34	394	366	73	116	245	227
Peak Hour Factor	0.87	0.87	0.87	0.96	0.96	0.96	0.97	0.97	0.97	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	723		93	591	43	410	513	102	497	595	644
Arrive On Green	0.19	0.43	0.00	0.11	0.37	0.36	0.41	0.60	0.61	0.22	0.34	0.34
Sat Flow, veh/h	1688	3455	0	1688	3179	234	1688	1434	286	1688	1772	1502
Grp Volume(v), veh/h	136	629	0	60	243	252	394	0	439	116	245	227
Grp Sat Flow(s),veh/h/ln	1688	1683	0	1688	1683	1730	1688	0	1720	1688	1772	1502
Q Serve(g_s), s	8.9	19.4	0.0	3.9	14.6	14.7	25.9	0.0	20.4	0.0	12.1	11.6
Cycle Q Clear(g_c), s	8.9	19.4	0.0	3.9	14.6	14.7	25.9	0.0	20.4	0.0	12.1	11.6
Prop In Lane	1.00		0.00	1.00		0.14	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	157	723		93	313	322	410	0	616	497	595	644
V/C Ratio(X)	0.87	0.87		0.64	0.78	0.78	0.96	0.00	0.71	0.23	0.41	0.35
Avail Cap(c_a), veh/h	340	1063		163	354	364	429	0	616	497	595	644
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.89	0.00	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	31.1	0.0	49.6	33.7	33.8	33.3	0.0	18.8	32.7	29.2	21.9
Incr Delay (d2), s/veh	13.1	5.5	0.0	7.2	9.4	9.5	30.5	0.0	6.2	0.2	2.1	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	6.7	0.0	1.8	5.7	5.9	12.5	0.0	7.1	2.6	5.5	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.9	36.5	0.0	56.8	43.1	43.3	63.8	0.0	24.9	32.9	31.3	23.4
LnGrp LOS	E	D		E	D	D	E	A	C	C	C	C
Approach Vol, veh/h		765	A		555			833			588	
Approach Delay, s/veh		40.5			44.7			43.3			28.6	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.2	45.0	11.3	28.5	31.7	42.5	14.6	25.2
Change Period (Y+Rc), s	3.7	* 3.7	4.5	* 4.5	3.5	3.7	3.5	4.5
Max Green Setting (Gmax), s	10.5	* 41	11.5	* 36	29.5	22.3	23.5	23.5
Max Q Clear Time (g_c+I1), s	2.0	22.4	5.9	21.4	27.9	14.1	10.9	16.7
Green Ext Time (p_c), s	0.2	1.8	0.1	2.6	0.3	1.3	0.3	1.2

Intersection Summary	
HCM 6th Ctrl Delay	39.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	136	805	60	495	394	439	116	245	227
v/c Ratio	0.65	0.83	0.45	0.65	0.91	0.61	0.40	0.57	0.34
Control Delay	61.6	44.0	60.6	43.3	66.3	37.5	45.6	46.4	14.2
Queue Delay	0.0	0.0	0.0	0.0	13.2	3.0	0.0	0.0	0.0
Total Delay	61.6	44.0	60.6	43.3	79.6	40.5	45.6	46.4	14.2
Queue Length 50th (ft)	97	277	43	166	279	284	75	170	61
Queue Length 95th (ft)	149	328	86	227	#474	370	131	#279	116
Internal Link Dist (ft)		1552		700		344		580	
Turn Bay Length (ft)	75		80				80		130
Base Capacity (vph)	338	1046	161	801	445	724	290	433	782
Starvation Cap Reductn	0	0	0	0	45	184	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.77	0.37	0.62	0.98	0.81	0.40	0.57	0.29

Intersection Summary

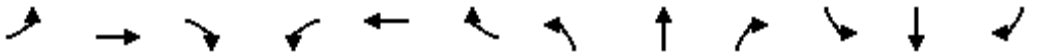
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	3	91	5	39	6	120	28	14	70	0
Future Vol, veh/h	2	2	3	91	5	39	6	120	28	14	70	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	2	3	96	5	41	6	126	29	15	74	0
Number of Lanes	0	1	0	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	8.2	8.8	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	29%	97%	0%	17%
Vol Thru, %	0%	81%	29%	3%	6%	83%
Vol Right, %	0%	19%	43%	0%	94%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	148	7	94	42	84
LT Vol	6	0	2	91	0	14
Through Vol	0	120	2	3	3	70
RT Vol	0	28	3	0	39	0
Lane Flow Rate	6	156	7	98	44	88
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.01	0.21	0.01	0.154	0.054	0.126
Departure Headway (Hd)	5.483	4.848	5.121	5.623	4.473	5.121
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	654	742	698	639	801	701
Service Time	3.202	2.567	3.155	3.348	2.199	3.144
HCM Lane V/C Ratio	0.009	0.21	0.01	0.153	0.055	0.126
HCM Control Delay	8.3	8.9	8.2	9.4	7.5	8.9
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0.8	0	0.5	0.2	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	305	272	82	580	36	182	116	28	24	159	82
Future Volume (veh/h)	170	305	272	82	580	36	182	116	28	24	159	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	195	351	0	85	604	38	188	120	29	26	175	90
Peak Hour Factor	0.87	0.87	0.87	0.96	0.96	0.96	0.97	0.97	0.97	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	449		322	655	41	213	493	119	569	707	793
Arrive On Green	0.22	0.22	0.00	0.38	0.41	0.40	0.21	0.60	0.61	0.17	0.40	0.40
Sat Flow, veh/h	1688	3455	0	1688	3217	202	1688	1379	333	1688	1772	1502
Grp Volume(v), veh/h	195	351	0	85	316	326	188	0	149	26	175	90
Grp Sat Flow(s),veh/h/ln	1688	1683	0	1688	1683	1736	1688	0	1712	1688	1772	1502
Q Serve(g_s), s	12.8	11.2	0.0	4.0	20.3	20.4	12.3	0.0	4.7	0.0	7.5	3.4
Cycle Q Clear(g_c), s	12.8	11.2	0.0	4.0	20.3	20.4	12.3	0.0	4.7	0.0	7.5	3.4
Prop In Lane	1.00		0.00	1.00		0.12	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	218	449		322	343	354	213	0	613	569	707	793
V/C Ratio(X)	0.89	0.78		0.26	0.92	0.92	0.88	0.00	0.24	0.05	0.25	0.11
Avail Cap(c_a), veh/h	340	1063		322	354	365	429	0	613	569	707	793
HCM Platoon Ratio	1.67	1.67	1.67	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	42.7	0.0	29.8	32.9	33.0	44.2	0.0	15.6	24.7	22.9	13.5
Incr Delay (d2), s/veh	17.1	3.0	0.0	0.4	28.2	28.0	11.3	0.0	0.9	0.0	0.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	4.4	0.0	1.6	9.2	9.6	5.3	0.0	1.9	0.5	3.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.0	45.7	0.0	30.2	61.1	61.0	55.4	0.0	16.5	24.7	23.7	13.8
LnGrp LOS	E	D		C	E	E	E	A	B	C	C	B
Approach Vol, veh/h		546	A		727			337			291	
Approach Delay, s/veh		51.2			57.4			38.2			20.7	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	45.0	26.7	19.2	18.4	49.7	18.7	27.2
Change Period (Y+Rc), s	3.7	* 3.7	4.5	* 4.5	3.5	3.7	3.5	4.5
Max Green Setting (Gmax), s	10.5	* 41	11.5	* 36	29.5	22.3	23.5	23.5
Max Q Clear Time (g_c+I1), s	2.0	6.7	6.0	13.2	14.3	9.5	14.8	22.4
Green Ext Time (p_c), s	0.0	0.6	0.1	1.5	0.6	0.8	0.4	0.4

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	195	664	85	642	188	149	26	175	90
v/c Ratio	0.75	0.71	0.34	0.85	0.73	0.20	0.06	0.31	0.11
Control Delay	63.8	31.3	47.2	54.4	62.1	23.8	32.4	33.9	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	31.3	47.2	54.4	62.1	23.8	32.4	33.9	3.7
Queue Length 50th (ft)	138	171	53	227	135	70	14	101	0
Queue Length 95th (ft)	200	207	109	#350	208	134	39	178	27
Internal Link Dist (ft)		1552		700		344		580	
Turn Bay Length (ft)	75		80				80		130
Base Capacity (vph)	338	1134	258	758	426	760	425	572	884
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.59	0.33	0.85	0.44	0.20	0.06	0.31	0.10

Intersection Summary

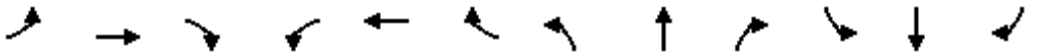
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	3	5	59	2	32	4	315	82	28	152	4
Future Vol, veh/h	2	3	5	59	2	32	4	315	82	28	152	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	3	5	62	2	34	4	332	86	29	160	4
Number of Lanes	0	1	0	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	9.1	9.5	13.6	10.5
HCM LOS	A	A	B	B

