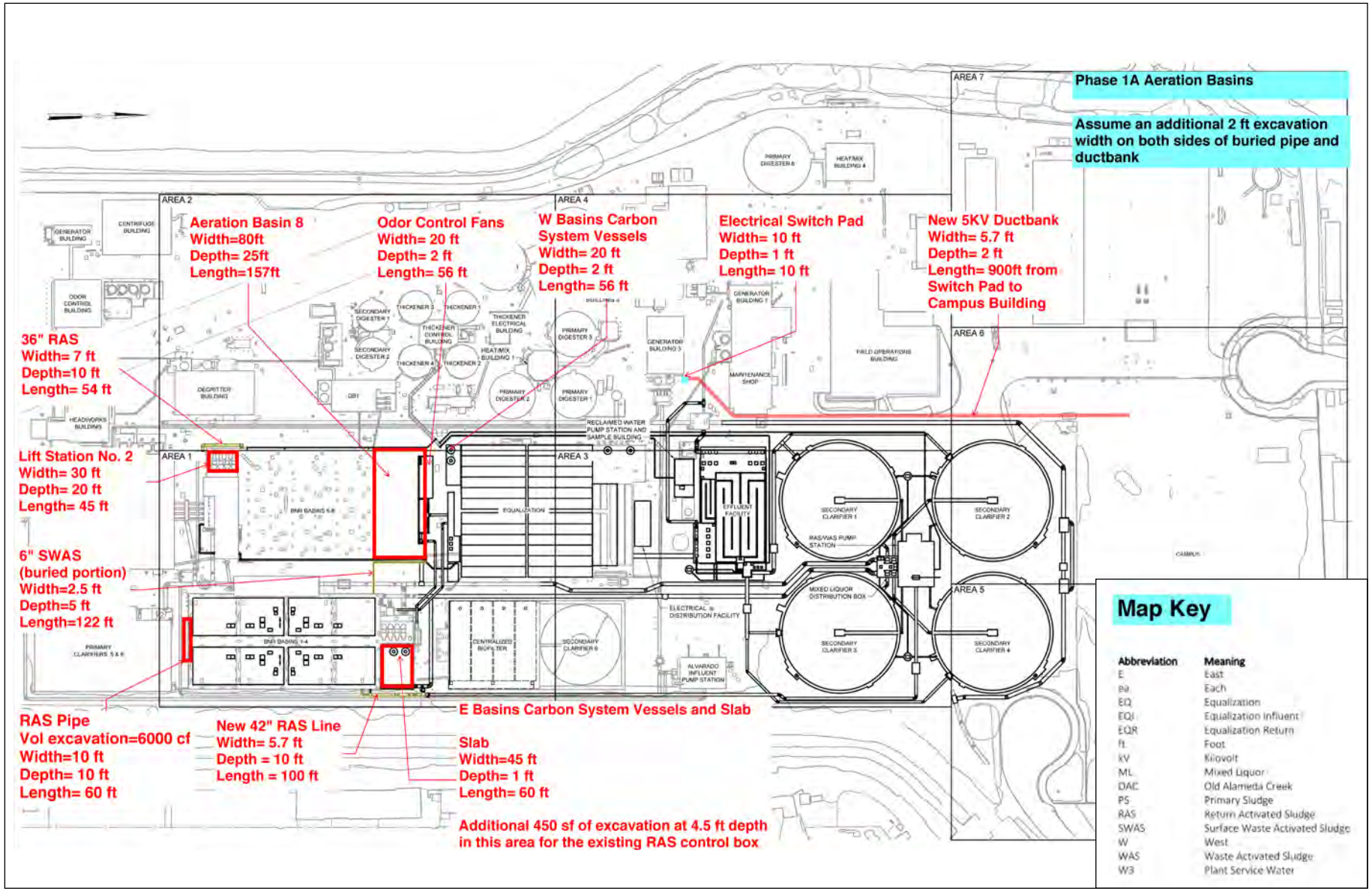
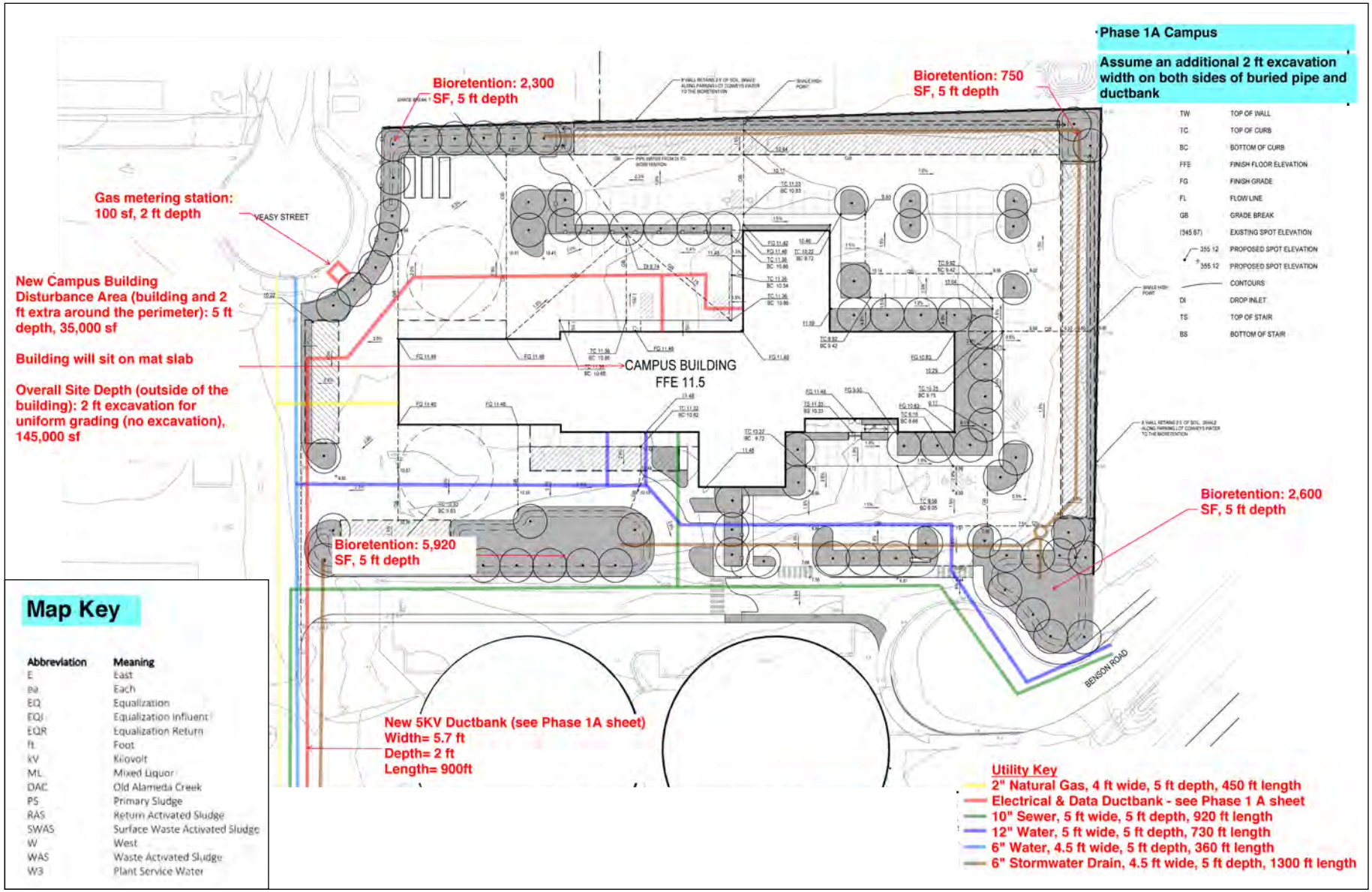
Appendix A

Construction Details of Phase 1 Projects



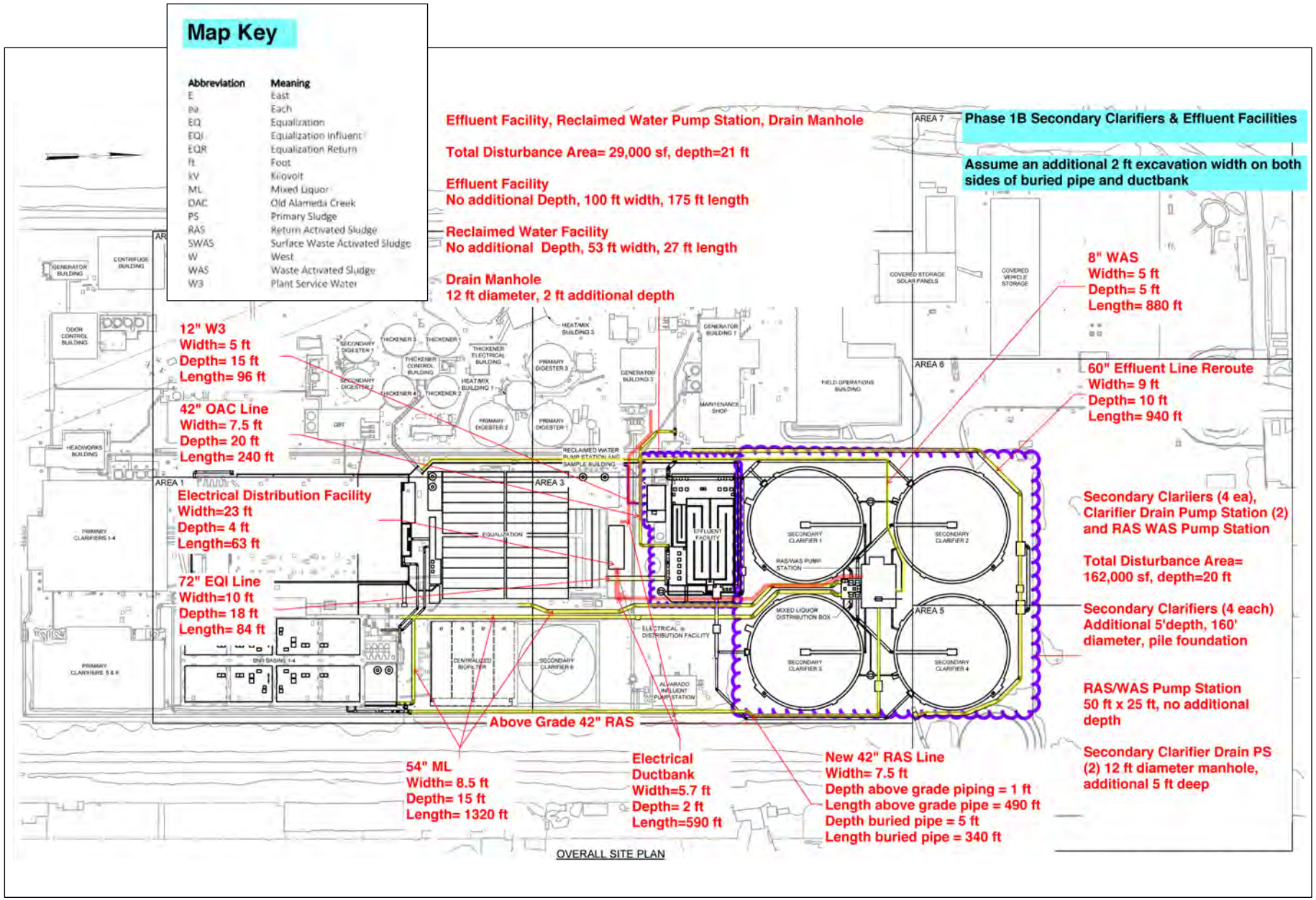
Source: Hazen and Sawyer, November 2020

Figure A1. Construction Details of Phase 1A – Aeration Basin Modifications



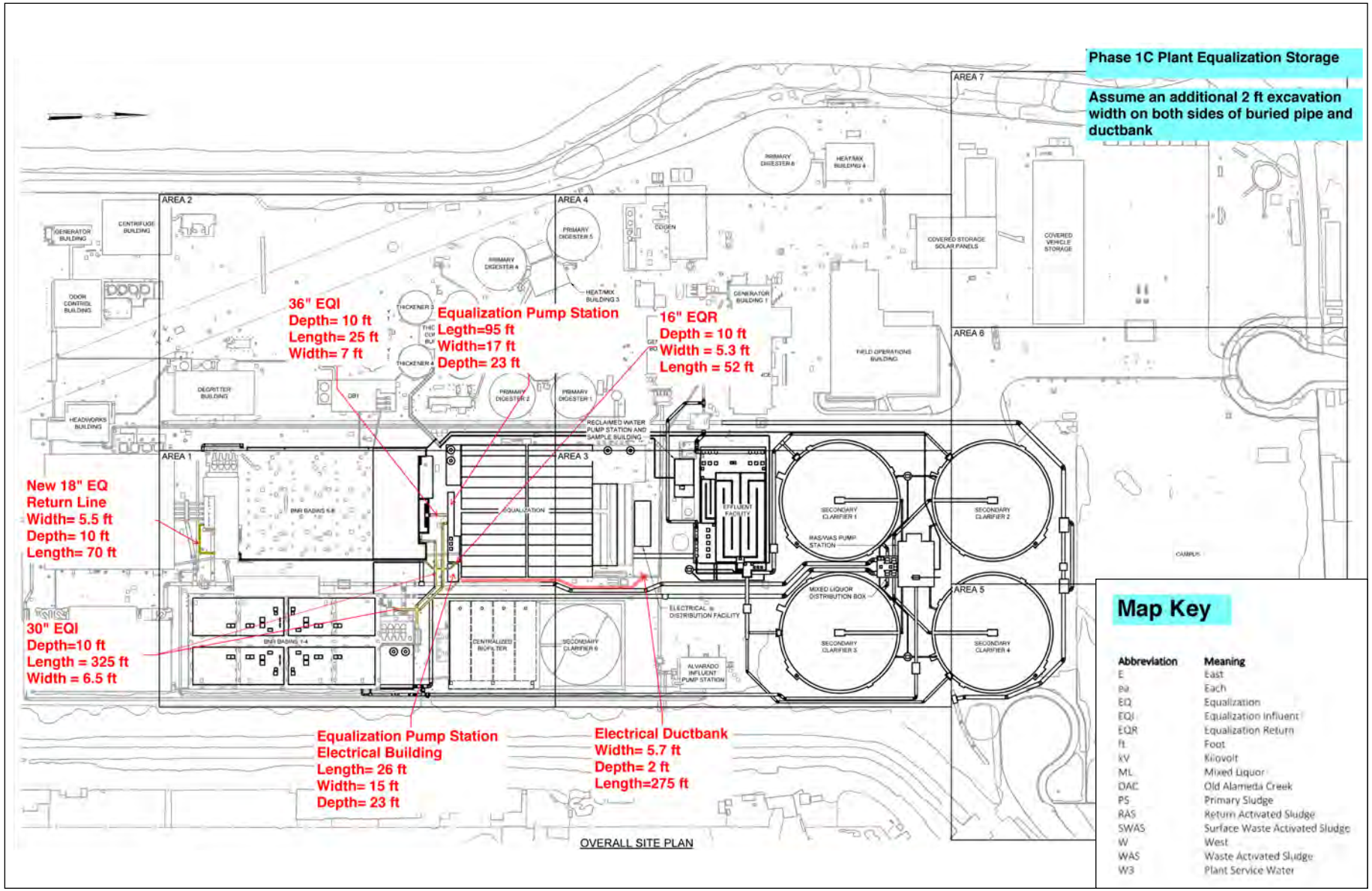
Source: Hazen and Sawyer, November 2020

Figure A2. Construction Details of Phase 1A – New Campus Building



Source: Hazen and Sawyer, November 2020

Figure A3. Construction Details of Phase 1B – Secondary Clarifiers and Effluent Facilities