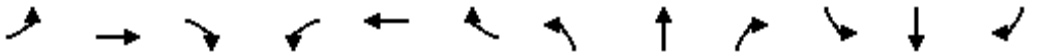
Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	20%	98%	0%	15%
Vol Thru, %	0%	79%	30%	2%	3%	83%
Vol Right, %	0%	21%	50%	0%	97%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	397	10	60	33	184
LT Vol	4	0	2	59	0	28
Through Vol	0	315	3	1	1	152
RT Vol	0	82	5	0	32	4
Lane Flow Rate	4	418	11	63	35	194
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.006	0.563	0.017	0.114	0.051	0.287
Departure Headway (Hd)	5.502	4.854	5.927	6.501	5.317	5.326
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	650	744	598	549	669	672
Service Time	3.24	2.592	4.017	4.272	3.087	3.374
HCM Lane V/C Ratio	0.006	0.562	0.018	0.115	0.052	0.289
HCM Control Delay	8.3	13.7	9.1	10.1	8.4	10.5
HCM Lane LOS	A	B	A	B	A	B
HCM 95th-tile Q	0	3.6	0.1	0.4	0.2	1.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	49	129	0	23	18	31	764	59	9	446	24
Future Volume (veh/h)	108	49	129	0	23	18	31	764	59	9	446	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	0	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	137	62	163	0	31	24	36	899	69	9	465	25
Peak Hour Factor	0.79	0.79	0.79	0.75	0.75	0.75	0.85	0.85	0.85	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	334	79	207	0	169	131	105	2027	153	70	1178	1012
Arrive On Green	0.18	0.18	0.19	0.00	0.18	0.19	0.67	0.67	0.68	0.90	0.90	0.90
Sat Flow, veh/h	1349	432	1136	0	926	717	56	3008	227	8	1748	1502
Grp Volume(v), veh/h	137	0	225	0	0	55	525	0	479	474	0	25
Grp Sat Flow(s),veh/h/ln	1349	0	1568	0	0	1643	1719	0	1572	1756	0	1502
Q Serve(g_s), s	5.5	0.0	7.8	0.0	0.0	1.6	0.0	0.0	8.1	0.0	0.0	0.1
Cycle Q Clear(g_c), s	7.1	0.0	7.8	0.0	0.0	1.6	7.8	0.0	8.1	2.5	0.0	0.1
Prop In Lane	1.00		0.72	0.00		0.44	0.07		0.14	0.02		1.00
Lane Grp Cap(c), veh/h	334	0	286	0	0	300	1226	0	1059	1248	0	1012
V/C Ratio(X)	0.41	0.00	0.79	0.00	0.00	0.18	0.43	0.00	0.45	0.38	0.00	0.02
Avail Cap(c_a), veh/h	680	0	688	0	0	721	1226	0	1059	1248	0	1012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.68	0.00	0.68
Uniform Delay (d), s/veh	22.7	0.0	22.1	0.0	0.0	19.6	4.3	0.0	4.3	1.1	0.0	1.0
Incr Delay (d2), s/veh	0.6	0.0	3.6	0.0	0.0	0.2	1.1	0.0	1.4	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	3.0	0.0	0.0	0.6	2.1	0.0	2.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	0.0	25.7	0.0	0.0	19.8	5.4	0.0	5.7	1.7	0.0	1.0
LnGrp LOS	C	A	C	A	A	B	A	A	A	A	A	A
Approach Vol, veh/h		362			55			1004			499	
Approach Delay, s/veh		24.8			19.8			5.6			1.7	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.6		14.4		42.6		14.4				
Change Period (Y+Rc), s		3.7		3.5		3.7		3.5				
Max Green Setting (Gmax), s		24.3		25.5		24.3		25.5				
Max Q Clear Time (g_c+I1), s		4.5		3.6		10.1		9.8				
Green Ext Time (p_c), s		1.6		0.1		3.2		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	602	169	64	488	37	421	391	79	117	246	228
Future Volume (veh/h)	130	602	169	64	488	37	421	391	79	117	246	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	149	692	0	67	508	39	434	403	81	129	270	251
Peak Hour Factor	0.87	0.87	0.87	0.96	0.96	0.96	0.97	0.97	0.97	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	783		97	626	48	429	513	103	450	540	609
Arrive On Green	0.20	0.47	0.00	0.11	0.40	0.39	0.42	0.60	0.61	0.20	0.30	0.30
Sat Flow, veh/h	1688	3455	0	1688	3169	243	1688	1432	288	1688	1772	1502
Grp Volume(v), veh/h	149	692	0	67	269	278	434	0	484	129	270	251
Grp Sat Flow(s),veh/h/ln	1688	1683	0	1688	1683	1728	1688	0	1720	1688	1772	1502
Q Serve(g_s), s	9.8	21.3	0.0	4.4	16.2	16.3	29.0	0.0	24.3	0.0	14.2	13.6
Cycle Q Clear(g_c), s	9.8	21.3	0.0	4.4	16.2	16.3	29.0	0.0	24.3	0.0	14.2	13.6
Prop In Lane	1.00		0.00	1.00		0.14	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	171	783		97	333	342	429	0	616	450	540	609
V/C Ratio(X)	0.87	0.88		0.69	0.81	0.81	1.01	0.00	0.79	0.29	0.50	0.41
Avail Cap(c_a), veh/h	340	1063		163	354	364	429	0	616	450	540	609
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.85	0.00	0.85	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.8	29.1	0.0	49.5	32.6	32.7	32.8	0.0	19.6	35.3	32.5	24.2
Incr Delay (d2), s/veh	12.9	7.0	0.0	8.5	12.5	12.5	42.8	0.0	8.4	0.3	3.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	7.3	0.0	2.0	6.4	6.7	15.1	0.0	8.6	2.9	6.6	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	36.1	0.0	58.0	45.0	45.2	75.6	0.0	28.0	35.6	35.8	26.2
LnGrp LOS	E	D		E	D	D	F	A	C	D	D	C
Approach Vol, veh/h		841	A		614			918			650	
Approach Delay, s/veh		39.9			46.5			50.5			32.1	
Approach LOS		D			D			D			C	

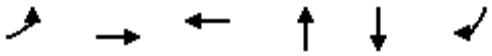
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.9	45.0	11.5	30.5	33.0	38.9	15.5	26.5
Change Period (Y+Rc), s	3.7	* 3.7	4.5	* 4.5	3.5	3.7	3.5	4.5
Max Green Setting (Gmax), s	10.5	* 41	11.5	* 36	29.5	22.3	23.5	23.5
Max Q Clear Time (g_c+I1), s	2.0	26.3	6.4	23.3	31.0	16.2	11.8	18.3
Green Ext Time (p_c), s	0.2	1.9	0.1	2.7	0.0	1.2	0.4	1.1

Intersection Summary	
HCM 6th Ctrl Delay	42.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	137	225	55	1004	474	25
v/c Ratio	0.53	0.50	0.15	0.50	0.43	0.03
Control Delay	27.3	10.4	12.4	6.6	4.7	2.1
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	27.4	10.4	12.4	6.7	4.7	2.1
Queue Length 50th (ft)	43	18	9	63	89	2
Queue Length 95th (ft)	68	46	23	130	m140	m4
Internal Link Dist (ft)		484	617	690	344	
Turn Bay Length (ft)	60					20
Base Capacity (vph)	557	780	741	1993	1103	981
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	6	0	9	164	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.29	0.08	0.55	0.43	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	149	886	67	547	434	484	129	270	251
v/c Ratio	0.68	0.87	0.49	0.70	0.93	0.69	0.51	0.72	0.40
Control Delay	62.0	46.8	62.0	44.4	67.9	41.4	50.6	55.2	18.1
Queue Delay	0.0	0.0	0.0	0.0	6.7	5.3	0.0	0.0	0.0
Total Delay	62.0	46.8	62.0	44.4	74.6	46.7	50.6	55.2	18.1
Queue Length 50th (ft)	106	307	48	183	327	342	83	191	85
Queue Length 95th (ft)	160	372	94	256	#543	475	144	#323	144
Internal Link Dist (ft)		1552		700		344		580	
Turn Bay Length (ft)	75		80				80		130
Base Capacity (vph)	338	1046	161	817	466	699	255	374	725
Starvation Cap Reductn	0	0	0	0	21	155	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.85	0.42	0.67	0.98	0.89	0.51	0.72	0.35

Intersection Summary

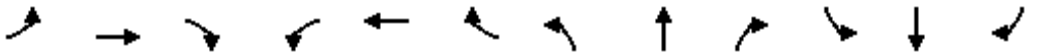
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	3	91	5	70	6	120	28	25	70	0
Future Vol, veh/h	2	2	3	91	5	70	6	120	28	25	70	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	2	3	96	5	74	6	126	29	26	74	0
Number of Lanes	0	1	0	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	8.3	8.7	9	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	29%	97%	0%	26%
Vol Thru, %	0%	81%	29%	3%	3%	74%
Vol Right, %	0%	19%	43%	0%	97%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	148	7	94	73	95
LT Vol	6	0	2	91	0	25
Through Vol	0	120	2	3	3	70
RT Vol	0	28	3	0	70	0
Lane Flow Rate	6	156	7	98	76	100
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.01	0.213	0.011	0.155	0.095	0.145
Departure Headway (Hd)	5.569	4.933	5.194	5.659	4.491	5.213
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	644	728	688	634	798	688
Service Time	3.295	2.659	3.235	3.389	2.221	3.241
HCM Lane V/C Ratio	0.009	0.214	0.01	0.155	0.095	0.145
HCM Control Delay	8.4	9	8.3	9.4	7.7	9.1
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0.8	0	0.5	0.3	0.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	305	299	86	580	36	193	116	28	24	159	82
Future Volume (veh/h)	170	305	299	86	580	36	193	116	28	24	159	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	195	351	0	90	604	38	199	120	29	26	175	90
Peak Hour Factor	0.87	0.87	0.87	0.96	0.96	0.96	0.97	0.97	0.97	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	449		322	655	41	224	493	119	561	695	783
Arrive On Green	0.22	0.22	0.00	0.38	0.41	0.40	0.22	0.60	0.61	0.17	0.39	0.39
Sat Flow, veh/h	1688	3455	0	1688	3217	202	1688	1379	333	1688	1772	1502
Grp Volume(v), veh/h	195	351	0	90	316	326	199	0	149	26	175	90
Grp Sat Flow(s),veh/h/ln	1688	1683	0	1688	1683	1736	1688	0	1712	1688	1772	1502
Q Serve(g_s), s	12.8	11.2	0.0	4.2	20.3	20.4	13.0	0.0	4.7	0.0	7.6	3.5
Cycle Q Clear(g_c), s	12.8	11.2	0.0	4.2	20.3	20.4	13.0	0.0	4.7	0.0	7.6	3.5
Prop In Lane	1.00		0.00	1.00		0.12	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	218	449		322	343	354	224	0	613	561	695	783
V/C Ratio(X)	0.89	0.78		0.28	0.92	0.92	0.89	0.00	0.24	0.05	0.25	0.11
Avail Cap(c_a), veh/h	340	1063		322	354	365	429	0	613	561	695	783
HCM Platoon Ratio	1.67	1.67	1.67	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	42.7	0.0	29.9	32.9	33.0	43.5	0.0	15.6	25.2	23.4	13.9
Incr Delay (d2), s/veh	17.1	3.0	0.0	0.5	28.2	28.0	11.2	0.0	0.9	0.0	0.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	4.4	0.0	1.7	9.2	9.6	5.6	0.0	1.9	0.5	3.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.0	45.7	0.0	30.3	61.1	61.0	54.8	0.0	16.5	25.2	24.2	14.2
LnGrp LOS	E	D		C	E	E	D	A	B	C	C	B
Approach Vol, veh/h		546	A		732			348			291	
Approach Delay, s/veh		51.2			57.3			38.4			21.2	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	45.0	26.7	19.2	19.1	48.9	18.7	27.2
Change Period (Y+Rc), s	3.7	* 3.7	4.5	* 4.5	3.5	3.7	3.5	4.5
Max Green Setting (Gmax), s	10.5	* 41	11.5	* 36	29.5	22.3	23.5	23.5
Max Q Clear Time (g_c+I1), s	2.0	6.7	6.2	13.2	15.0	9.6	14.8	22.4
Green Ext Time (p_c), s	0.0	0.6	0.1	1.5	0.6	0.8	0.4	0.4

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	195	690	88	642	199	149	26	175	90
v/c Ratio	0.75	0.72	0.37	0.85	0.74	0.20	0.06	0.31	0.11
Control Delay	63.8	30.5	48.4	54.4	61.6	22.0	33.0	34.6	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	30.5	48.4	54.4	61.6	22.0	33.0	34.6	3.8
Queue Length 50th (ft)	138	175	56	227	141	70	14	102	0
Queue Length 95th (ft)	200	211	114	#350	207	121	39	180	28
Internal Link Dist (ft)		1552		700		344		580	
Turn Bay Length (ft)	75		80				80		130
Base Capacity (vph)	338	1143	249	758	426	760	417	561	875
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.60	0.35	0.85	0.47	0.20	0.06	0.31	0.10

Intersection Summary

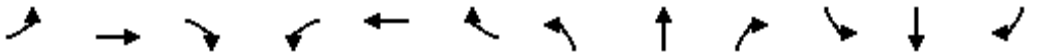
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	3	5	59	2	43	4	315	82	59	152	4
Future Vol, veh/h	2	3	5	59	2	43	4	315	82	59	152	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	3	5	62	2	45	4	332	86	62	160	4
Number of Lanes	0	1	0	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	9.3	9.5	14	11.2
HCM LOS	A	A	B	B

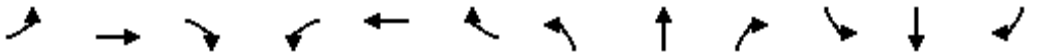
Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	20%	98%	0%	27%
Vol Thru, %	0%	79%	30%	2%	2%	71%
Vol Right, %	0%	21%	50%	0%	98%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	397	10	60	44	215
LT Vol	4	0	2	59	0	59
Through Vol	0	315	3	1	1	152
RT Vol	0	82	5	0	43	4
Lane Flow Rate	4	418	11	63	46	226
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.007	0.571	0.018	0.116	0.069	0.339
Departure Headway (Hd)	5.569	4.92	6.148	6.587	5.396	5.39
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	641	731	586	541	658	663
Service Time	3.317	2.669	4.148	4.372	3.18	3.45
HCM Lane V/C Ratio	0.006	0.572	0.019	0.116	0.07	0.341
HCM Control Delay	8.4	14.1	9.3	10.2	8.6	11.2
HCM Lane LOS	A	B	A	B	A	B
HCM 95th-tile Q	0	3.7	0.1	0.4	0.2	1.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	49	129	14	9	18	31	764	59	9	446	35
Future Volume (veh/h)	139	49	129	14	9	18	31	764	59	9	446	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	176	62	163	19	12	24	36	899	69	9	465	36
Peak Hour Factor	0.79	0.79	0.79	0.75	0.75	0.75	0.85	0.85	0.85	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	88	232	119	78	87	104	1961	148	69	1140	979
Arrive On Green	0.20	0.20	0.21	0.20	0.20	0.21	0.65	0.65	0.66	0.87	0.87	0.87
Sat Flow, veh/h	1372	432	1136	169	383	427	56	3007	227	8	1748	1502
Grp Volume(v), veh/h	176	0	225	55	0	0	525	0	479	474	0	36
Grp Sat Flow(s),veh/h/ln	1372	0	1568	979	0	0	1717	0	1572	1756	0	1502
Q Serve(g_s), s	1.2	0.0	7.6	0.2	0.0	0.0	0.0	0.0	8.7	0.0	0.0	0.2
Cycle Q Clear(g_c), s	8.9	0.0	7.6	7.7	0.0	0.0	8.4	0.0	8.7	3.1	0.0	0.2
Prop In Lane	1.00		0.72	0.35		0.44	0.07		0.14	0.02		1.00
Lane Grp Cap(c), veh/h	359	0	320	285	0	0	1187	0	1025	1209	0	979
V/C Ratio(X)	0.49	0.00	0.70	0.19	0.00	0.00	0.44	0.00	0.47	0.39	0.00	0.04
Avail Cap(c_a), veh/h	681	0	688	614	0	0	1187	0	1025	1209	0	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.62	0.00	0.62
Uniform Delay (d), s/veh	21.8	0.0	20.9	18.7	0.0	0.0	4.9	0.0	4.9	1.5	0.0	1.3
Incr Delay (d2), s/veh	0.8	0.0	2.1	0.2	0.0	0.0	1.2	0.0	1.5	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	2.8	0.6	0.0	0.0	2.4	0.0	2.2	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	0.0	23.0	19.0	0.0	0.0	6.1	0.0	6.5	2.1	0.0	1.4
LnGrp LOS	C	A	C	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		401			55			1004			510	
Approach Delay, s/veh		22.8			19.0			6.3			2.1	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		41.4		15.6		41.4		15.6				
Change Period (Y+Rc), s		3.7		3.5		3.7		3.5				
Max Green Setting (Gmax), s		24.3		25.5		24.3		25.5				
Max Q Clear Time (g_c+I1), s		5.1		9.7		10.7		10.9				
Green Ext Time (p_c), s		1.6		0.1		3.1		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			8.9									
HCM 6th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	602	180	64	488	37	448	391	83	117	246	228
Future Volume (veh/h)	130	602	180	64	488	37	448	391	83	117	246	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	149	692	0	67	508	39	462	403	86	129	270	251
Peak Hour Factor	0.87	0.87	0.87	0.96	0.96	0.96	0.97	0.97	0.97	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	783		97	626	48	429	507	108	450	540	609
Arrive On Green	0.20	0.47	0.00	0.11	0.40	0.39	0.42	0.60	0.61	0.20	0.30	0.30
Sat Flow, veh/h	1688	3455	0	1688	3169	243	1688	1415	302	1688	1772	1502
Grp Volume(v), veh/h	149	692	0	67	269	278	462	0	489	129	270	251
Grp Sat Flow(s),veh/h/ln	1688	1683	0	1688	1683	1728	1688	0	1718	1688	1772	1502
Q Serve(g_s), s	9.8	21.3	0.0	4.4	16.2	16.3	29.0	0.0	24.9	0.0	14.2	13.6
Cycle Q Clear(g_c), s	9.8	21.3	0.0	4.4	16.2	16.3	29.0	0.0	24.9	0.0	14.2	13.6
Prop In Lane	1.00		0.00	1.00		0.14	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	171	783		97	333	342	429	0	615	450	540	609
V/C Ratio(X)	0.87	0.88		0.69	0.81	0.81	1.08	0.00	0.80	0.29	0.50	0.41
Avail Cap(c_a), veh/h	340	1063		163	354	364	429	0	615	450	540	609
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.83	0.00	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.8	29.1	0.0	49.5	32.6	32.7	32.8	0.0	19.7	35.3	32.5	24.2
Incr Delay (d2), s/veh	12.9	7.0	0.0	8.5	12.5	12.5	61.6	0.0	8.6	0.3	3.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	7.3	0.0	2.0	6.4	6.7	17.3	0.0	8.8	2.9	6.6	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	36.1	0.0	58.0	45.0	45.2	94.4	0.0	28.3	35.6	35.8	26.2
LnGrp LOS	E	D		E	D	D	F	A	C	D	D	C
Approach Vol, veh/h		841	A		614			951			650	
Approach Delay, s/veh		39.9			46.5			60.4			32.1	
Approach LOS		D			D			E			C	