OVERALL SITE PLAN

Source: Hazen and Sawyer, November 2020

Figure A4. Construction Details of Phase 1C – Plant Equalization Storage

Appendix B

Alvarado WWTP CIP Project Schedules
FY2021 through FY2030

CIP Plant Project Schedule FY 21 through FY 30 (Based on the FY 21-40 CIP Budget)

Project Name	Construction
Field Ops Building Seismic Upgrade	FY 27-FY 28
FMC Storage	FY 24
Plant Paving	FY 23, FY 28, FY 30
Solar Panels/Inverters Replacement at Carport	FY 22
Wet Weather Flow Management (Calcium Thiosulfate Chemical Feed System Project)	FY 21
Aeration Blower 11 Project	FY 21-FY 22
Aeration Internal Lift Pumps	FY 23
Alvarado Influent PS Improvements Project	FY 20-FY 22
Alvarado Influent Valve Box Gates	FY22 -FY23
Cathodic Protection Improvements - Plant	FY 21, FY 24, FY 26, FY 28, FY 30
Centrifuge Building Improvements	FY 21-FY 22
Centrifuge Replacement	FY 24-FY 25
Centrifuge System Equipment Replacement	FY 24-FY 25
Cogen Engine No. 1 60K Block Replacement	FY 25
Cogen Engine No. 2 60K Block Replacement	FY 22, FY 30
Cogen Retrofit	FY 28
Control Box No. 1 Improvements	FY 28-FY 29
Degritter Building Roof (Seismic) Replacement	FY 30
Degritting at Headworks and Improvements	FY 28-FY 29
Digester No. 1 Insp & Rehab	FY 22
Digester No. 2 Insp & Rehab	FY 21
Digeser No. 4 Insp & Rehab	FY 26
Digester No. 5 Insp & Rehab	FY 28
Digester No. 6 Insp & Rehab	FY 24
Digester No. 7	FY 20-FY 22
Emergency Outfall Outlet Improvements	FY 21-FY 22
Flares Replacement	FY 23
Headworks Gates	FY 31
Headworks Screens Replacement	FY 21
MCC Replacement	FY 22-FY 23, FY 28-FY 29
Odor Scrubber System Improvements	
Plant 1 and 2 Water System Improvements	FY 23
Plant 12kV Switchgear	FY 25-FY 27
Plant Asset Condition Assessmnet R&R	FY 23, FY 24, FY 25, FY 26, FY 28, FY 30
Plant Asset Condition Assessment Projects	FY 22, FY 25, FY 29, FY29, FY 30
Plant Fiber Optic Network	FY 21-FY 30
Plant Grating Replacement	FY 22
Plant Mechanical and Electrical Projects	FY 22-FY 30
PLC Replacement	FY 22, FY 25, FY 29
Primary Clarifier (1-4) Seismic Upgrade	FY 24-FY 25
Primary Clarifier Rehab (5-6)	FY 26-FY28
Secondary Digester No. 1 Insp & Rehab	FY 24
Secondary Digester No. 2 Insp & Rehab	FY 27
Seismic Retrofit of Conc. Structures	FY 22, FY 24, FY 26, FY 28, FY 30
Site Drainage Improvements	FY 25-FY 26
Standby Power Generation System Upgrade	FY 22-FY 24
Switchboard 3 Replacement	FY 23-FY 24
Switchboard 4 Replacement	FY 24-FY 25
Thickeners 1 and 2 Rehabilitation	FY 25-FY 26
WAS Thickeners	FY 22-FY 24
Waste Recycling and Alternative Energy	FY 31
Primary Clarifiers 1-4 Odor Scrubber	FY25-FY28
Headworks Odor Scrubbers	FY27-FY29
Alvarado Influent PS Odor Control	FY25-FY31

Appendix C

Mitigation Monitoring and Reporting Plan

The following mitigation measures shall be implemented to reduce the impact to less than significant levels:

MITIGATION MONITORING AND REPORTING PLAN

Potential Impact	Mitigation Measure	Responsibility	Action	Completion Date
C. Air Quality				
C3. Impact to Receptors from Substantial Pollutant Concentrations	**AQ-1.** Onsite construction equipment for all Phase 1 projects shall meet a minimum of Tier 4 interim emission standards provided that up to 20% of the onsite construction equipment (based on horsepower-hour) can be Tier 2 or Tier 3, when equipment meeting Tier 4 interim standards is not available.	USD Contractor	Include in contract documents	Prior to start of construction
D. Biological Resources				
D1, D4. Impact to Special-Status Species	**BIO-1. Development of a Noise and Vibration Mitigation** Plan. During the final design of Phase 1B project, a Noise and Vibration Mitigation Plan (Plan) will be developed by a qualified biologist. The Plan will include a detailed timing assessment of pile driving and a study of sound attenuation from pile driving at the construction site. If necessary, the following will be completed: an analysis of alternative drilling technologies; an assessment of different shielding methods such as temporary sound walls, shrouds, and jackets for effectiveness in abating noise and vibration levels in areas west of the WWTP. The Plan will require implementation measures as necessary to reduce noise and vibrational impacts to rail nesting. The Plan shall also require if needed.	USD	Prepare plan	During final design of Phase 1B project
	BIO-2. Adequate measures shall be taken to avoid inadvertent take of bird nests protected under the Federal Migratory Bird Treaty Act and State Fish and Game Code when in active use. This shall be accomplished by taking the following steps. • If initial construction for a Phase 1 Program project is proposed during the nesting season (February 1 to August 31), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 7 days prior to the onset of construction in order to determine whether any active nests are present in the APE and surrounding area within 100 feet of proposed construction for passerines and 250 feet of proposed construction for raptors. The survey shall be reconducted any time construction has been delayed or curtailed for more than 7 days during the nesting season. • If no active nests are identified during the construction survey period, or construction is initiated during the non-breeding season (September 1 to January 31), construction may proceed with no restrictions.	Contractor* USD *Hire qualified biologist	Conduct pre-construction survey	Prior to start of construction of a Phase 1 project

MITIGATION MONITORING AND REPORTING PLAN

Potential Impact	Mitigation Measure	Responsibility	Action	Completion Date
	• If bird nests are found, an adequate setback shall be established around the nest location and construction 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 construction is to be initiated elsewhere in the APE. • A report of findings shall be prepared by the qualified biologist and submitted to the District for review and approval prior to initiation of construction during the nesting season (February 1 to August 31). 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 construction can proceed. No report of findings is required if construction is initiated during the non-nesting season (September 1 to January 31) and continues uninterrupted according to the above criteria.			
E. Cultural Resources **E1-E3. Impact to historic, and archaeological resources and disturbed or redeposited human remains**	**ARCH 1:** Brief cultural resources training shall be given to construction crews for all Phase 1 projects regarding identification of potential archaeological resources. The training will include the distribution of an archaeological "Alert Sheet" to ground-disturbing construction crews. The Alert Sheet describes potential archaeological resources and outlines procedures for contacting an archaeologist in the event that archaeological resources are uncovered. Compliance with the California Health and Safety Code and California Public Resources Code as detailed in the mitigation measures below must be maintained. This Alert Sheet shall be distributed in a brief, on-site education session conducted by an archaeologist.	USD Contractor* *Hire qualified archaeologist	Conduct training, prepare "Alert Sheet"	Prior to construction
	ARCH 2: A program of intermittent ("spot-check") archaeological monitoring by an on-site archaeologist shall be conducted as follows: • Phase 1A–AB Improvements Project: Intermittent (spot checking) monitoring recommended for excavation below about 15 feet (the approximately depth of modern disturbance). Total ground disturbance will reach up to 25 feet. • Phase 1A–Campus Building: Intermittent monitoring recommended for all mass excavation as well as foundation disturbance (if soils are observable). Total depth will be about 5 feet for mass excavation, up to 60 feet for foundation. • Phase 1B–Secondary Clarifiers and Effluent Facilities: Intermittent monitoring recommended for excavation below six (6) feet. Total ground disturbance will reach up to 25 feet for mass excavation, up to 60 feet for foundation.	USD Contractor	Conduct monitoring	During construction

MITIGATION MONITORING AND REPORTING PLAN

Potential Impact	Mitigation Measure	Responsibility	Action	Completion Date
	• Phase 1C–Plant Equalization Storage: Intermittent monitoring recommended for excavation below about 15 feet (the approximate depth of modern disturbance). Total ground disturbance will reach up to 23 feet. The specific monitoring plan for each Phase 1 Program project will be developed by a qualified archaeologist as design is finalized and prior to construction. As construction proceeds, the monitoring program for individual Phase 1 projects may be terminated by the archaeologist with approval from USD if initially observed subsurface conditions preclude the possible presence of cultural resources.			
	ARCH 3: Future geotechnical borings in previously untested areas (Phase 1-Campus Building site) shall be monitored by a qualified archaeologist. In the event that a potentially significant cultural site exists beneath the project site and can be incidentally identified in a geotechnical boring, Mitigation Measure ARCH 4 will implemented. Early detection would also greatly reduce costs, and negative findings may reduce the frequency of spot monitoring.	USD	Monitor borings	Prior to construction
	ARCH 4: If resources are identified during construction of any Phase 1 Program project – whether during archaeological monitoring or through accidental discovery by the crew – the potential significance of the resource shall be evaluated and data recovered as determined by the archaeologist. If the archaeologist identifies an intact and potentially significant archaeological resource, he or she shall develop a treatment plan in consultation with the Union Sanitary District, the State Water Resources Control Board (SWRCB), tribal representatives (in the event of a prehistoric site) and the State Historic Preservation Officer (SHPO). This plan would likely entail a program of systematic data recovery in which cultural materials are documented and removed.	USD/Contractor	Develop treatment plan	During construction
	ARCH 5: If human remains are encountered during excavation activities of any Phase 1 project, the following procedures will be implemented. a. Per the stipulations of the California Health and Safety Code Section 7050.5(b), the Alameda County Coroner's Office will be contacted immediately; this will occur whether or not a Most Likely Descendant has already been appointed. b. The Coroner's Office has two working days in which to examine the identified remains. If the Coroner determines that the remains are Native American, then – if a Most Likely Descendant has not yet been appointed – the Office will notify the Native American Heritage Commission (NAHC) within 24 hours.	USD/Contractor	Follow requirements of Health and Safety Code	During construction

MITIGATION MONITORING AND REPORTING PLAN

Potential Impact	Mitigation Measure	Responsibility	Action	Completion Date
	c. Following receipt of the Coroner's Office notice, the NAHC will contact a Most Likely Descendant. The Most Likely Descendant then has 48 hours in which they can make recommendations to the project sponsor and consulting archaeologist regarding the treatment and/or re-interment of the human remains and any associated grave goods. d. Appropriate treatment and disposition of Native American human remains and associated grave goods will be collaboratively determined in consultation between the appointed Most Likely Descendant, the consulting archaeologist, and the landowner or authorized representative. The treatment of human remains may potential include the preservation, excavation, analysis and/or reburial of those remains and any associated artifacts. e. If the remains are determined not to be Native American, the Coroner, archaeological research team, and the USD will collaboratively develop a procedure for the appropriate study, documentation, and ultimate disposition of the historic human remains.			
M. Noise				
M1, M2. Temporary or permanent increase in noise or vibration levels	**NOI-1.** Control Measure E2 provides that each of the 11 treatment blower fans are to be selected to generate a maximum sound level of 85 dB (A-weighted sound pressure) at a distance of 3 feet from the outdoor emanating point (e.g., discharge opening). Alternately, a refined analysis of the final design could be performed to address the actual configurations and/or incorporate additional noise reduction measures (e.g., noise barriers, duct silencers) to reduce noise to meet the City noise standards.	USD	Specify sound specifications for building ventilation equipment	During final design
	NOI-2. Cumulatively with other operational noise sources, the Phase 1A-Campus Building ventilation equipment is to be designed to meet the applicable noise limits. A detailed noise analysis of the final design will be performed to address the actual configurations and/or incorporate additional noise reduction measures (e.g., noise barriers, duct silencers) to reduce noise to meet the City noise standards. A qualified professional should be involved during the design phase of the project to advise the design team regarding effective noise-reduction measures, if needed.	USD	Conduct refined analysis of noise reduction measures	During final design

MITIGATION MONITORING AND REPORTING PLAN

Potential Impact	Mitigation Measure	Responsibility	Action	Completion Date
	NOI-3. Construction-related activities for all Phase 1 projects are to be conducted in accordance with the following: 1. Properly muffle and maintain all construction equipment powered by internal combustion engines. 2. Prohibit unnecessary idling of combustion engines. 3. Locate all stationary noise-generating construction equipment such as air compressors as far as practical from existing nearby residences and other noise-sensitive land uses. Such equipment shall also be acoustically shielded. 4. Select quiet construction equipment, particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order. 5. Residences adjacent to project sites shall be notified in advance in writing of the proposed construction schedule before construction activities commence. 6. The Contractor shall designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the disturbance coordinator shall be posted at the construction site.	USD Contractor	Require design to include, designate a noise disturbance coordinator	During design, prior to construction, and during construction
	NOI-4: For Phase 1A-Campus Building, a quieter deep foundation installation method such as drilled displacement columns, auger cast piles, or soil mixing (rather than impact pile driving) is to be used.	USD	Require in design	During design
	NOI-5: A detailed noise mitigation plan shall be completed for the Phase 1B-Secondary Clarifiers and Effluent Facilities Project as the design is refined. The plan will include an analysis of alternative and quieter deep foundation installation methods. If impact pile driving is required for structural reasons due to soil conditions, a more detailed analysis shall be performed to account for the anticipated type and size of the piles, quantity, locations, and potential noise reduction methods such as temporary sound barriers, shrouds, or jackets, and monitoring if needed.	USD	Develop mitigation plan	During design

MITIGATION MONITORING AND REPORTING PLAN

Potential Impact	Mitigation Measure	Responsibility	Action	Completion Date
	NOI-6. Vibration-generating equipment is to be adequately vibration isolated using spring isolation mounts and hangers per American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Guidelines to reduce groundborne vibration levels at neighboring properties.	USD	Require in design	During design
	NOI-7: Limit construction activities with the highest potential to produce significant vibration (e.g., such as vibratory roller) to less sensitive daytime hours (9 AM to 5 PM). In addition, to reduce potential vibration impact from construction-related activities, they are to be conducted in accordance with the following (and as required by the City Municipal Code): 1. Avoid the use of vibratory rollers (i.e., compactors) within 25 feet of buildings that are susceptible to damage from vibration. 2. Schedule construction activities with the highest potential to produce vibration to hours with the least potential to affect nearby institutional, educational, and office uses that the Federal Transit Administration identifies as sensitive to daytime vibration (ETA 2006). 3. Notify neighbors of scheduled construction activities that would generate vibration that might be perceptible to people. This includes vibratory rollers, vibratory drivers, and heavy equipment to be used within 100 feet of sensitive receptors..	USD/Contractor	Notify adjacent property owners, limit use of construction equipment with high vibration potential	Prior to and during construction

Appendix D

Air Quality and Greenhouse Gas Emissions Technical Report

Air Quality and Greenhouse Gas Emissions Analyses: Union Sanitary District Phase 1 Enhanced Treatment and Site Upgrade Project

Scheidegger & Associates
Walnut Creek, CA

March 2021

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Air Quality and Greenhouse Gas Emissions Analyses: Union Sanitary District Phase 1 Enhanced Treatment and Site Upgrade Project

Air Quality and Greenhouse Gas Emissions Analyses: Union Sanitary District Phase 1 Enhanced Treatment and Site Upgrade Project

Prepared for:

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Walnut Creek, CA 94596

BAAQMD Plant #1209

March 2021

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List of Acronyms and Abbreviations

AAQS	Ambient Air Quality Standards
AB	Aeration Basin
ATCM	Airborne Toxics Control Measure
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practice
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model®
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DPM	Diesel Particulate Matter
EPA	[United States] Environmental Protection Agency
ETSU	Enhanced Treatment and Site Upgrade [Project]
GHG	Greenhouse Gas
HDDV	Heavy Duty Diesel Vehicles
hp	Horsepower
IS	Initial Study
kW	Kilowatt
LTS	Less Than Significant
MND	Mitigated Negative Declaration
MT	Metric Ton
N_2O	Nitrous Oxide
NO_x	Oxides of Nitrogen
PM_{10}	Respirable Particulate Matter [Less Than 10 Microns in Size]
$PM_{2.5}$	Fine Particulate Matter [Less Than 2.5 Microns in Size]
ppmv	Parts per Million by Volume
ROG	Reactive Organic Gas
RWQCB	Regional Water Quality Control Board
SO_x	Oxides of Sulfur
TAC	Toxic Air Contaminant
USD	Union Sanitary District
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

Air Quality and Greenhouse Gas Emissions Analyses: Phase 1 Union Sanitary District Enhanced Treatment and Site Upgrade Project

1.0 INTRODUCTION

1.1 Report Summary

Yorke Engineering, LLC (Yorke) prepared this report of an Air Quality and Greenhouse Gas (GHG) emissions analysis for Scheidegger & Associates (Scheidegger). Scheidegger is preparing a California Environmental Quality Act (CEQA) Initial Study/Mitigated Negative Declaration (IS/MND) for Union Sanitary District's (USD's) Enhanced Treatment and Site Upgrade Project (ETSU project or "The Project") in Union City, CA. This Air Quality and GHG Technical Report includes criteria pollutant[1] and GHG analyses based on California Emissions Estimator Model® (CalEEMod) emissions estimates for the construction of Phase 1 of the proposed ETSU project. CalEEMod was also used to estimate ongoing operational emissions for facility changes that may result from Phase 1 of the proposed ETSU project. This report was prepared at the request of Scheidegger to fulfill the CEQA requirements for the proposed project. This report focuses on the mass emissions-related significance criteria; other criteria are discussed in the IS/MND. This report finds that Phase 1 of the proposed ETSU project is expected to have less than significant impacts due to the Project's air quality and GHG emissions.

1.2 Project Overview

The project site is located in Union City, within the Bay Area Air Quality Management District (BAAQMD). The Project is being proposed to implement various upgrades to the wastewater treatment plant (WWTP) to meet water discharge regulations and implement other improvements at the facility. Changes to water quality regulations are anticipated by USD and reflected in the ETSU project improvements. A number of improvements to the secondary system have been included in the ETSU project to more effectively treat the influent wastewater during both average and wet weather conditions.

This report serves as the air quality and GHG emissions analyses for the ETSU project. The analyses consist of the following aspects:

- Identification of the relevant CEQA thresholds of significance for air quality and GHG emissions applicable to the project;
- Identification of anticipated construction equipment and construction activities, including demolition, site preparation, grading (including excavation), construction, paving, and architectural coatings;
- Estimation of construction emissions associated with the demolition, site preparation, grading, construction, coating, and paving from the following sources:

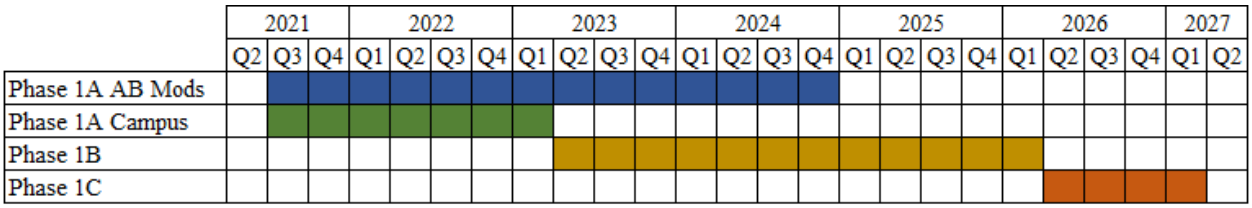
[1] Criteria pollutants are the pollutants for which Ambient Air Quality Standards (AAQS) have been established by the California Air Resources Board (CARB) and United States Environmental Protection Agency (EPA).

  - Off-road construction equipment;
  - On-road mobile equipment associated with workers, vendors, and hauling;
  - Fugitive dust associated with grading, demolition, truck loading, and on-road vehicles traveling along paved and unpaved roads; and
  - Architectural coating activities (including the painting/striping of parking lots) and paving;
- Estimation of operational emissions from the following sources:
  - Increased on-road mobile vehicle traffic (which may occur regardless of the project); and
  - An emergency generator;
- Identification of best management practices (BMPs) that will be implemented as part of the ETSU project to reduce pollutant emissions; and
- An analysis that demonstrates that the project's emissions will not cause significant air quality or GHG emissions impacts, i.e., will not exceed the defined CEQA mass emissions significance thresholds.

1.3 Project Schedule

The full ETSU project is expected to take place in three independent phases. Phase 1 will take place over the next 5 years and is currently being designed, permitted, and reviewed under CEQA. Phase 1 is not dependent on Phase 2 or Phase 3, and Phases 2 and 3 are not yet underway in any capacity. Phase 1 is further divided into subphases: Phase 1A Campus Building, Phase 1A aeration basin (AB) modifications, Phase 1B effluent facilities and secondary clarifiers, and Phase 1C primary flow equalization. Phase 3 may or may not end up being required, depending on future requirements from the Regional Water Quality Control Board (RWQCB). The preliminary schedule for construction of Phase 1 components is shown in Figure 1-1.

Figure 1-1: Preliminary ETSU Phase 1 Project Schedule



1.4 BAAQMD Air Permitting Requirements

The construction equipment proposed and the emissions from worker, delivery, and haulage vehicles would not be expected to require BAAQMD permits, since these activities represent mobile sources that are not directly regulated by the BAAQMD. All construction-related emissions would be temporary and would cease upon completion of the project construction phase.

If over 50 horsepower (hp) when the design is finalized, the engine for the emergency generator would be required to obtain a BAAQMD permit related to ongoing emissions for maintenance and testing. Since engineering is not yet complete and the actual engine size may be less than 50 hp, an application for a permit for this engine has not been submitted and the BAAQMD has not yet performed their evaluation to define conditions that would be imposed.

2.0 AIR QUALITY AND GREENHOUSE GAS EMISSIONS IMPACT ANALYSES

2.1 Air Quality and GHG CEQA Significance Thresholds

The Air Quality Section of Appendix G of the CEQA Guidelines (Environmental Checklist Form) contains air quality significance criteria. Where applicable, quantitative significance criteria established by the local Air Quality Management District or Air Pollution Control District may be relied upon to make significance determinations.

The BAAQMD quantitative significance thresholds shown in Table 2-1 were used to evaluate project emissions impacts (BAAQMD 2017a). There is no numeric threshold for fugitive dust; rather, the BAAQMD requires that BMPs be implemented. Additionally, the thresholds for sulfur oxides (SO_x) and carbon monoxide (CO) emissions are not explicitly defined by the BAAQMD.

Table 2-1: BAAQMD CEQA Thresholds of Significance

Criteria Pollutants, Precursors, GHGs, Risks, and Odors	Construction	Operation	
	lbs/day	lbs/day	tons/yr
Reactive Organic Gases (ROGs)	54	54	10
Nitrogen Oxides (NO_x)	54	54	10
Respirable Particulate Matter (PM_{10})	82*	82	15
Fine Particulate Matter ($PM_{2.5}$)	54*	54	10
PM_{10} / $PM_{2.5}$ (fugitive dust)[1]	BMPs	None	
Local Carbon Monoxide (CO)[2]	None	CAAQS: 9 ppmv (8-hr); 20 ppmv (1-hr)	
GHGs – Stationary Sources	None	10,000 MT CO_2e/year	
GHGs – Other Than Stationary Sources (Land Use Projects)	None	Compliance with GHG Reduction Strategy OR 1,100 MT CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents + employees)	
Risks and Hazards (individual project within 1,000-foot zone of influence)[3]	Compliance with Community Risk Reduction Plan OR Increased cancer risk of >10.0 in one million; Increased non-cancer risk of >1.0 Hazard Index (Chronic or Acute); Ambient $PM_{2.5}$ increase: >0.3 µg/m^3 annual average		
Risks and Hazards (cumulative threshold within 1,000-foot zone of influence)	Compliance with Community Risk Reduction Plan OR Increased cancer risk of >100.0 in one million; Increased non-cancer risk of >10.0 Hazard Index (Chronic or Acute); Ambient $PM_{2.5}$ increase: >0.8 µg/m^3 annual average		
Accidental Release of Acutely Hazardous Air Pollutants/Materials	None	Storage or use of acutely hazardous materials (AHMs) located near receptors or new receptors locating near stored or used AHMs are considered significant	
Odors	None	Five confirmed complaints per year averaged over 3 years	

Source: BAAQMD 2017a (see note 3)

Notes:

* Exhaust only for construction

[1] BMPs – Best Management Practices for control of fugitive dust.

[2] Not to exceed California Ambient Air Quality Standards (CAAQS) for CO.

[3] For projects located in the San Francisco City Air Pollutant Exposure Zone, a significant impact would occur if the project would result in an excess cancer risk of 7 per million or greater or $PM_{2.5}$ concentrations at sensitive receptors of 0.2 micrograms per cubic meter ($\mu g/m^3$) or greater annual average.

2.2 Project Emissions Estimation Methodology and Assumptions

The construction analysis for this project was performed using CalEEMod version 2016.3.2, the official statewide land use computer model designed to provide a uniform platform for estimating potential criteria pollutant and GHG emissions associated with construction and operations of land use projects under CEQA. CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the BAAQMD and other California air districts. Default land use data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) were provided by the various California air districts to account for local requirements and conditions. As the official assessment methodology for land use projects in California, CalEEMod is relied upon herein for construction emissions quantification, which forms the basis for the impact analyses.

The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The mobile source emission factors used in CalEEMod – published by the California Air Resources Board (CARB) – account for the Pavley standards and Low Carbon Fuel Standards. The model also identifies project design features, regulatory measures, and mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from the selected measures. The model provides "unmitigated" and "mitigated" emissions outputs, wherein default mitigations are applied based on typical California construction equipment and vehicle fleets for a variety of activities. For instance, in this case, respirable particulate matter (PM_{10}) fugitive dust during construction is expected to be mitigated approximately 50% by water application on unpaved roads and construction areas.