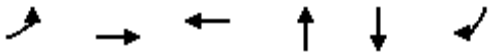
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.9	45.0	11.5	30.5	33.0	38.9	15.5	26.5
Change Period (Y+Rc), s	3.7	* 3.7	4.5	* 4.5	3.5	3.7	3.5	4.5
Max Green Setting (Gmax), s	10.5	* 41	11.5	* 36	29.5	22.3	23.5	23.5
Max Q Clear Time (g_c+I1), s	2.0	26.9	6.4	23.3	31.0	16.2	11.8	18.3
Green Ext Time (p_c), s	0.2	1.9	0.1	2.7	0.0	1.2	0.4	1.1

Intersection Summary		
HCM 6th Ctrl Delay		46.0
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	167	228	36	1004	474	36
v/c Ratio	0.58	0.48	0.10	0.52	0.44	0.04
Control Delay	27.5	9.3	9.5	7.4	5.4	2.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	27.5	9.3	9.5	7.5	5.4	2.5
Queue Length 50th (ft)	52	18	3	75	103	3
Queue Length 95th (ft)	76	44	15	144	m164	m6
Internal Link Dist (ft)		484	617	690	344	
Turn Bay Length (ft)	60					20
Base Capacity (vph)	567	782	717	1939	1073	956
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	6	0	10	185	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.29	0.05	0.57	0.44	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	149	899	67	547	458	487	129	270	251
v/c Ratio	0.68	0.88	0.49	0.69	0.94	0.70	0.53	0.77	0.41
Control Delay	62.0	47.6	62.0	44.3	68.8	40.9	52.1	59.5	18.4
Queue Delay	0.0	0.0	0.0	0.0	6.6	5.9	0.0	0.0	0.0
Total Delay	62.0	47.6	62.0	44.3	75.4	46.9	52.1	59.5	18.4
Queue Length 50th (ft)	106	313	48	183	~355	348	83	191	85
Queue Length 95th (ft)	160	378	94	256	#585	#431	144	#323	144
Internal Link Dist (ft)		1552		700		344		580	
Turn Bay Length (ft)	75		80				80		130
Base Capacity (vph)	338	1046	161	820	487	697	243	350	707
Starvation Cap Reductn	0	0	0	0	20	156	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.86	0.42	0.67	0.98	0.90	0.53	0.77	0.36

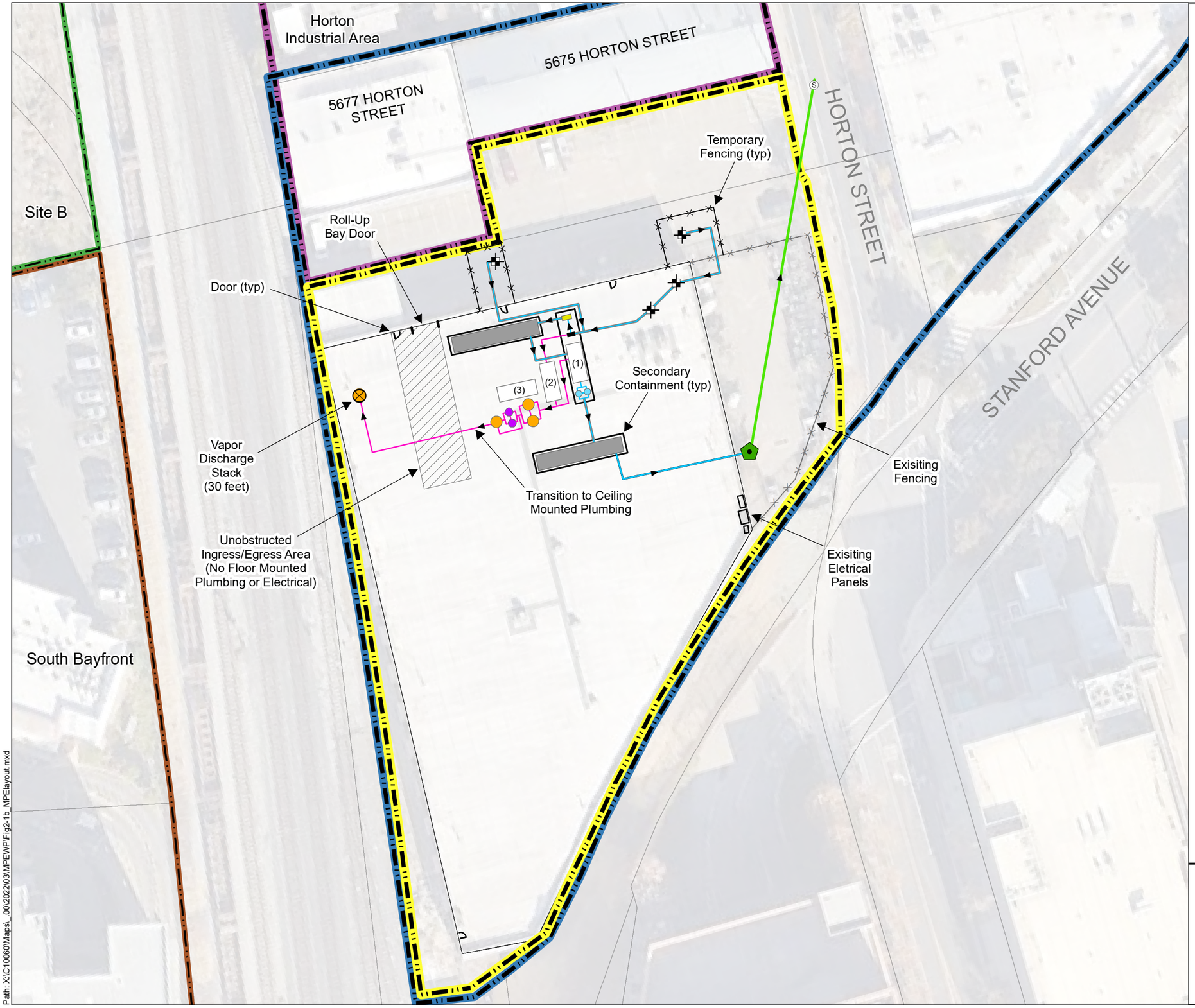
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX F
SELECTED FIGURES FROM THE MPE PILOT TEST WORK PLAN AND PHOTOGRAPHS OF EXCAVATION, THERMAL MPE TREATMENT SYSTEMS, AND IN-SITU GROUNDWATER POLISHING AT SIMILAR SITES

DRAFT



Legend

- Groundwater Extraction Well (Note 2)
- FMW Site Property Boundary
- Extracted Aboveground Vapor & Groundwater Piping (Groundwater Piping Double Contained)
- Treated Aboveground Groundwater Piping
- Sanitary Sewer Line
- Treated Groundwater Discharge Location to Sanitary Sewer Cleanout Pending Sewer Discharge Permit for the City of Emeryville
- Treated Vapor Discharge Location
- Sanitary Sewer Manhole
- Vapor Treatment System Piping
- Water Treatment System Piping
- Fencing

MPE Equipment

- (1) Air Stripper and Blower in Cargo Container on Chassis
- (2) SVE Blower in Cargo Container on Chassis
- (3) Electrical Control Unit in Cargo Container on Chassis
- Water Tank
- SPL Separation Tank
- Manifold
- VGAC Vessel
- $KMnO_4$ Vessel
- LGAC Vessel