The following lists the source for the basic information which was used in developing the emissions estimates for the proposed project in CalEEMod. There are many CalEEMod defaults, and not all of them are listed here, however given the primary emissions sources some influential CalEEMod defaults are listed.

- Project information from CalEEMod defaults includes:
  - Construction equipment count, horsepower, and load factors;
  - Construction equipment and hauling truck age and age-weighted emission factors;
  - Construction and operational hauling truck trip distance;
  - Operational hauling truck emission factors
  - Commuter count during construction phases;
  - Emission factors for the operational engine;
  - Architectural coating area for Phase 1A Campus;
- Project information found from Google Earth or other sources:
  - Site dimensions / construction area footprints.

- Project information and key assumptions provided by Scheidegger include:
  - Project element and building dimensions;
  - Project schedules;
  - Long-term change in staffing levels is not expected as a result of this project;
  - Operational emissions include emissions for up to 8 additional hauling trucks per day after completion of the project;
  - Operational emissions include emissions for an up to 80 hp (60 kilowatt) emergency generator run for maintenance and testing purposes for up to 50 hours per year;
  - The construction site will be watered three times a day;
  - Approximate hauling and vendor trips, assumed to be up to 50 heavy-duty diesel vehicles (HDDVs) per day per phase on average; and
  - Maximum architectural coating areas per phase for Phase 1A Aeration Basin Modifications, Phase 1B, and Phase 1C;

The land use data used for CalEEMod input are presented in Table 2-2.

Table 2-2: Land Use Data for CalEEMod Input

Project Element	Land Use Type	Land Use Subtype	Unit Amount	Size Metric (sq. ft.)	Lot Acreage (footprint)	Square Feet (est.)
Phase 1A Campus						
New Campus	Commercial	Government Office Building	35.0	1,000	0.80	35,000
Landscaping	Parking	Other Non-Asphalt Surfaces	47.0	1,000	1.08	47,000
Retention Ponds	Parking	Other Non-Asphalt Surfaces	11.8	1,000	0.27	11,761
Parking	Parking	Parking Lot	180	1,000	4.13	180,000
Phase 1A Aeration Basin Modifications						
New Aeration Basin and Other Aeration Basin Upgrades Including New Odor Abatement	Industrial	General Light Industrial	207.0	1,000	4.77	207,000
Phase 1B Effluent Facilities and Secondary Clarifiers						
New Secondary Clarifiers	Industrial	General Light Industrial	270.0	1,000	6.20	270,000

Project Element	Land Use Type	Land Use Subtype	Unit Amount	Size Metric (sq. ft.)	Lot Acreage (footprint)	Square Feet (est.)
Phase 1C Primary Flow Equalization						
New Equalization Basins	Industrial	General Light Industrial	200.0	1,000	4.59	200,000

Source: Applicant 2020, CalEEMod version 2016.3.1

Notes:

Utility: Pacific Gas and Electric

Climate Zone 5

1 acre = 43,560 square feet

2.3 Project Air Quality Emissions Analysis

2.3.1 Construction Criteria Pollutant Emissions Analysis Results

A project's construction phase produces many types of emissions. Fugitive dust emissions can result from a variety of construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle exhaust. Construction-related emissions can cause increases in localized concentrations of PM_{10}, as well as affecting PM_{10} compliance with ambient air quality standards on a regional basis. Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns, such as reduced visibility and soiling of exposed surfaces. The use of diesel-powered construction equipment emits ozone precursors NO_x and ROG, and $PM_{2.5}$.

Tables 2-3 through 2-5 show daily and annual "unmitigated" and "mitigated" criteria pollutant construction emissions calculated by CalEEMod. The CalEEMod outputs for this analysis are provided in Attachment A. As discussed above, the BAAQMD does not have numeric CEQA thresholds for fugitive dust, but instead requires that BMPs be implemented on construction projects. In these tables, the unmitigated emissions reflect expected construction BMPs for fugitive dust accounted for by CalEEMod as described below, such as watering several times a day as needed for dust control. For the purposes of this air quality analysis, 50 on-road (off-site) vehicles/trucks (i.e., HDDVs which are large enough to carry 16 cubic yards of soil) per phase per day were assumed. The latest estimates from the traffic study indicate there will be fewer trucks than 50 per day per phase. However, the emission estimates were not updated since the unmitigated criteria pollutant emissions calculations are below the BAAQMD CEQA construction significance threshold even with the conservative estimate for the number of on-road HDDVs.

As shown in Figure 1-1, some of the construction activities for two phases could overlap. Therefore, emissions are combined for Phase 1A Aeration Basin Modifications and Phase 1A Campus Building, as well as for Phase 1A Aeration Basin Modifications and Phase 1B Effluent Facilities and Secondary Clarifiers, because per the schedule, construction activities associated with these phases of the project overlap.

As shown in the tables, even with the conservative assumption on the number of HDDVs per phase per day, the unmitigated emissions are below the BAAQMD CEQA significance criteria of 54 pounds per day of ROG, $PM_{2.5}$, and NO_x and 82 pounds per day of PM_{10} that

would apply to construction emissions. CO and SO_x emissions are presented without a threshold in the following tables because there are no mass emissions thresholds for these pollutants, and the BAAQMD is in compliance with National and California Ambient Air Quality Standards (AAQS) for these pollutants. Additionally, emissions of these pollutants are small and not expected to make any significant impact on continued attainment of these standards. Based on the project specifications, the potential for air quality impacts from Phase 1 of the ETSU project should be considered Less Than Significant (LTS).

Table 2-3: Phase 1A Campus Buildings and Aeration Basin Modifications Criteria Pollutant Emissions and Thresholds

Criteria Pollutants	Unmitigated Average Emissions	Mitigated Average Emissions	Threshold	Unmitigated Average Emissions	Mitigated Average Emissions	Threshold	Significant?
	lbs/day	lbs/day	lbs/day	tons/year	tons/year	tons/year	
ROG	5.4	2.6	54	1.0	0.5	10	No
NO_x	35.7	27.0	54	6.5	4.9	10	No
CO	27.2	29.0	–	5.0	5.3	–	No
SO_x	0.07	0.07	–	0.01	0.01	–	No
Exhaust PM_{10}	1.40	0.34	82	0.26	0.06	15	No
Exhaust $PM_{2.5}$	1.31	0.32	54	0.24	0.06	10	No

Sources: BAAQMD 2017a, CalEEMod version 2016.3.2.

Table 2-4: Phase 1A Aeration Basin Modifications and Phase 1B Criteria Pollutant Emissions and Thresholds

Criteria Pollutants	Unmitigated Average Emissions	Mitigated Average Emissions	Threshold	Unmitigated Average Emissions	Mitigated Average Emissions	Threshold	Significant?
	lbs/day	lbs/day	lbs/day	tons/year	tons/year	tons/year	
ROG	6.4	3.7	54	1.2	0.7	10	No
NO_x	33.9	23.0	54	6.2	4.2	10	No
CO	27.9	26.7	–	5.1	4.9	–	No
SO_x	0.07	0.07	–	0.01	0.01	–	No
Exhaust PM_{10}	1.32	0.28	82	0.24	0.05	15	No
Exhaust $PM_{2.5}$	1.23	0.27	54	0.22	0.05	10	No

Sources: BAAQMD 2017a, CalEEMod version 2016.3.2.

Table 2-5: Phase 1C Criteria Pollutant Emissions and Thresholds

Criteria Pollutants	Unmitigated Average Emissions	Mitigated Average Emissions	Threshold	Unmitigated Average Emissions	Mitigated Average Emissions	Threshold	Significant?
	lbs/day	lbs/day	lbs/day	tons/year	tons/year	tons/year	
ROG	6.4	3.7	54	1.2	0.7	10	No
NO_x	33.9	23.0	54	6.2	4.2	10	No
CO	27.9	26.7	–	5.1	4.9	–	No
SO_x	0.07	0.07	–	0.01	0.01	–	No
Exhaust PM_{10}	1.32	0.28	82	0.24	0.05	15	No
Exhaust $PM_{2.5}$	1.23	0.27	54	0.22	0.05	10	No

Sources: BAAQMD 2017a, CalEEMod version 2016.3.2.

Although the unmitigated criteria pollutant emissions are below the BAAQMD significance thresholds for construction emissions, in the development of the IS/MND it was determined that a mitigation measure would be required related to potential health risks from diesel particulate matter (DPM) emissions from the onsite construction equipment use. For this mitigation, it was determined that approximately 80% of the onsite construction equipment (during periods when construction of the various projects/phases overlap) would need to meet Tier 4 interim standards (CARB 2012). This mitigation measure is discussed in more detail in the IS/MND, but the mitigated emissions shown in Tables 2-3 through 2-5 reflect the imposition of this measure on the criteria pollutant emissions. In order to derive the mitigated emissions, the construction detail values in the CalEEMod outputs in Attachment A were used to determine the 80% level of onsite construction equipment that would be needed to meet Tier 4 interim standards in order for the health risks to be below the BAAQMD CEQA significance thresholds.

2.3.2 Best Management Practices for Fugitive Dust

The following measures are typical BMPs for fugitive dust, and will be implemented for this project. Proper implementation of these measures is assumed to fully mitigate fugitive dust emissions during construction.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered as needed to control dust emissions;
- All haul trucks transporting soil, sand, or other loose materials off-site shall be covered;
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day; the use of dry power sweeping is prohibited;
- All areas to be paved shall be completed as soon as possible; building pads shall be laid as soon as possible after grading;
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes [as required by the California

airborne toxics control measure (ATCM) Title 13, Section 2485 of California Code of Regulations (CCR)]; clear signage shall be provided for construction workers at all access points; and

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

In addition to the above measures, compliance with State laws related to portable equipment and mobile construction equipment and vehicles (both off-road and on-road) is required, as applicable. The fleet average off-road equipment emission factors contained in CalEEMod account for statistically determined portions of newer post-2000 Tiers 2, 3, and 4 equipment that may be available for the project, whether contractor-owned or rented.

2.3.3 Operational Criteria Pollutant Emissions Analysis Results

The term "operational" refers to the full range of activities that can or may generate criteria pollutant, GHG, and toxic air contaminant (TAC) emissions when the project is functioning in its intended use. For projects such as office parks, shopping centers, apartment buildings, residential subdivisions, hotels, and other indirect sources, motor vehicles traveling to and from the project represent the primary source of air pollutant emissions. For industrial projects and some commercial projects, equipment operation and manufacturing processes, i.e., permitted stationary sources can be of greatest concern from an emissions standpoint. CEQA significance thresholds address the impacts of operational emissions sources on local and regional air quality. Thresholds are also provided for other potential impacts related to project operations, such as odors.

Changes to the operational emissions as a result of the ETSU project were assumed to consist of up to eight additional hauling trucks per day and the operation of an emergency generator. The emergency generator engine is expected to be no more than 80 hp (approximately 60 kilowatts) and run for maintenance and testing up to 50 hours per year and no more than 2 hours a day. The engineering design is not yet finalized, and it is possible that an emergency engine that is less than 50 hp will suffice, in which case a BAAQMD permit would not be required, but the larger size was assumed for the calculations to be conservative. Emissions from the engine are expected to be minimal, but maintenance and testing emissions are included in the operational emissions. The emissions from both the 80 hp emergency generator and the up to eight additional hauling trucks are summarized in Table 2-6.

Table 2-6: Operational Emissions Summary and Significance Evaluation

Criteria Pollutants	Emissions	Threshold	Emissions	Threshold	Significant?
	lbs/day	lbs/day	tons/year	tons/year	
ROG	0.027	54	0.005	10	No
NO_x	0.649	54	0.118	10	No
CO	0.148	–	0.027	–	No
SO_x	0.001	–	0.000	–	No
PM_{10}	0.003	82	0.001	15	No
$PM_{2.5}$	0.003	54	0.001	10	No

Sources: BAAQMD 2017a, CalEEMod version 2016.3.2.

There are no expected new stationary sources that would require a BAAQMD permit other than possibly an emergency generator engine. There are no expected permanent new mobile sources (forklifts, yard trucks, etc.). There are no planned hearths or woodstoves, and there is no planned increase in landscaping equipment. There is no expected change in number of employees. Since no changes to these aspects are expected as a result of the ETSU project, operational mobile source emissions from commuting, emissions from consumer products, and solid waste generation should remain the same. Additionally, consistent staffing and a newer building should result in reduced water and energy usage, since newer building codes require low-flow and high energy efficiency appliances and fixtures. Finally, since the new campus building is replacing an existing building, any increase in ongoing architectural coating is expected to be minimal, at most. CalEEMod estimates that ROG emissions from architectural coatings (the only pollutant associated with architectural coatings) for the new building are 0.17 tons per year. This estimate is well below the 10-ton per year operational threshold even before discounting the ROG emissions associated with the building being replaced.

2.4 Project GHG Emissions Analysis

2.4.1 GHG Emissions CEQA Significance Thresholds

As shown in Table 2-1, the CEQA significance criteria related to GHG emissions for an industrial facility identified by the BAAQMD (BAAQMD 2017a) include:

- A proposed stationary source project will not have a significant GHG impact, if operation of the project will emit less than the screening significance level of 10,000 metric tons (MT) per year of carbon dioxide equivalents (CO_2e).

No construction GHG emission thresholds are provided by the BAAQMD, as the emissions are temporary.

2.4.2 Construction GHG Emissions Analysis Results

GHGs – primarily carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), collectively reported as carbon dioxide equivalents (CO_2e) – are emitted from mobile sources such as on-road vehicles and off-road construction equipment burning fuels such as gasoline, diesel, biodiesel, propane, or natural gas (compressed or liquefied). Indirect GHG emissions result from electric power generated elsewhere (i.e., power plants) used to operate process equipment, lighting, and utilities at a facility. Also, included in GHG quantification is electric power used to pump the water supply (e.g., aqueducts, wells, pipelines) and disposal and decomposition of municipal waste in landfills (CARB 2018).

Using CalEEMod, direct onsite and off-site GHG emissions were estimated for construction of the project.

Although there are no BAAQMD GHG construction thresholds, the construction GHG emissions are presented in Table 2-7 for information.