Abbreviations

FMW	=	Former Marchant/Whitney
$KMnO_4$	=	potasium permanganate
LGAC	=	liquid granular activated carbon
SPL	=	separate phase liquid
SVE	=	soil vapor extraction
typ	=	typical
VGAC	=	vapor granular activated carbon

Notes

1. All locations are approximate.
2. See Figures 2-2a through 2-2c for proposed wells for the MPE Pilot tests.

N

0 50 100

(Scale in Feet)

Proposed MPE Pilot Test Equipment Layout

Former Marchant/Whitney Site
Emeryville, CA
March 2022
EKI C10060.00

Figure 2-1b

eki environment & water

Path: X:\C10060\Maps_00\2022\03\MPEWP\Fig2-1b_MPElayout.mxd

DRAFT

SYSTEM SHUTDOWN ALARMS

ALARM DI PAH
ALARM DI LAH
ALARM DI LAH
ALARM DI LAH
ALARM DI LAH
ALARM DI LAH

FI PI
SVE MANIFOLD
PI FI
V-INF-SVE S
SVE BLOWER
V-INF-AS S
AIR STRIPPER BLOWER
V-INF S
AIR DRYER
FI
LS
RETURN WATER
FI
V-MID-AD S
V-MID-GAC-1 S
V-MID-GAC-2 S
V-MID-KMNO-1 S
V-MID-KMNO-2 S
LEAD
LAG
GAC VESSEL (3,000 lbs)
GAC VESSEL (3,000 lbs)
KMNO4 VESSEL (3,000 lbs)
KMNO4 VESSEL (3,000 lbs)
GAC VESSEL (3,000 lbs)
V-EFF S
TREATED AIR DISCHARGE UNDER BAAQMD PERMIT

AIR COMPRESSOR
GW-INF-MANI S
GW MANIFOLD
PS
GW-INF-KO S
KNOCKOUT TANK
FQI
PUMP
LS
GW FEED TANK (21,000 gal)
LS
PUMP
GW-INF S
GW-MID-BAG S
BAG FILTERS (50 MICRON)
PUMP
PUMP
LS
pH ADJUSTMENT
AIR STRIPPER
PUMP
FI
GW-MID-AS S
GW-MID-GAC-1 S
GW-MID-GAC-2 S
LEAD
LAG
GAC VESSEL (1,000 lbs)
GAC VESSEL (1,000 lbs)
LS
TREATED WATER TANK (21,000 gal)
GW-EFF S
PUMP
FQI
TREATED WATER DISCHARGE UNDER EBMUD SPECIAL DISCHARGE PERMIT

MPE WELLS
SPL CONTAINERIZED FOR DISPOSAL AT AN OFF-SITE PERMITTED FACILITY

Legend:

- DI — Digital Input to PLC
- LS — Level Switch
- PS — Pressure Switch
- PI — Pressure Indicator
- FI — Flow Indicator
- Secondary Containment
- ALARM LAH — Level Alarm High
- ALARM PAH — Pressure Alarm High
- GW-INF S — Sample Port with Sample Name
- FQI — Flow Totalizing Indicator
- Air Stream and Treatment Process
- Water Stream and Treatment Process
- SPL Removal
- Return Water
- pH Adjustment Line
- Signal

Notes:
1. Pressure indicators installed on vessels are not shown.
2. Subject to change based on approval of the following: City building and sewer discharge permits, BAAQMD permit, EBMUD special discharge permit, and permit by rule tier permit from the ACDEH.
3. Vessel capacity is based on the media-specific density.

Abbreviations:

ACDEH	= Alameda County Department of Environmental Health
BAAQMD	= Bay Area Air Quality Management District
EBMUD	= East Bay Municipal Utility District
GAC	= Granular Activated Carbon
GW	= Groundwater
KMnO4	= Potassium Permanganate
lbs	= pounds
MPE	= Multi-Phase Extraction
PLC	= Programmable Logic Controller
SPL	= Separate Phase Liquid
SVE	= Soil Vapor Extraction

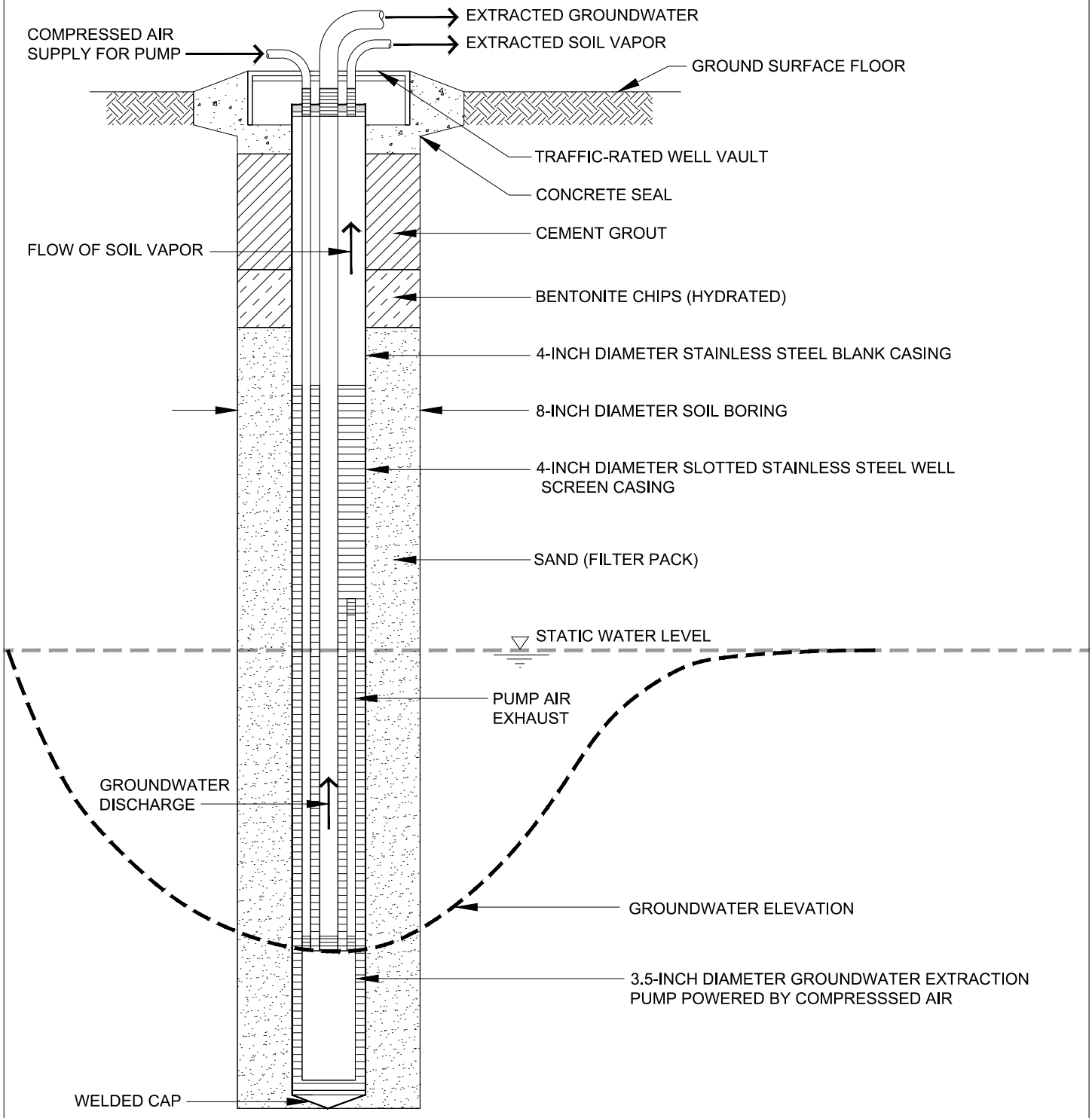
eki environment & water

Multi-Phase Extraction System
Simplified Process and Instrumentation Diagram

Former Marchant / Whitney Site
Emeryville, CA
March 2022
EKI C10060.00

Figure 2-3

DRAFT



Typical Multi-Phase Extraction Well with Pneumatic Pump

NOTES:

1. CONSTRUCTION DETAILS ARE CONCEPTUAL; ACTUAL DETAILS MAY DIFFER.
2. NOT TO SCALE.

Former Marchant/Whitney Site
Emeryville, CA
March 2022
EKI C10060.00
Figure 3-1

eki environment & water

20220304.142125 G:\C10060.00\2022-03\Figure 3-1.dwg Layout1

DRAFT

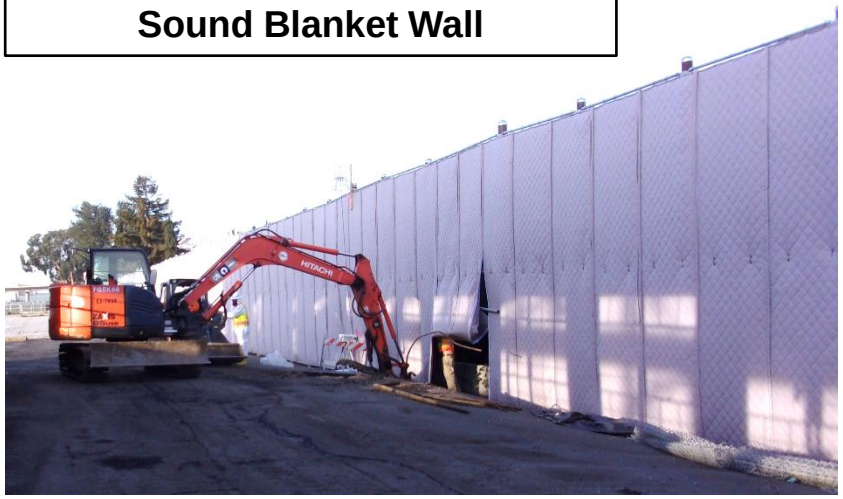
Example Excavation Photos

Excavation Tent

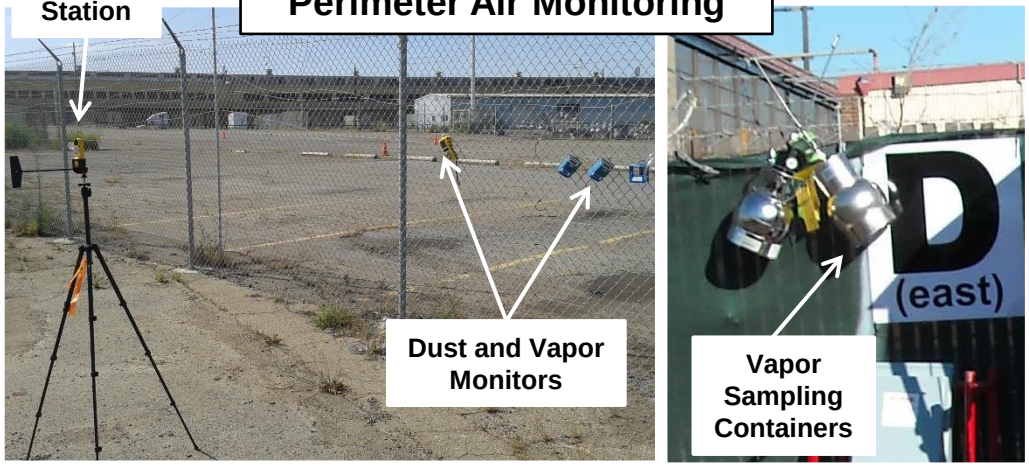
Treated Air Discharge Points

VENT HATCH IN OPERATIONAL POSITION

Noise Mitigation – Temporary Sound Blanket Wall



Perimeter Air Monitoring



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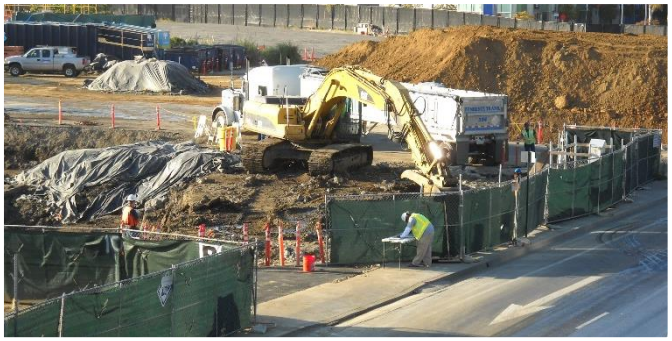
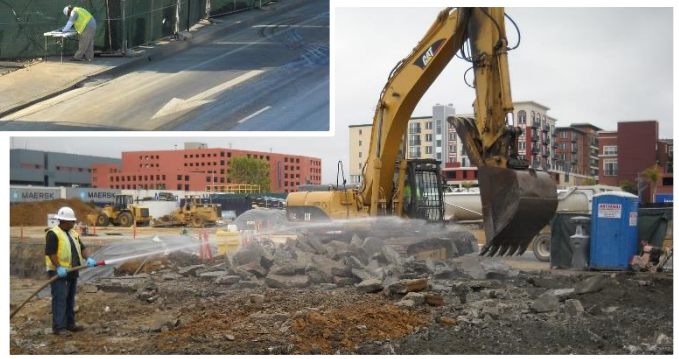
Example Excavation Photos

Concrete Hammering

Excavation





Vapor & Odor Suppression

Backfilling

DRAFT

Thermal Treatment (Electrical Resistant Heating)

Aboveground

Belowground

Thermal Treatment

- Safely Performed in Variety of Settings While Buildings in Use

Commercial

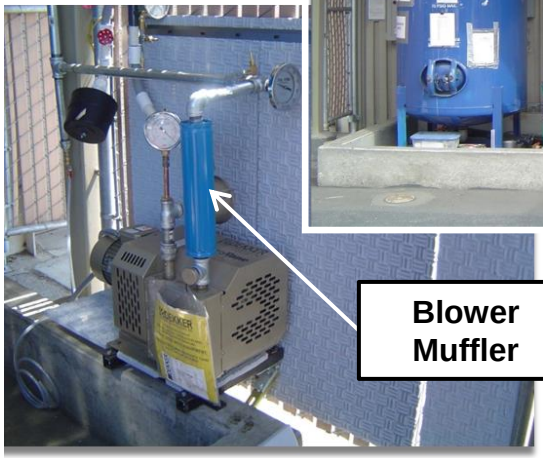
Industrial

Residential

DRAFT

Example Multi-Phase Extraction System and In-Situ Groundwater Polishing Photos

Multi-Phase Extraction System Equipment



Blower
Muffler

In-Situ Groundwater Polishing

APPENDIX G
ARCHAEOLOGICAL MONITORING PLAN

ARCHAEOLOGICAL MONITORING PLAN

5679 HORTON STREET (FORMER MARCHANT/WHITNEY SITE) PROJECT

EMERYVILLE, ALAMEDA COUNTY, CALIFORNIA

LSA

June 2022

ARCHAEOLOGICAL MONITORING PLAN

5679 HORTON STREET (FORMER MARCHANT/WHITNEY SITE) PROJECT

EMERYVILLE, ALAMEDA COUNTY, CALIFORNIA

Submitted to:

EKI Environment & Water, Inc.
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LSA Project No. EKI2201

TABLE OF CONTENTS

APPENDIX

LIST OF ABBREVIATIONS AND ACRONYMS

AMP	Archaeological Monitoring Plan
ARMR	*Archaeological Resource Management Reports*
CalEPA	California Environmental Protection Agency
California Register	California Register of Historical Resources
CEQA	California Environmental Quality Act
City	City of Emeryville
cm	centimeter(s)
DPR	California Department of Parks and Recreation
DTSC	California Department of Toxic Substances Control
FMW Site	Former Marchant/Whitney Site
HAZWOPER	Hazardous Waste Operations and Emergency Response
MLD	Most Likely Descendant
NWIC	Northwest Information Center
OHP	California Office of Historic Preservation
Order	Imminent and Substantial Endangerment Determination and Order and Remedial Action Order
OSHA	Occupational Safety and Health Administration
Project	5679 Horton Street (Former Marchant/Whitney [FMW] Site) Project
RAP	Remedial Action Plan
RPA	Registered Professional Archaeologist
STP	shovel test pit
Successor Agency	City of Emeryville as Successor Agency to the Emeryville Redevelopment Agency

USGS	United States Geological Survey

1.0 INTRODUCTION

This Archaeological Monitoring Plan (AMP) has been prepared for the 5679 Horton Street (Former Marchant/Whitney [FMW] Site) Project (project). The project site is located in Emeryville, Alameda County, California, at 5679 Horton Street. It is depicted in unsectioned lands of the *Potrero de los Cerritos Land Grant* in Township 1 South, Range 4 West, Mount Diablo Baseline and Meridian, as depicted on the United States Geological Survey (USGS) *Oakland West, California* 7.5-minute topographic quadrangle (USGS 1993; Appendix A, Figure 1). The project site currently consists of a large, single story, warehouse building, approximately 47,000 square feet in size, with a paved parking lot and driveway to the north and a paved outdoor fenced storage area to the east (Appendix A, Figure 2).

1.1 PROJECT DESCRIPTION

The project consists of the approval and implementation of the Updated Feasibility Study/Draft Remedial Action Plan (RAP) for the FMW Site at 5679 Horton Street. The RAP was prepared in accordance with Tasks 5.7 and 5.11 of the Imminent and Substantial Endangerment Determination and Order and Remedial Action Order (Order) issued by the California Environmental Protection Agency (CalEPA), Department of Toxic Substances Control (DTSC) to the City of Emeryville as the Successor Agency to the Emeryville Redevelopment Agency (Successor Agency) on August 13, 2020, related to the FMW Site.