Table 2-7: Construction GHG Emissions

Phase	GHGs	Average Emissions lbs/day	Average Emissions tons/yr
Campus	CO_2	1,766	322.2
	CH_4	0.3	0.0
	N_2O	0	0.0
	Total CO_2e	1,772	323.5
1A	CO_2	2,575	470.0
	CH_4	0.5	0.1
	N_2O	0	0.0
	Total CO_2e	2,586	472.0
1B	CO_2	2,150	392.4
	CH_4	0.3	0.1
	N_2O	0	0.0
	Total CO_2e	2,159	394.0
1C	CO_2	1,088	198.5
	CH_4	0.2	0.0
	N_2O	0	0.0
	Total CO_2e	1,092	199.4

Source: CalEEMod version 2016.3.2.

2.4.3 Operational GHG Emissions Analysis Results

Table 2-8 shows mitigated GHG emissions from operations and evaluates emissions against the BAAQMD's stationary source significance threshold. Off-site traffic impacts are included in these emissions estimates. Since CalEEMod calculates GHG emissions based on off-road equipment and on-road vehicle fuel usage, in most situations, unmitigated and mitigated emissions are the same. For simplicity, and because emissions are low, the engine and ongoing emissions from hauling trucks are combined and compared to the lowest threshold of 10,000 MT CO_2e per year. As shown in Table 2-8, GHG emissions are well below the GHG significance threshold for land use sources, and hence, impacts from operation of the ETSU project are considered Less Than Significant.

Table 2-8: Operational GHG Emissions

GHGs	Emissions MT/yr	Threshold MT/yr	Significant?
CO_2	14.0	–	–
CH_4	0.0	–	–
N_2O	0.0	–	–
CO_2e	14.1	10,000	No

Sources: BAAQMD 2017a, CalEEMod version 2016.3.2.

Notes:

Annual operational GHG emissions comprise direct area + direct stationary + direct mobile + indirect energy + indirect waste + indirect water usage.

2.5 Air Quality and GHG Emissions Analyses Conclusions

As shown by the above analyses, the construction and operational emissions of Phase 1 of the ETSU project are expected to remain below BAAQMD CEQA air quality and GHG thresholds.

PM_{10} fugitive dust BMPs will be implemented. As a result, the air quality and GHG emissions impacts for construction of this project will be Less Than Significant.

Operation of the ETSU project involves minimal emissions. Therefore, the Project will also be Less Than Significant during operation with respect to air quality and GHG emissions.

3.0 REFERENCES AND INFORMATION SOURCES

California Air Resources Board (CARB). Air Quality Standards and Area Designations. Website https://www.arb.ca.gov/desig/desig.htm.

California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Website https://ww3.arb.ca.gov/cc/scopingplan/scopingplan.htm.

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Bay Area Air Quality Management District (BAAQMD). 2017a. CEQA Air Quality Guidelines. Website https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines.

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California Emissions Estimator Model® (CalEEMod). 2016. Version 2016.3.2. Website http://www.caleemod.com/.

United States Environmental Protection Agency (EPA). EPA Region 9 Air Quality Maps and Geographic Information. Website https://www3.epa.gov/region9/air/maps/index.html. Last updated 11/16/2020.

ATTACHMENT A – CALEEMOD OUTPUT

USD - Office Building Tier 4l

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government Office Building	35.00	1000sqft	0.80	35,000.00	0
Other Non-Asphalt Surfaces	47.00	1000sqft	1.08	47,000.00	0
Other Non-Asphalt Surfaces	0.27	Acre	0.27	11,761.20	0
Parking Lot	180.00	1000sqft	4.13	180,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
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

USD - Office Building Tier 4 - Bay Area AQMD Air District, Annual

Project Characteristics -

Land Use -

Construction Phase - Per Applicant

Trips and VMT - Per Applicant

Demolition -

Grading - Per Applicant

Vehicle Trips - No change in employee number

Land Use Change -

Construction Off-road Equipment Mitigation - Per Applicant

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	25.00
tblConstructionPhase	NumDays	230.00	287.00
tblConstructionPhase	NumDays	20.00	25.00
tblConstructionPhase	NumDays	20.00	25.00
tblConstructionPhase	NumDays	20.00	25.00
tblConstructionPhase	NumDays	10.00	13.00
tblGrading	AcresOfGrading	12.50	6.20
tblGrading	MaterialExported	0.00	14,148.00
tblGrading	MaterialExported	0.00	6,751.00
tblGrading	MaterialImported	0.00	8,872.00
tblTripsAndVMT	HaulingTripNumber	130.00	1,250.00
tblTripsAndVMT	HaulingTripNumber	844.00	650.00
tblTripsAndVMT	HaulingTripNumber	1,769.00	1,250.00
tblTripsAndVMT	VendorTripNumber	45.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT

tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblVehicleTrips	WD_TR	68.93	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1915	2.2712	1.4151	4.1800e-003	0.2832	0.0824	0.3656	0.1280	0.0767	0.2047	0.0000	382.7946	382.7946	0.0595	0.0000	384.2824
2022	0.4247	2.8308	2.4240	6.3600e-003	0.1387	0.0985	0.2372	0.0373	0.0926	0.1298	0.0000	575.9929	575.9929	0.0848	0.0000	578.1140
2023	0.0759	0.0271	0.0140	8.0000e-005	1.9300e-003	3.1000e-004	2.2400e-003	5.3000e-004	3.1000e-004	8.4000e-004	0.0000	7.9558	7.9558	4.5000e-004	0.0000	7.9671
Maximum	**0.4247**	**2.8308**	**2.4240**	**6.3600e-003**	**0.2832**	**0.0985**	**0.3656**	**0.1280**	**0.0926**	**0.2047**	**0.0000**	**575.9929**	**575.9929**	**0.0848**	**0.0000**	**578.1140**

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	0.0692	1.4585	1.5497	4.1800e-003	0.1667	6.8200e-003	0.1735	0.0682	6.7200e-003	0.0750	0.0000	382.7944	382.7944	0.0595	0.0000	384.2822
2022	0.2860	2.3015	2.6227	6.3600e-003	0.1387	0.0122	0.1510	0.0373	0.0121	0.0494	0.0000	575.9925	575.9925	0.0848	0.0000	578.1136
2023	0.0753	0.0261	0.0141	8.0000e-005	1.9300e-003	4.0000e-005	1.9800e-003	5.3000e-004	4.0000e-005	5.7000e-004	0.0000	7.9558	7.9558	4.5000e-004	0.0000	7.9671
Maximum	**0.2860**	**2.3015**	**2.6227**	**6.3600e-003**	**0.1667**	**0.0122**	**0.1735**	**0.0682**	**0.0121**	**0.0750**	**0.0000**	**575.9925**	**575.9925**	**0.0848**	**0.0000**	**578.1136**

USD - Office Building Tier 4 - Bay Area AQMD Air District, Annual

	ROG	NOx	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	**37.79**	**26.18**	**-8.65**	**0.00**	**27.48**	**89.47**	**46.04**	**36.05**	**88.88**	**62.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2021**	**9-30-2021**	1.5369	0.8565
2	**10-1-2021**	**12-31-2021**	0.9185	0.6594
3	**1-1-2022**	**3-31-2022**	0.8160	0.6272
4	**4-1-2022**	**6-30-2022**	0.8229	0.6319
5	**7-1-2022**	**9-30-2022**	0.8319	0.6388
6	**10-1-2022**	**12-31-2022**	0.7902	0.6935
7	**1-1-2023**	**3-31-2023**	0.1010	0.0995
		Highest	1.5369	0.8565

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	0.1756	2.0000e-005	2.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6900e-003	4.6900e-003	1.0000e-005	0.0000	4.9900e-003
Energy	3.6500e-003	0.0332	0.0279	2.0000e-004		2.5200e-003	2.5200e-003		2.5200e-003	2.5200e-003	0.0000	181.5008	181.5008	7.2700e-003	2.0200e-003	182.2851
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	6.6074	0.0000	6.6074	0.3905	0.0000	16.3694
Water						0.0000	0.0000		0.0000	0.0000	2.2059	15.2841	17.4900	0.2273	5.4900e-003	24.8083
Total	**0.1792**	**0.0332**	**0.0303**	**2.0000e-004**	**0.0000**	**2.5300e-003**	**2.5300e-003**	**0.0000**	**2.5300e-003**	**2.5300e-003**	**8.8133**	**196.7896**	**205.6029**	**0.6250**	**7.5100e-003**	**223.4678**

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	0.1756	2.0000e-005	2.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6900e-003	4.6900e-003	1.0000e-005	0.0000	4.9900e-003
Energy	3.6500e-003	0.0332	0.0279	2.0000e-004		2.5200e-003	2.5200e-003		2.5200e-003	2.5200e-003	0.0000	181.5008	181.5008	7.2700e-003	2.0200e-003	182.2851
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	6.6074	0.0000	6.6074	0.3905	0.0000	16.3694
Water						0.0000	0.0000		0.0000	0.0000	2.2059	15.2841	17.4900	0.2273	5.4900e-003	24.8083
Total	**0.1792**	**0.0332**	**0.0303**	**2.0000e-004**	**0.0000**	**2.5300e-003**	**2.5300e-003**	**0.0000**	**2.5300e-003**	**2.5300e-003**	**8.8133**	**196.7896**	**205.6029**	**0.6250**	**7.5100e-003**	**223.4678**

	ROG	NOx	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

USD - Office Building Tier 4 - Bay Area AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2021	8/4/2021	5	25	
2	Site Preparation	Site Preparation	8/5/2021	8/23/2021	5	13	
3	Grading	Grading	8/24/2021	9/27/2021	5	25	
4	Building Construction	Building Construction	9/28/2021	11/2/2022	5	287	
5	Paving	Paving	11/3/2022	12/7/2022	5	25	
6	Architectural Coating	Architectural Coating	12/8/2022	1/11/2023	5	25	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 6.2

Acres of Paving: 5.48

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 52,500; Non-Residential Outdoor: 17,500; Striped Parking Area: 14,326 (Architectural Coating – sqft)

OffRoad Equipment

USD - Office Building Tier 4 - Bay Area AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	6	15.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	650.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	111.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Paving	6	15.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Architectural Coating	1	22.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

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					
Fugitive Dust					0.0141	0.0000	0.0141	2.1400e-003	0.0000	2.1400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0396	0.3930	0.2696	4.9000e-004		0.0194	0.0194		0.0180	0.0180	0.0000	42.5010	42.5010	0.0120	0.0000	42.8000
Total	**0.0396**	**0.3930**	**0.2696**	**4.9000e-004**	**0.0141**	**0.0194**	**0.0335**	**2.1400e-003**	**0.0180**	**0.0202**	**0.0000**	**42.5010**	**42.5010**	**0.0120**	**0.0000**	**42.8000**

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	4.9200e-003	0.1687	0.0359	4.9000e-004	0.0106	5.2000e-004	0.0111	2.9000e-003	5.0000e-004	3.4000e-003	0.0000	47.2840	47.2840	2.4100e-003	0.0000	47.3443
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	5.8000e-004	4.0000e-004	4.2100e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2525	1.2525	3.0000e-005	0.0000	1.2532
Total	**5.5000e-003**	**0.1691**	**0.0402**	**5.0000e-004**	**0.0120**	**5.3000e-004**	**0.0126**	**3.2900e-003**	**5.1000e-004**	**3.8000e-003**	**0.0000**	**48.5364**	**48.5364**	**2.4400e-003**	**0.0000**	**48.5975**

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					6.3500e-003	0.0000	6.3500e-003	9.6000e-004	0.0000	9.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3000e-003	0.1695	0.3084	4.9000e-004		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	42.5009	42.5009	0.0120	0.0000	42.8000
Total	**7.3000e-003**	**0.1695**	**0.3084**	**4.9000e-004**	**6.3500e-003**	**7.7000e-004**	**7.1200e-003**	**9.6000e-004**	**7.7000e-004**	**1.7300e-003**	**0.0000**	**42.5009**	**42.5009**	**0.0120**	**0.0000**	**42.8000**

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	4.9200e-003	0.1687	0.0359	4.9000e-004	0.0106	5.2000e-004	0.0111	2.9000e-003	5.0000e-004	3.4000e-003	0.0000	47.2840	47.2840	2.4100e-003	0.0000	47.3443
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	5.8000e-004	4.0000e-004	4.2100e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2525	1.2525	3.0000e-005	0.0000	1.2532
Total	**5.5000e-003**	**0.1691**	**0.0402**	**5.0000e-004**	**0.0120**	**5.3000e-004**	**0.0126**	**3.2900e-003**	**5.1000e-004**	**3.8000e-003**	**0.0000**	**48.5364**	**48.5364**	**2.4400e-003**	**0.0000**	**48.5975**

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					0.1178	0.0000	0.1178	0.0646	0.0000	0.0646	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0253	0.2632	0.1375	2.5000e-004		0.0133	0.0133		0.0122	0.0122	0.0000	21.7332	21.7332	7.0300e-003	0.0000	21.9089
Total	**0.0253**	**0.2632**	**0.1375**	**2.5000e-004**	**0.1178**	**0.0133**	**0.1311**	**0.0646**	**0.0122**	**0.0768**	**0.0000**	**21.7332**	**21.7332**	**7.0300e-003**	**0.0000**	**21.9089**

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	2.5600e-003	0.0877	0.0187	2.5000e-004	5.4900e-003	2.7000e-004	5.7600e-003	1.5100e-003	2.6000e-004	1.7700e-003	0.0000	24.5877	24.5877	1.2500e-003	0.0000	24.6190
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	3.6000e-004	2.5000e-004	2.6200e-003	1.0000e-005	9.2000e-004	1.0000e-005	9.3000e-004	2.5000e-004	1.0000e-005	2.5000e-004	0.0000	0.7816	0.7816	2.0000e-005	0.0000	0.7820
Total	**2.9200e-003**	**0.0880**	**0.0213**	**2.6000e-004**	**6.4100e-003**	**2.8000e-004**	**6.6900e-003**	**1.7600e-003**	**2.7000e-004**	**2.0200e-003**	**0.0000**	**25.3692**	**25.3692**	**1.2700e-003**	**0.0000**	**25.4010**