1.2 CULTURAL SENSITIVITY

A California Environmental Quality Act (CEQA)-level cultural resources study conducted for the project resulted in the conclusion that there is a high probability of significant intact subsurface precontact archaeological deposits and human remains in the project site that may qualify as historical or unique archaeological resources as defined in the *State of California's CEQA Guidelines* Title 14 California Code of Regulations Section 15064.5(a), and California Public Resources Code Section 21083.2(g) (LSA 2022). The cultural resources study recommended archaeological monitoring when any soils within the project site are disturbed and removed during demolition of concrete slabs and foundations of the existing building, as well as during well drilling and soil removal, as well as the preparation of this AMP. The study included Native American coordination, which resulted in representatives from Nototomne Cultural Preservation expressing concerns in regard to a high potential for encountering buried tribal cultural resources (including human remains) within the project site during project-related, ground-disturbing activities and requesting tribal monitoring of all ground-disturbing activities.

2.0 MONITORING PLAN

2.1 MONITORING PERSONNEL

This project will have both archaeological and Native American monitors on site to observe all project-related ground-disturbing activities. All monitors will be familiar with this AMP, safety requirements, and rules for the project, and will have expertise in California prehistory as well as Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour certification. The monitors will complete a daily form that identifies the date and location of the monitoring as well as any cultural resources that are identified. Photographs will be taken of monitoring activities and as part of resource documentation, as necessary.

2.1.1 Archaeological Monitors

A qualified archaeological monitor for the project will be either a Registered Professional Archaeologist (RPA) or an archaeologist under the direct supervision of the RPA.

2.1.2 Native American Monitors

A Native American tribal representative from Nototomne Cultural Preservation will be present to observe all project-related ground-disturbing activities.

2.2 MONITORING PROCEDURES

2.2.1 Pre-Construction Training

Prior to the commencement of ground-disturbing activities on the first day of monitoring, the archaeological monitor and Native American monitor will provide cultural resources awareness training to construction personnel. This training should be in the form of a presentation and handout describing the types of possible archaeological deposits that may be encountered during construction activities and the procedures that should be used in the event of inadvertent discoveries of cultural resources during construction. All construction personnel involved in ground-disturbing work should receive this training before commencing work on site.

2.2.2 Monitoring Timing and Methods

Demolition of above grade portions of the existing warehouse building do not need to be monitored. Monitoring will occur after demolition of the above grade portion of the existing building when soils beyond the building's footprint will be disturbed and when the concrete slabs and foundation are removed. Monitoring will be conducted at a safe distance from hazardous materials and will continue during ground-disturbing activities that occur after the slabs have been removed and during well-drilling and soil removal activities. If archaeological resources (such as unusual amounts of bone or shell, artifacts, human remains, or architectural remains) are identified during monitoring, the monitoring archaeologist will be empowered to temporarily halt construction within 25 feet of the find and flag the resource to protect it from project activities that may disrupt it. The monitoring archaeologist shall immediately notify the Successor Agency and DTSC of the encountered archaeological deposit.

The monitoring archaeologist will make an initial assessment of the *potential* for the find to qualify as a historical or unique archaeological resource under CEQA (Public Resources Code Sections 21084.1 and 21083.2(g)), and as warranted, make recommendations for additional analysis necessary (including archaeological excavation) to formally evaluate the eligibility of the find for the California Register of Historical Resources (California Register). Eligibility of the resource for the California Register would depend on a combination of factors, including the horizontal and vertical extent of the archaeological deposits, the type and relative abundance of archaeological material found, and the extent of prior disturbance of the deposits, if any.

If it is determined that the identified archaeological find is not significant, the deposit may be removed and construction work in the area may resume. If it is determined that the archaeological deposit is significant, work affecting the deposit will be suspended and temporarily avoided. Within ten calendar days, the archaeologist will submit to the Successor Agency and DTSC a preliminary assessment report describing the potential significance of the resource and recommendations regarding appropriate and feasible avoidance measures and/or other appropriate mitigation measures to preserve the status of the resource as a unique archaeological resource.

2.2.3 Human Remains

If human remains are found, the requirements of State Health and Safety Code Section 7050.5 must be met. State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Alameda County Coroner has made a determination of origin and disposition pursuant to State Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be Native American, the County Coroner would notify the Native American Heritage Commission within 24 hours, which would determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site. The MLD recommendations may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials, preservation of Native American human remains and associated items in place, relinquishment of Native American human remains and associated items to the descendants for treatment, reinternment of human remains and associated items at an appropriate location, or any other culturally appropriate treatment.

2.2.4 Hazardous Materials

The need to remove hazardous materials present at the project site could interfere with the ability to remove potential cultural resources encountered during excavation, as well as the ability to conduct archaeological site testing as described in Section 3. A portion of project excavation will be conducted inside a tent with ventilation and treatment of air prior to discharge. Workers inside the tent will begin in modified Level B personal protective equipment (PPE) and may downgrade PPE based on work zone monitoring. Modified Level B PPE will consist of supplied air and full-face respiratory protective gear. Accordingly, archaeological and tribal monitoring will not be conducted within tented areas. If the Successor Agency, in consultation with the archaeologist, determines that a unique archaeological resource is present and that the resource could be adversely affected by the

proposed remediation project, the Successor Agency shall consult with DTSC to determine how to avoid any significant adverse effects on the unique archaeological resource given the presence of hazardous materials. Standard monitoring will be conducted at a safe distance from hazardous materials.

2.3 REPORT OF FINDINGS

Upon completion of the construction monitoring (and any necessary laboratory operations, as discussed below), the archaeologist will prepare a monitoring report documenting the monitoring results and the status of cultural resource(s), if applicable. If no archaeological cultural resources are found during construction, the monitoring report would be a brief letter report. If monitoring is positive and results in the identification of cultural resources, the report would be consistent with the Guidelines of the State Office of Historic Preservation's *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (OHP 1990) and would be submitted to the Successor Agency. A positive findings report would remain confidential due to the inclusion of cultural resources locational information and will include the following information:

1. The location and dates of monitoring.
2. The methodology and procedures for field and laboratory work.
3. The location, description, and eligibility determination of the cultural resource(s) found during monitoring.
4. All forms (archaeological monitoring, photographic record, and artifact record) completed as a part of monitoring will be provided as appendices to the report. State of California Department of Parks and Recreation (DPR) Series 523 forms will be prepared in accordance with the guidelines established by the California Office of Historic Preservation (OHP) for cultural resources found during the project.
5. The status of curation of the material found.

Copies of any report prepared for this project will be submitted to the Northwest Information Center (NWIC).

3.0 ARCHAEOLOGICAL SITE TESTING

If potentially significant, intact archaeological deposits or human remains are identified during construction monitoring, construction would be temporarily halted, and the area of the find would be flagged for avoidance at a distance determined by the monitoring archaeologist to avoid impacts to the resource by construction activities (at least 25 feet in the case of human remains). The project archaeologist will contact the Successor Agency and DTSC and determine whether archaeological site testing is necessary. Testing would be conducted in the event that the find is an archaeological deposit (not an isolated artifact) that has potential to qualify as a historical or unique archaeological resource under CEQA (Public Resources Code Sections 21084.1 and 21083.2(g)). DTSC, in consultation with the Successor Agency, shall determine if such archaeological site testing is safe (i.e., there are no hazardous or toxic substances present at levels considered harmful) given due consideration of the presence of hazardous materials and site conditions in the area of the find. If determined necessary by the project archaeologist and safe by DTSC, archaeological site testing in the area of the find would be conducted to evaluate site importance/significance and, therefore, site eligibility for listing in the California Register.

The archaeological site testing procedures will be conducted in a manner consistent with standard accepted professional archaeological methodology, and as may be modified to address the presence of hazardous materials. Testing procedures can include surficial artifact collection, and excavation using shovel test pits (STPs), 1x1 meter excavation units, mechanized trenching, or a combination of these methods. Testing will only occur if there are no hazardous or toxic substances present at levels considered harmful. If testing cannot be conducted due to safety issues, the archaeological resource will be documented using photography and global positioning system (GPS) only.

3.1 Fieldwork

Test excavation may consist of the excavation of STPs and 1x1 meter units in the area of the find. These excavations are used to determine the character, integrity, and vertical (depth) and horizontal (size) extent of the site. Placement of STPs will be on a north-south axis or along the axis of greatest site length, whichever is more appropriate for a particular site. STPs will be excavated to determine the extent of cultural deposits and to generally identify site areas where cultural material exists in quantity. STPs will measure approximately 40 centimeters (cm) in diameter and will be hand-excavated in 20 cm levels to a culturally sterile level or to a depth no greater than 100 cm. Sediment from each STP level will be passed through 1/8-inch mesh screen and all cultural material will be saved in labeled plastic bags. Notes recorded at the time of excavation will identify sediment color, depth, and cultural material from each STP. Bagged material will be transported to a laboratory for cleaning, sorting, identification, analysis, and curation.