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					0.0530	0.0000	0.0530	0.0291	0.0000	0.0291	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5300e-003	0.0791	0.1492	2.5000e-004		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	21.7332	21.7332	7.0300e-003	0.0000	21.9089
Total	**4.5300e-003**	**0.0791**	**0.1492**	**2.5000e-004**	**0.0530**	**4.0000e-004**	**0.0534**	**0.0291**	**4.0000e-004**	**0.0295**	**0.0000**	**21.7332**	**21.7332**	**7.0300e-003**	**0.0000**	**21.9089**

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	2.5600e-003	0.0877	0.0187	2.5000e-004	5.4900e-003	2.7000e-004	5.7600e-003	1.5100e-003	2.6000e-004	1.7700e-003	0.0000	24.5877	24.5877	1.2500e-003	0.0000	24.6190
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	3.6000e-004	2.5000e-004	2.6200e-003	1.0000e-005	9.2000e-004	1.0000e-005	9.3000e-004	2.5000e-004	1.0000e-005	2.5000e-004	0.0000	0.7816	0.7816	2.0000e-005	0.0000	0.7820
Total	**2.9200e-003**	**0.0880**	**0.0213**	**2.6000e-004**	**6.4100e-003**	**2.8000e-004**	**6.6900e-003**	**1.7600e-003**	**2.7000e-004**	**2.0200e-003**	**0.0000**	**25.3692**	**25.3692**	**1.2700e-003**	**0.0000**	**25.4010**

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					0.0799	0.0000	0.0799	0.0419	0.0000	0.0419	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0286	0.3092	0.1982	3.7000e-004		0.0145	0.0145		0.0133	0.0133	0.0000	32.5671	32.5671	0.0105	0.0000	32.8304
Total	**0.0286**	**0.3092**	**0.1982**	**3.7000e-004**	**0.0799**	**0.0145**	**0.0944**	**0.0419**	**0.0133**	**0.0553**	**0.0000**	**32.5671**	**32.5671**	**0.0105**	**0.0000**	**32.8304**

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	4.9200e-003	0.1687	0.0359	4.9000e-004	0.0106	5.2000e-004	0.0111	2.9000e-003	5.0000e-004	3.4000e-003	0.0000	47.2840	47.2840	2.4100e-003	0.0000	47.3443
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	5.8000e-004	4.0000e-004	4.2100e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2525	1.2525	3.0000e-005	0.0000	1.2532
Total	**5.5000e-003**	**0.1691**	**0.0402**	**5.0000e-004**	**0.0120**	**5.3000e-004**	**0.0126**	**3.2900e-003**	**5.1000e-004**	**3.8000e-003**	**0.0000**	**48.5364**	**48.5364**	**2.4400e-003**	**0.0000**	**48.5975**

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					0.0359	0.0000	0.0359	0.0189	0.0000	0.0189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.5000e-003	0.1292	0.2374	3.7000e-004		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	32.5671	32.5671	0.0105	0.0000	32.8304
Total	**6.5000e-003**	**0.1292**	**0.2374**	**3.7000e-004**	**0.0359**	**6.1000e-004**	**0.0366**	**0.0189**	**6.1000e-004**	**0.0195**	**0.0000**	**32.5671**	**32.5671**	**0.0105**	**0.0000**	**32.8304**

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	4.9200e-003	0.1687	0.0359	4.9000e-004	0.0106	5.2000e-004	0.0111	2.9000e-003	5.0000e-004	3.4000e-003	0.0000	47.2840	47.2840	2.4100e-003	0.0000	47.3443
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	5.8000e-004	4.0000e-004	4.2100e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2525	1.2525	3.0000e-005	0.0000	1.2532
Total	**5.5000e-003**	**0.1691**	**0.0402**	**5.0000e-004**	**0.0120**	**5.3000e-004**	**0.0126**	**3.2900e-003**	**5.1000e-004**	**3.8000e-003**	**0.0000**	**48.5364**	**48.5364**	**2.4400e-003**	**0.0000**	**48.5975**

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	0.0656	0.6014	0.5718	9.3000e-004		0.0331	0.0331		0.0311	0.0311	0.0000	79.9149	79.9149	0.0193	0.0000	80.3969
Total	**0.0656**	**0.6014**	**0.5718**	**9.3000e-004**		**0.0331**	**0.0331**		**0.0311**	**0.0311**	**0.0000**	**79.9149**	**79.9149**	**0.0193**	**0.0000**	**80.3969**

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	6.8200e-003	0.2702	0.0505	6.0000e-004	0.0107	5.8000e-004	0.0112	2.9300e-003	5.5000e-004	3.4900e-003	0.0000	58.0557	58.0557	3.9800e-003	0.0000	58.1552
Worker	0.0118	8.1100e-003	0.0859	2.8000e-004	0.0303	2.0000e-004	0.0305	8.0500e-003	1.8000e-004	8.2300e-003	0.0000	25.5807	25.5807	5.7000e-004	0.0000	25.5950
Total	**0.0186**	**0.2783**	**0.1364**	**8.8000e-004**	**0.0409**	**7.8000e-004**	**0.0417**	**0.0110**	**7.3000e-004**	**0.0117**	**0.0000**	**83.6364**	**83.6364**	**4.5500e-003**	**0.0000**	**83.7502**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0184	0.3765	0.6166	9.3000e-004		2.9200e-003	2.9200e-003		2.9200e-003	2.9200e-003	0.0000	79.9148	79.9148	0.0193	0.0000	80.3968
Total	**0.0184**	**0.3765**	**0.6166**	**9.3000e-004**		**2.9200e-003**	**2.9200e-003**		**2.9200e-003**	**2.9200e-003**	**0.0000**	**79.9148**	**79.9148**	**0.0193**	**0.0000**	**80.3968**

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	6.8200e-003	0.2702	0.0505	6.0000e-004	0.0107	5.8000e-004	0.0112	2.9300e-003	5.5000e-004	3.4900e-003	0.0000	58.0557	58.0557	3.9800e-003	0.0000	58.1552
Worker	0.0118	8.1100e-003	0.0859	2.8000e-004	0.0303	2.0000e-004	0.0305	8.0500e-003	1.8000e-004	8.2300e-003	0.0000	25.5807	25.5807	5.7000e-004	0.0000	25.5950
Total	**0.0186**	**0.2783**	**0.1364**	**8.8000e-004**	**0.0409**	**7.8000e-004**	**0.0417**	**0.0110**	**7.3000e-004**	**0.0117**	**0.0000**	**83.6364**	**83.6364**	**4.5500e-003**	**0.0000**	**83.7502**

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	0.1860	1.7021	1.7836	2.9400e-003		0.0882	0.0882		0.0830	0.0830	0.0000	252.5805	252.5805	0.0605	0.0000	254.0933
Total	**0.1860**	**1.7021**	**1.7836**	**2.9400e-003**		**0.0882**	**0.0882**		**0.0830**	**0.0830**	**0.0000**	**252.5805**	**252.5805**	**0.0605**	**0.0000**	**254.0933**

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	0.0203	0.7998	0.1556	1.8600e-003	0.0337	1.5600e-003	0.0352	9.2700e-003	1.5000e-003	0.0108	0.0000	181.0579	181.0579	0.0121	0.0000	181.3601
Worker	0.0346	0.0230	0.2494	8.6000e-004	0.0956	6.1000e-004	0.0962	0.0254	5.6000e-004	0.0260	0.0000	77.8571	77.8571	1.6200e-003	0.0000	77.8978
Total	**0.0549**	**0.8228**	**0.4050**	**2.7200e-003**	**0.1293**	**2.1700e-003**	**0.1315**	**0.0347**	**2.0600e-003**	**0.0368**	**0.0000**	**258.9150**	**258.9150**	**0.0137**	**0.0000**	**259.2579**

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	0.0582	1.1894	1.9482	2.9400e-003		9.2200e-003	9.2200e-003		9.2200e-003	9.2200e-003	0.0000	252.5802	252.5802	0.0605	0.0000	254.0930
Total	**0.0582**	**1.1894**	**1.9482**	**2.9400e-003**		**9.2200e-003**	**9.2200e-003**		**9.2200e-003**	**9.2200e-003**	**0.0000**	**252.5802**	**252.5802**	**0.0605**	**0.0000**	**254.0930**

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	0.0203	0.7998	0.1556	1.8600e-003	0.0337	1.5600e-003	0.0352	9.2700e-003	1.5000e-003	0.0108	0.0000	181.0579	181.0579	0.0121	0.0000	181.3601
Worker	0.0346	0.0230	0.2494	8.6000e-004	0.0956	6.1000e-004	0.0962	0.0254	5.6000e-004	0.0260	0.0000	77.8571	77.8571	1.6200e-003	0.0000	77.8978
Total	**0.0549**	**0.8228**	**0.4050**	**2.7200e-003**	**0.1293**	**2.1700e-003**	**0.1315**	**0.0347**	**2.0600e-003**	**0.0368**	**0.0000**	**258.9150**	**258.9150**	**0.0137**	**0.0000**	**259.2579**

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	0.0138	0.1391	0.1823	2.9000e-004		7.1000e-003	7.1000e-003		6.5300e-003	6.5300e-003	0.0000	25.0345	25.0345	8.1000e-003	0.0000	25.2369
Paving	5.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0192**	**0.1391**	**0.1823**	**2.9000e-004**		**7.1000e-003**	**7.1000e-003**		**6.5300e-003**	**6.5300e-003**	**0.0000**	**25.0345**	**25.0345**	**8.1000e-003**	**0.0000**	**25.2369**

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	2.3300e-003	0.0917	0.0179	2.1000e-004	3.8600e-003	1.8000e-004	4.0400e-003	1.0600e-003	1.7000e-004	1.2300e-003	0.0000	20.7635	20.7635	1.3900e-003	0.0000	20.7982
Worker	5.4000e-004	3.6000e-004	3.8600e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2066	1.2066	3.0000e-005	0.0000	1.2072
Total	**2.8700e-003**	**0.0921**	**0.0217**	**2.2000e-004**	**5.3400e-003**	**1.9000e-004**	**5.5300e-003**	**1.4500e-003**	**1.8000e-004**	**1.6300e-003**	**0.0000**	**21.9701**	**21.9701**	**1.4200e-003**	**0.0000**	**22.0054**

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	4.1800e-003	0.1255	0.2162	2.9000e-004		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	25.0344	25.0344	8.1000e-003	0.0000	25.2368
Paving	5.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.5900e-003**	**0.1255**	**0.2162**	**2.9000e-004**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**25.0344**	**25.0344**	**8.1000e-003**	**0.0000**	**25.2368**

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	2.3300e-003	0.0917	0.0179	2.1000e-004	3.8600e-003	1.8000e-004	4.0400e-003	1.0600e-003	1.7000e-004	1.2300e-003	0.0000	20.7635	20.7635	1.3900e-003	0.0000	20.7982
Worker	5.4000e-004	3.6000e-004	3.8600e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2066	1.2066	3.0000e-005	0.0000	1.2072
Total	**2.8700e-003**	**0.0921**	**0.0217**	**2.2000e-004**	**5.3400e-003**	**1.9000e-004**	**5.5300e-003**	**1.4500e-003**	**1.8000e-004**	**1.6300e-003**	**0.0000**	**21.9701**	**21.9701**	**1.4200e-003**	**0.0000**	**22.0054**

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	0.1580					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7400e-003	0.0120	0.0154	3.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004	0.0000	2.1703	2.1703	1.4000e-004	0.0000	2.1738
Total	**0.1597**	**0.0120**	**0.0154**	**3.0000e-005**		**6.9000e-004**	**6.9000e-004**		**6.9000e-004**	**6.9000e-004**	**0.0000**	**2.1703**	**2.1703**	**1.4000e-004**	**0.0000**	**2.1738**

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	1.5800e-003	0.0624	0.0121	1.5000e-004	2.6300e-003	1.2000e-004	2.7500e-003	7.2000e-004	1.2000e-004	8.4000e-004	0.0000	14.1192	14.1192	9.4000e-004	0.0000	14.1428
Worker	5.3000e-004	3.6000e-004	3.8500e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2034	1.2034	3.0000e-005	0.0000	1.2040
Total	**2.1100e-003**	**0.0627**	**0.0160**	**1.6000e-004**	**4.1100e-003**	**1.3000e-004**	**4.2400e-003**	**1.1100e-003**	**1.3000e-004**	**1.2400e-003**	**0.0000**	**15.3225**	**15.3225**	**9.7000e-004**	**0.0000**	**15.3467**

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	0.1580					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6000e-004	9.0100e-003	0.0156	3.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	2.1703	2.1703	1.4000e-004	0.0000	2.1738
Total	**0.1584**	**9.0100e-003**	**0.0156**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**2.1703**	**2.1703**	**1.4000e-004**	**0.0000**	**2.1738**

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	1.5800e-003	0.0624	0.0121	1.5000e-004	2.6300e-003	1.2000e-004	2.7500e-003	7.2000e-004	1.2000e-004	8.4000e-004	0.0000	14.1192	14.1192	9.4000e-004	0.0000	14.1428
Worker	5.3000e-004	3.6000e-004	3.8500e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2034	1.2034	3.0000e-005	0.0000	1.2040
Total	**2.1100e-003**	**0.0627**	**0.0160**	**1.6000e-004**	**4.1100e-003**	**1.3000e-004**	**4.2400e-003**	**1.1100e-003**	**1.3000e-004**	**1.2400e-003**	**0.0000**	**15.3225**	**15.3225**	**9.7000e-004**	**0.0000**	**15.3467**

3.7 Architectural Coating - 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					
Archit. Coating	0.0743					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7000e-004	5.2100e-003	7.2400e-003	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	1.0213	1.0213	6.0000e-005	0.0000	1.0228
Total	**0.0751**	**5.2100e-003**	**7.2400e-003**	**1.0000e-005**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**	**0.0000**	**1.0213**	**1.0213**	**6.0000e-005**	**0.0000**	**1.0228**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0217	5.1200e-003	7.0000e-005	1.2400e-003	2.0000e-005	1.2600e-003	3.4000e-004	2.0000e-005	3.6000e-004	0.0000	6.3900	6.3900	3.8000e-004	0.0000	6.3994
Worker	2.4000e-004	1.5000e-004	1.6700e-003	1.0000e-005	7.0000e-004	0.0000	7.0000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5446	0.5446	1.0000e-005	0.0000	0.5449
Total	**7.5000e-004**	**0.0218**	**6.7900e-003**	**8.0000e-005**	**1.9400e-003**	**2.0000e-005**	**1.9600e-003**	**5.2000e-004**	**2.0000e-005**	**5.5000e-004**	**0.0000**	**6.9345**	**6.9345**	**3.9000e-004**	**0.0000**	**6.9442**

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	0.0743					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2000e-004	4.2400e-003	7.3300e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.0213	1.0213	6.0000e-005	0.0000	1.0228
Total	**0.0746**	**4.2400e-003**	**7.3300e-003**	**1.0000e-005**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**1.0213**	**1.0213**	**6.0000e-005**	**0.0000**	**1.0228**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0217	5.1200e-003	7.0000e-005	1.2400e-003	2.0000e-005	1.2600e-003	3.4000e-004	2.0000e-005	3.6000e-004	0.0000	6.3900	6.3900	3.8000e-004	0.0000	6.3994
Worker	2.4000e-004	1.5000e-004	1.6700e-003	1.0000e-005	7.0000e-004	0.0000	7.0000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5446	0.5446	1.0000e-005	0.0000	0.5449
Total	**7.5000e-004**	**0.0218**	**6.7900e-003**	**8.0000e-005**	**1.9400e-003**	**2.0000e-005**	**1.9600e-003**	**5.2000e-004**	**2.0000e-005**	**5.5000e-004**	**0.0000**	**6.9345**	**6.9345**	**3.9000e-004**	**0.0000**	**6.9442**

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
Government Office Building	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	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
Government Office Building	9.50	7.30	7.30	33.00	62.00	5.00	50	34	16
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	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
Government Office Building	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Other Non-Asphalt Surfaces	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Parking Lot	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

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	145.3976	145.3976	6.5700e-003	1.3600e-003	145.9673
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	145.3976	145.3976	6.5700e-003	1.3600e-003	145.9673
NaturalGas Mitigated	3.6500e-003	0.0332	0.0279	2.0000e-004		2.5200e-003	2.5200e-003		2.5200e-003	2.5200e-003	0.0000	36.1033	36.1033	6.9000e-004	6.6000e-004	36.3178
NaturalGas Unmitigated	3.6500e-003	0.0332	0.0279	2.0000e-004		2.5200e-003	2.5200e-003		2.5200e-003	2.5200e-003	0.0000	36.1033	36.1033	6.9000e-004	6.6000e-004	36.3178

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					
Government Office Building	676550	3.6500e-003	0.0332	0.0279	2.0000e-004		2.5200e-003	2.5200e-003		2.5200e-003	2.5200e-003	0.0000	36.1033	36.1033	6.9000e-004	6.6000e-004	36.3178
Other Non-Asphalt Surfaces	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
Parking Lot	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		**3.6500e-003**	**0.0332**	**0.0279**	**2.0000e-004**		**2.5200e-003**	**2.5200e-003**		**2.5200e-003**	**2.5200e-003**	**0.0000**	**36.1033**	**36.1033**	**6.9000e-004**	**6.6000e-004**	**36.3178**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government Office Building	676550	3.6500e-003	0.0332	0.0279	2.0000e-004		2.5200e-003	2.5200e-003		2.5200e-003	2.5200e-003	0.0000	36.1033	36.1033	6.9000e-004	6.6000e-004	36.3178
Other Non-Asphalt Surfaces	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
Parking Lot	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		**3.6500e-003**	**0.0332**	**0.0279**	**2.0000e-004**		**2.5200e-003**	**2.5200e-003**		**2.5200e-003**	**2.5200e-003**	**0.0000**	**36.1033**	**36.1033**	**6.9000e-004**	**6.6000e-004**	**36.3178**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government Office Building	436800	127.0701	5.7500e-003	1.1900e-003	127.5680
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	63000	18.3274	8.3000e-004	1.7000e-004	18.3992
Total		**145.3976**	**6.5800e-003**	**1.3600e-003**	**145.9673**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government Office Building	436800	127.0701	5.7500e-003	1.1900e-003	127.5680
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	63000	18.3274	8.3000e-004	1.7000e-004	18.3992
Total		**145.3976**	**6.5800e-003**	**1.3600e-003**	**145.9673**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1756	2.0000e-005	2.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6900e-003	4.6900e-003	1.0000e-005	0.0000	4.9900e-003
Unmitigated	0.1756	2.0000e-005	2.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6900e-003	4.6900e-003	1.0000e-005	0.0000	4.9900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6900e-003	4.6900e-003	1.0000e-005	0.0000	4.9900e-003
Total	**0.1756**	**2.0000e-005**	**2.4100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.6900e-003**	**4.6900e-003**	**1.0000e-005**	**0.0000**	**4.9900e-003**

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	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.6900e-003	4.6900e-003	1.0000e-005	0.0000	4.9900e-003
Total	**0.1756**	**2.0000e-005**	**2.4100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.6900e-003**	**4.6900e-003**	**1.0000e-005**	**0.0000**	**4.9900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	17.4900	0.2273	5.4900e-003	24.8083
Unmitigated	17.4900	0.2273	5.4900e-003	24.8083

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government Office Building	6.95309 / 4.26157	17.4900	0.2273	5.4900e-003	24.8083
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**17.4900**	**0.2273**	**5.4900e-003**	**24.8083**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government Office Building	6.95309 / 4.26157	17.4900	0.2273	5.4900e-003	24.8083
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**17.4900**	**0.2273**	**5.4900e-003**	**24.8083**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.6074	0.3905	0.0000	16.3694
Unmitigated	6.6074	0.3905	0.0000	16.3694

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government Office Building	32.55	6.6074	0.3905	0.0000	16.3694
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.6074**	**0.3905**	**0.0000**	**16.3694**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government Office Building	32.55	6.6074	0.3905	0.0000	16.3694
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.6074**	**0.3905**	**0.0000**	**16.3694**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

USD - Phase 1A (non campus) Tier4 - Bay Area AQMD Air District, Annual

USD - Phase 1A Aeration Basins Tier4I

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	207.00	1000sqft	4.75	207,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2024
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

USD - Phase 1A (non campus) Tier4 - Bay Area AQMD Air District, Annual

Project Characteristics -

Land Use - Per Applicant

Construction Phase - Per Applicant

Trips and VMT - Per Applicant

Grading - Per Applicant

Architectural Coating - Per Applicant

Vehicle Trips -

Area Coating - Per Applicant

Water And Wastewater -

Construction Off-road Equipment Mitigation - Per Applicant

Fleet Mix -

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	103,500.00	130,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	310,500.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	103500	130000
tblAreaCoating	Area_Nonresidential_Interior	310500	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	18.00	60.00
tblConstructionPhase	NumDays	230.00	690.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	8.00	60.00
tblConstructionPhase	NumDays	18.00	60.00
tblConstructionPhase	NumDays	5.00	30.00
tblGrading	AcresOfGrading	30.00	4.75
tblGrading	MaterialExported	0.00	1,967.00

tblGrading	MaterialExported	0.00	15,650.00
tblGrading	MaterialImported	0.00	461.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,000.00
tblTripsAndVMT	HaulingTripNumber	1,956.00	565.00
tblTripsAndVMT	HaulingTripNumber	240.00	243.00
tblTripsAndVMT	VendorTripNumber	34.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.3391	3.6844	2.4177	5.7000e-003	0.5244	0.1569	0.6813	0.2674	0.1457	0.4131	0.0000	512.6374	512.6374	0.1048	0.0000	515.2574
2022	0.2784	3.0054	2.5460	6.5300e-003	0.1295	0.1076	0.2371	0.0348	0.1013	0.1361	0.0000	589.9633	589.9633	0.0881	0.0000	592.1660
2023	0.2514	2.5942	2.4925	6.4100e-003	0.1295	0.0923	0.2219	0.0348	0.0869	0.1217	0.0000	579.0122	579.0122	0.0853	0.0000	581.1446
2024	0.5668	1.3625	1.2758	3.6600e-003	0.0672	0.0391	0.1063	0.0182	0.0367	0.0549	0.0000	335.1618	335.1618	0.0476	0.0000	336.3514
Maximum	**0.5668**	**3.6844**	**2.5460**	**6.5300e-003**	**0.5244**	**0.1569**	**0.6813**	**0.2674**	**0.1457**	**0.4131**	**0.0000**	**589.9633**	**589.9633**	**0.1048**	**0.0000**	**592.1660**

2.1 Overall Construction

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	0.0992	1.9973	2.6905	5.7000e-003	0.2741	9.8100e-003	0.2839	0.1306	9.7300e-003	0.1404	0.0000	512.6370	512.6370	0.1048	0.0000	515.2570
2022	0.1259	2.3940	2.7423	6.5300e-003	0.1295	0.0134	0.1430	0.0348	0.0133	0.0481	0.0000	589.9630	589.9630	0.0881	0.0000	592.1657
2023	0.1163	2.1428	2.7043	6.4100e-003	0.1295	0.0124	0.1419	0.0348	0.0123	0.0471	0.0000	579.0118	579.0118	0.0853	0.0000	581.1443
2024	0.5078	1.2437	1.3841	3.6600e-003	0.0672	5.2000e-003	0.0724	0.0182	5.1600e-003	0.0233	0.0000	335.1616	335.1616	0.0476	0.0000	336.3512
Maximum	**0.5078**	**2.3940**	**2.7423**	**6.5300e-003**	**0.2741**	**0.0134**	**0.2839**	**0.1306**	**0.0133**	**0.1404**	**0.0000**	**589.9630**	**589.9630**	**0.1048**	**0.0000**	**592.1657**

	ROG	NOx	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	**40.85**	**26.95**	**-9.04**	**0.00**	**29.42**	**89.70**	**48.57**	**38.51**	**89.08**	**64.33**	**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	**2-1-2021**	**4-30-2021**	1.2751	0.5970
2	**5-1-2021**	**7-31-2021**	1.1943	0.4709
3	**8-1-2021**	**10-31-2021**	0.9169	0.5779
4	**11-1-2021**	**1-31-2022**	0.8857	0.6488
5	**2-1-2022**	**4-30-2022**	0.8024	0.6156
6	**5-1-2022**	**7-31-2022**	0.8282	0.6351
7	**8-1-2022**	**10-31-2022**	0.8288	0.6357
8	**11-1-2022**	**1-31-2023**	0.7927	0.6148

9	**2-1-2023**	**4-30-2023**	0.6956	0.5522
10	**5-1-2023**	**7-31-2023**	0.7184	0.5702
11	**8-1-2023**	**10-31-2023**	0.7187	0.5705
12	**11-1-2023**	**1-31-2024**	0.7064	0.5697
13	**2-1-2024**	**4-30-2024**	0.6422	0.5404
14	**5-1-2024**	**7-31-2024**	0.5316	0.5032
15	**8-1-2024**	**9-30-2024**	0.4786	0.4724
		Highest	1.2751	0.6488

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	0.8538	2.0000e-005	1.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7000e-003	3.7000e-003	1.0000e-005	0.0000	3.9400e-003
Energy	0.0276	0.2511	0.2110	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	728.6493	728.6493	0.0258	9.2700e-003	732.0578
Mobile	0.2550	1.1931	3.1465	0.0126	1.1838	0.0102	1.1940	0.3177	9.4900e-003	0.3272	0.0000	1,160.7846	1,160.7846	0.0378	0.0000	1,161.7307
Waste						0.0000	0.0000		0.0000	0.0000	52.1037	0.0000	52.1037	3.0792	0.0000	129.0848
Water						0.0000	0.0000		0.0000	0.0000	15.1866	75.3513	90.5378	1.5632	0.0375	140.8036
Total	**1.1365**	**1.4442**	**3.3593**	**0.0141**	**1.1838**	**0.0293**	**1.2131**	**0.3177**	**0.0286**	**0.3463**	**67.2903**	**1,964.7889**	**2,032.0792**	**4.7061**	**0.0468**	**2,163.6808**

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	0.8538	2.0000e-005	1.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7000e-003	3.7000e-003	1.0000e-005	0.0000	3.9400e-003
Energy	0.0276	0.2511	0.2110	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	728.6493	728.6493	0.0258	9.2700e-003	732.0578
Mobile	0.2550	1.1931	3.1465	0.0126	1.1838	0.0102	1.1940	0.3177	9.4900e-003	0.3272	0.0000	1,160.7846	1,160.7846	0.0378	0.0000	1,161.7307
Waste						0.0000	0.0000		0.0000	0.0000	52.1037	0.0000	52.1037	3.0792	0.0000	129.0848
Water						0.0000	0.0000		0.0000	0.0000	15.1866	75.3513	90.5378	1.5632	0.0375	140.8036
Total	**1.1365**	**1.4442**	**3.3593**	**0.0141**	**1.1838**	**0.0293**	**1.2131**	**0.3177**	**0.0286**	**0.3463**	**67.2903**	**1,964.7889**	**2,032.0792**	**4.7061**	**0.0468**	**2,163.6808**

	ROG	NOx	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

USD - Phase 1A (non campus) Tier4 - Bay Area AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	2/1/2021	4/23/2021	5	60	
2	Site Preparation	Site Preparation	4/24/2021	6/4/2021	5	30	
3	Grading	Grading	6/5/2021	8/27/2021	5	60	
4	Building Construction	Building Construction	8/28/2021	4/19/2024	5	690	
5	Paving	Paving	4/20/2024	7/12/2024	5	60	
6	Architectural Coating	Architectural Coating	7/13/2024	10/4/2024	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4.75

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 130,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