Based on the results of the STPs, units will be excavated to more accurately identify material density and depth. Units will be placed in areas of the site shown to contain the greatest potential for finding the deepest midden deposits, as well as the greatest quantity and diversity of cultural material. Excavation units will be hand-excavated in 10 cm levels following the natural surface contour. Excavated sediment will be screened through 1/8-inch mesh and cultural material from each level will be saved in labeled plastic bags. Bagged material will be transported to a laboratory

for cleaning, sorting, identification, analysis, and curation. Unit excavation will cease when sterile sediment or bedrock is encountered, but, because project work for remediation excavation will be primarily limited to the unsaturated zone (i.e. five feet below ground surface), in no event shall any archaeological excavation exceed a depth of five feet below ground surface into the saturated zone where groundwater with chemicals of concern could be encountered.

During the course of unit excavation, if a distinct sediment type is identified, excavation may change to follow this new contour in 10 cm levels until it disappears or until another change occurs, whereupon excavation following the natural surface contour will resume. Once excavation ends, an STP may be placed in the unit floor to confirm that additional cultural material does not exist below what is thought to be the bottom of the unit.

During unit excavation, a line-level placed at the ground surface will be used to record the basal depth of in situ artifacts and features. Fire-affected rock will be counted and weighed. Notes, measurements, and drawings will be recorded on unit level forms during excavation. Items and samples given exact provenance will be sketched on the floor plan of the appropriate level form. After excavation, one wall of each unit will be profiled and photographed. The wall selected will be the wall displaying the most representative stratigraphic development, including residual features. Distinctive subsurface horizons will be described by sediment type and color using the Munsell Color Chart.

3.2 LABORATORY ANALYSIS

All artifacts and ecofacts collected during monitoring will be taken to a laboratory where they will be cleaned and prepared for analysis. Cataloging and processing will take place based on methods for each material class; material will be cataloged as individual artifacts or as groups of ecofacts, as appropriate. Items may be analyzed by specialists, as warranted.

Ecofactual material such as (nonhuman) bone, charcoal, and/or shell may be submitted for radiocarbon testing that can reveal the age of the material analyzed. Similarly, artifacts made of obsidian (volcanic glass) may be submitted for sourcing and hydration analyses that will reveal the geochemical source and time of manufacture. Other specialized studies may be conducted but would be dependent upon the presence of material. Items such as beads and fish ear bones (otoliths) can provide information on chronological site occupation and seasonality, although these items must be found before specialized studies can occur. Items will be prepared for curation in accordance with standardized curation guidelines and will be temporarily curated at the laboratory until they are deposited with an approved curation facility.

3.3 SITES NOT ELIGIBLE FOR THE CALIFORNIA REGISTER

Should site testing indicate the site is not eligible for listing in the California Register, then the resource shall be fully recorded on DPR Series 523 Forms and construction activities allowed to resume.

3.4 SITES ELIGIBLE FOR THE CALIFORNIA REGISTER

Series 523 DPR forms will be completed to record site location and to provide material descriptions. Completed forms will be appended to the monitoring report. Should site testing indicate that the site may be eligible for listing on the California Register, then adverse effects to the resource shall be avoided, if feasible, or effects mitigated. Avoidance of impacts to resources is always the preferred alternative, although where avoidance is not feasible, mitigation of impacts to a resource can consist of, but is not limited to, excavation in accordance with a data recovery plan.

3.4.1 Data Recovery Excavation and Reporting

Mitigation of impacts to an important (significant) resource can include excavation of the deposit in accordance with a data recovery plan (California Code of Regulations Title 14(3) Section 15126.4(b)(3)(C)), which states:

> When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information form and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. Archaeological sites known to contain human remains shall be treated in accordance with the provisions of Section 7050.5 Health and Safety Code.

As such, if a resource determined to be important and eligible for listing in the California Register is found during the project, then an attempt to avoid the resource through project redesign or other means would be made. If it is determined that the only feasible alternative is excavation and removal of the resource, a data recovery plan shall be written describing the scientific methodology to be employed during excavation. The data recovery plan will employ a research design to guide the excavation. Any studies developed as part of this effort will be reported upon in a manner that adheres to current professional standards, and reports will be filed with the NWIC.

If additional material is exposed at the same site after impacts have been mitigated, additional mitigation (excavation) will not be required unless the new material represents a new type of data (artifact classes and/or features) not recovered during previous mitigation.

4.0 REFERENCES

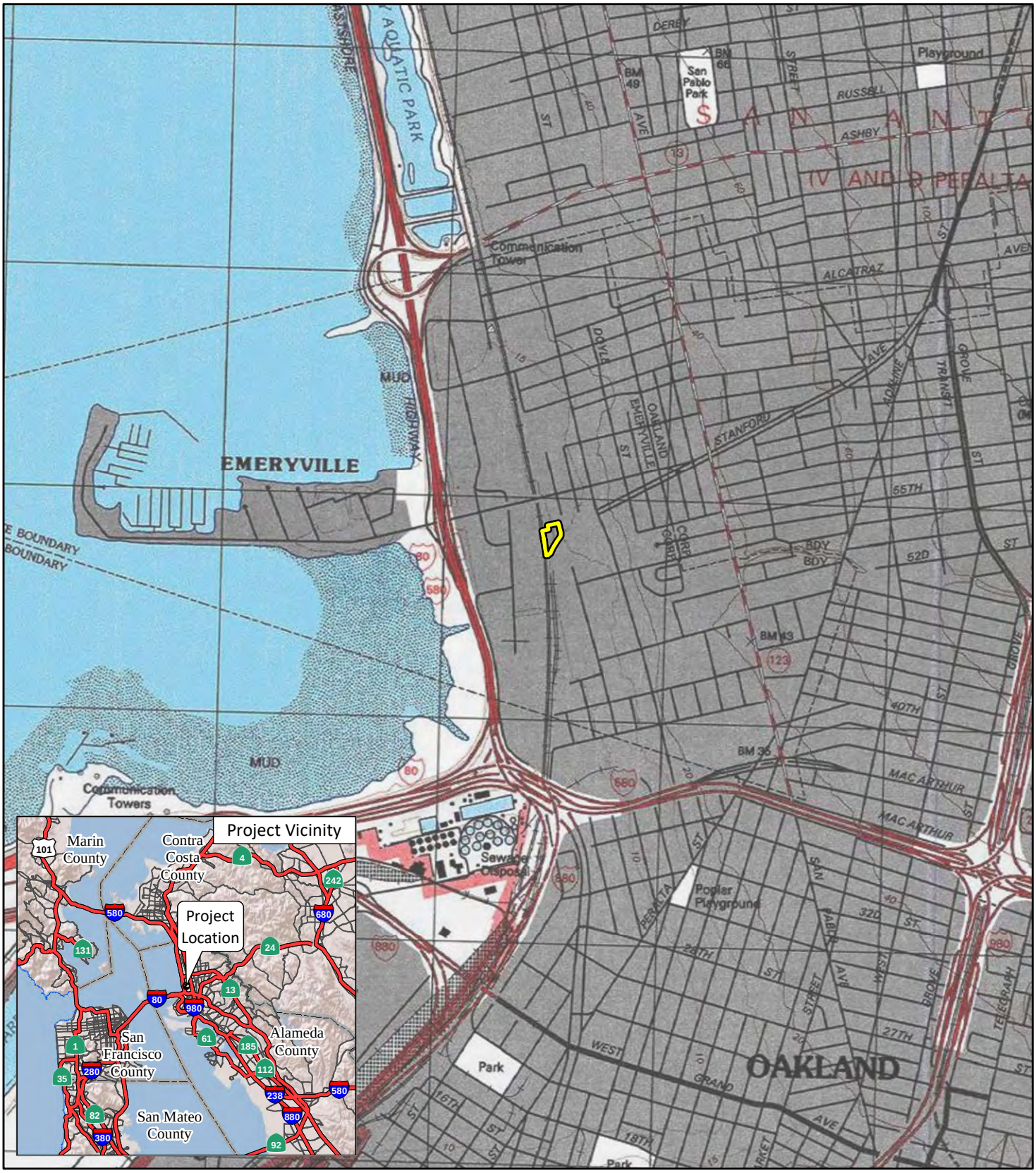
California Office of Historic Preservation (OHP)
1990 *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format.* February.

LSA Associates, Inc. (LSA)
2022 *Cultural Resources Study for the 5679 Horton Street Project in Emeryville, Alameda County, California* (LSA Project No. EKI2201). On file, EKI Environment and Water, Inc.

United States Geological Survey (USGS)
1993 *Oakland West, California* 7.5-minute topographic quadrangle map. USGS, Denver, Colorado.

APPENDIX A

PROJECT FIGURES



LSA

LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

5679 Horton Street (Former Marchant/Whitney Site) Project

Project Location

SOURCE: USGS 7.5' Quad - *Oakland West* (1993), CA

I:\EKI2201\GIS\MXD\ProjectLocation.mxd (5/31/2022)

LSA

LEGEND

Project Location

FIGURE 2

N

0 50 100

FEET

SOURCE: Google Imagery (2022)

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5679 Horton Street (Former Marchant/Whitney Site) Project

Project Site