USD - Phase 1A (non campus) Tier4 - Bay Area AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	6	15.00	0.00	1,000.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	565.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	243.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	87.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Paving	8	20.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Architectural Coating	1	17.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

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	0.0950	0.9432	0.6470	1.1600e-003		0.0465	0.0465		0.0432	0.0432	0.0000	102.0024	102.0024	0.0287	0.0000	102.7201
Total	**0.0950**	**0.9432**	**0.6470**	**1.1600e-003**		**0.0465**	**0.0465**		**0.0432**	**0.0432**	**0.0000**	**102.0024**	**102.0024**	**0.0287**	**0.0000**	**102.7201**

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	3.9400e-003	0.1349	0.0288	3.9000e-004	8.4500e-003	4.2000e-004	8.8600e-003	2.3200e-003	4.0000e-004	2.7200e-003	0.0000	37.8272	37.8272	1.9300e-003	0.0000	37.8754
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	1.3800e-003	9.5000e-004	0.0101	3.0000e-005	3.5600e-003	2.0000e-005	3.5800e-003	9.5000e-004	2.0000e-005	9.7000e-004	0.0000	3.0060	3.0060	7.0000e-005	0.0000	3.0076
Total	**5.3200e-003**	**0.1359**	**0.0388**	**4.2000e-004**	**0.0120**	**4.4000e-004**	**0.0124**	**3.2700e-003**	**4.2000e-004**	**3.6900e-003**	**0.0000**	**40.8331**	**40.8331**	**2.0000e-003**	**0.0000**	**40.8831**

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	0.0175	0.4067	0.7402	1.1600e-003		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003	0.0000	102.0022	102.0022	0.0287	0.0000	102.7200
Total	**0.0175**	**0.4067**	**0.7402**	**1.1600e-003**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**	**0.0000**	**102.0022**	**102.0022**	**0.0287**	**0.0000**	**102.7200**

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	3.9400e-003	0.1349	0.0288	3.9000e-004	8.4500e-003	4.2000e-004	8.8600e-003	2.3200e-003	4.0000e-004	2.7200e-003	0.0000	37.8272	37.8272	1.9300e-003	0.0000	37.8754
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	1.3800e-003	9.5000e-004	0.0101	3.0000e-005	3.5600e-003	2.0000e-005	3.5800e-003	9.5000e-004	2.0000e-005	9.7000e-004	0.0000	3.0060	3.0060	7.0000e-005	0.0000	3.0076
Total	**5.3200e-003**	**0.1359**	**0.0388**	**4.2000e-004**	**0.0120**	**4.4000e-004**	**0.0124**	**3.2700e-003**	**4.2000e-004**	**3.6900e-003**	**0.0000**	**40.8331**	**40.8331**	**2.0000e-003**	**0.0000**	**40.8831**

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					0.2719	0.0000	0.2719	0.1491	0.0000	0.1491	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1536	50.1536	0.0162	0.0000	50.5591
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.2719**	**0.0307**	**0.3026**	**0.1491**	**0.0282**	**0.1773**	**0.0000**	**50.1536**	**50.1536**	**0.0162**	**0.0000**	**50.5591**

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	2.2300e-003	0.0762	0.0162	2.2000e-004	4.7700e-003	2.4000e-004	5.0100e-003	1.3100e-003	2.3000e-004	1.5400e-003	0.0000	21.3723	21.3723	1.0900e-003	0.0000	21.3996
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	8.3000e-004	5.7000e-004	6.0600e-003	2.0000e-005	2.1300e-003	1.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8036	1.8036	4.0000e-005	0.0000	1.8046
Total	**3.0600e-003**	**0.0768**	**0.0223**	**2.4000e-004**	**6.9000e-003**	**2.5000e-004**	**7.1600e-003**	**1.8800e-003**	**2.4000e-004**	**2.1200e-003**	**0.0000**	**23.1759**	**23.1759**	**1.1300e-003**	**0.0000**	**23.2042**

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					0.1224	0.0000	0.1224	0.0671	0.0000	0.0671	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0105	0.1824	0.3444	5.7000e-004		9.3000e-004	9.3000e-004		9.3000e-004	9.3000e-004	0.0000	50.1535	50.1535	0.0162	0.0000	50.5590
Total	**0.0105**	**0.1824**	**0.3444**	**5.7000e-004**	**0.1224**	**9.3000e-004**	**0.1233**	**0.0671**	**9.3000e-004**	**0.0680**	**0.0000**	**50.1535**	**50.1535**	**0.0162**	**0.0000**	**50.5590**

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	2.2300e-003	0.0762	0.0162	2.2000e-004	4.7700e-003	2.4000e-004	5.0100e-003	1.3100e-003	2.3000e-004	1.5400e-003	0.0000	21.3723	21.3723	1.0900e-003	0.0000	21.3996
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	8.3000e-004	5.7000e-004	6.0600e-003	2.0000e-005	2.1300e-003	1.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8036	1.8036	4.0000e-005	0.0000	1.8046
Total	**3.0600e-003**	**0.0768**	**0.0223**	**2.4000e-004**	**6.9000e-003**	**2.5000e-004**	**7.1600e-003**	**1.8800e-003**	**2.4000e-004**	**2.1200e-003**	**0.0000**	**23.1759**	**23.1759**	**1.1300e-003**	**0.0000**	**23.2042**

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					0.1832	0.0000	0.1832	0.0996	0.0000	0.0996	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0687	0.7421	0.4757	8.9000e-004		0.0348	0.0348		0.0320	0.0320	0.0000	78.1611	78.1611	0.0253	0.0000	78.7931
Total	**0.0687**	**0.7421**	**0.4757**	**8.9000e-004**	**0.1832**	**0.0348**	**0.2180**	**0.0996**	**0.0320**	**0.1316**	**0.0000**	**78.1611**	**78.1611**	**0.0253**	**0.0000**	**78.7931**

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	9.6000e-004	0.0328	6.9900e-003	9.0000e-005	2.0500e-003	1.0000e-004	2.1500e-003	5.6000e-004	1.0000e-004	6.6000e-004	0.0000	9.1920	9.1920	4.7000e-004	0.0000	9.2037
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	1.3800e-003	9.5000e-004	0.0101	3.0000e-005	3.5600e-003	2.0000e-005	3.5800e-003	9.5000e-004	2.0000e-005	9.7000e-004	0.0000	3.0060	3.0060	7.0000e-005	0.0000	3.0076
Total	**2.3400e-003**	**0.0337**	**0.0171**	**1.2000e-004**	**5.6100e-003**	**1.2000e-004**	**5.7300e-003**	**1.5100e-003**	**1.2000e-004**	**1.6300e-003**	**0.0000**	**12.1980**	**12.1980**	**5.4000e-004**	**0.0000**	**12.2114**

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					0.0824	0.0000	0.0824	0.0448	0.0000	0.0448	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0156	0.3100	0.5697	8.9000e-004		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	78.1610	78.1610	0.0253	0.0000	78.7930
Total	**0.0156**	**0.3100**	**0.5697**	**8.9000e-004**	**0.0824**	**1.4500e-003**	**0.0839**	**0.0448**	**1.4500e-003**	**0.0463**	**0.0000**	**78.1610**	**78.1610**	**0.0253**	**0.0000**	**78.7930**

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	9.6000e-004	0.0328	6.9900e-003	9.0000e-005	2.0500e-003	1.0000e-004	2.1500e-003	5.6000e-004	1.0000e-004	6.6000e-004	0.0000	9.1920	9.1920	4.7000e-004	0.0000	9.2037
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	1.3800e-003	9.5000e-004	0.0101	3.0000e-005	3.5600e-003	2.0000e-005	3.5800e-003	9.5000e-004	2.0000e-005	9.7000e-004	0.0000	3.0060	3.0060	7.0000e-005	0.0000	3.0076
Total	**2.3400e-003**	**0.0337**	**0.0171**	**1.2000e-004**	**5.6100e-003**	**1.2000e-004**	**5.7300e-003**	**1.5100e-003**	**1.2000e-004**	**1.6300e-003**	**0.0000**	**12.1980**	**12.1980**	**5.4000e-004**	**0.0000**	**12.2114**

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	0.0855	0.7844	0.7459	1.2100e-003		0.0431	0.0431		0.0406	0.0406	0.0000	104.2368	104.2368	0.0252	0.0000	104.8655
Total	**0.0855**	**0.7844**	**0.7459**	**1.2100e-003**		**0.0431**	**0.0431**		**0.0406**	**0.0406**	**0.0000**	**104.2368**	**104.2368**	**0.0252**	**0.0000**	**104.8655**

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	8.8900e-003	0.3524	0.0658	7.8000e-004	0.0139	7.6000e-004	0.0147	3.8300e-003	7.2000e-004	4.5500e-003	0.0000	75.7248	75.7248	5.1900e-003	0.0000	75.8546
Worker	0.0120	8.2900e-003	0.0878	2.9000e-004	0.0309	2.0000e-004	0.0311	8.2300e-003	1.9000e-004	8.4200e-003	0.0000	26.1518	26.1518	5.9000e-004	0.0000	26.1665
Total	**0.0209**	**0.3607**	**0.1536**	**1.0700e-003**	**0.0448**	**9.6000e-004**	**0.0458**	**0.0121**	**9.1000e-004**	**0.0130**	**0.0000**	**101.8767**	**101.8767**	**5.7800e-003**	**0.0000**	**102.0211**

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	0.0240	0.4911	0.8043	1.2100e-003		3.8100e-003	3.8100e-003		3.8100e-003	3.8100e-003	0.0000	104.2367	104.2367	0.0252	0.0000	104.8653
Total	**0.0240**	**0.4911**	**0.8043**	**1.2100e-003**		**3.8100e-003**	**3.8100e-003**		**3.8100e-003**	**3.8100e-003**	**0.0000**	**104.2367**	**104.2367**	**0.0252**	**0.0000**	**104.8653**

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	8.8900e-003	0.3524	0.0658	7.8000e-004	0.0139	7.6000e-004	0.0147	3.8300e-003	7.2000e-004	4.5500e-003	0.0000	75.7248	75.7248	5.1900e-003	0.0000	75.8546
Worker	0.0120	8.2900e-003	0.0878	2.9000e-004	0.0309	2.0000e-004	0.0311	8.2300e-003	1.9000e-004	8.4200e-003	0.0000	26.1518	26.1518	5.9000e-004	0.0000	26.1665
Total	**0.0209**	**0.3607**	**0.1536**	**1.0700e-003**	**0.0448**	**9.6000e-004**	**0.0458**	**0.0121**	**9.1000e-004**	**0.0130**	**0.0000**	**101.8767**	**101.8767**	**5.7800e-003**	**0.0000**	**102.0211**

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	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

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	0.0242	0.9539	0.1856	2.2200e-003	0.0402	1.8700e-003	0.0420	0.0111	1.7900e-003	0.0128	0.0000	215.9406	215.9406	0.0144	0.0000	216.3011
Worker	0.0324	0.0215	0.2331	8.0000e-004	0.0894	5.7000e-004	0.0899	0.0238	5.3000e-004	0.0243	0.0000	72.7799	72.7799	1.5200e-003	0.0000	72.8179
Total	**0.0565**	**0.9754**	**0.4187**	**3.0200e-003**	**0.1295**	**2.4400e-003**	**0.1320**	**0.0348**	**2.3200e-003**	**0.0371**	**0.0000**	**288.7205**	**288.7205**	**0.0159**	**0.0000**	**289.1190**

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	0.0694	1.4186	2.3236	3.5000e-003		0.0110	0.0110		0.0110	0.0110	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.0694**	**1.4186**	**2.3236**	**3.5000e-003**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

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	0.0242	0.9539	0.1856	2.2200e-003	0.0402	1.8700e-003	0.0420	0.0111	1.7900e-003	0.0128	0.0000	215.9406	215.9406	0.0144	0.0000	216.3011
Worker	0.0324	0.0215	0.2331	8.0000e-004	0.0894	5.7000e-004	0.0899	0.0238	5.3000e-004	0.0243	0.0000	72.7799	72.7799	1.5200e-003	0.0000	72.8179
Total	**0.0565**	**0.9754**	**0.4187**	**3.0200e-003**	**0.1295**	**2.4400e-003**	**0.1320**	**0.0348**	**2.3200e-003**	**0.0371**	**0.0000**	**288.7205**	**288.7205**	**0.0159**	**0.0000**	**289.1190**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0167	0.7049	0.1663	2.1300e-003	0.0402	8.0000e-004	0.0410	0.0111	7.6000e-004	0.0118	0.0000	207.6734	207.6734	0.0123	0.0000	207.9797
Worker	0.0303	0.0193	0.2144	7.7000e-004	0.0894	5.6000e-004	0.0899	0.0238	5.1000e-004	0.0243	0.0000	69.9926	69.9926	1.3600e-003	0.0000	70.0267
Total	**0.0470**	**0.7242**	**0.3808**	**2.9000e-003**	**0.1295**	**1.3600e-003**	**0.1309**	**0.0348**	**1.2700e-003**	**0.0361**	**0.0000**	**277.6660**	**277.6660**	**0.0136**	**0.0000**	**278.0063**

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	0.0694	1.4186	2.3236	3.5000e-003		0.0110	0.0110		0.0110	0.0110	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.0694**	**1.4186**	**2.3236**	**3.5000e-003**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0167	0.7049	0.1663	2.1300e-003	0.0402	8.0000e-004	0.0410	0.0111	7.6000e-004	0.0118	0.0000	207.6734	207.6734	0.0123	0.0000	207.9797
Worker	0.0303	0.0193	0.2144	7.7000e-004	0.0894	5.6000e-004	0.0899	0.0238	5.1000e-004	0.0243	0.0000	69.9926	69.9926	1.3600e-003	0.0000	70.0267
Total	**0.0470**	**0.7242**	**0.3808**	**2.9000e-003**	**0.1295**	**1.3600e-003**	**0.1309**	**0.0348**	**1.2700e-003**	**0.0361**	**0.0000**	**277.6660**	**277.6660**	**0.0136**	**0.0000**	**278.0063**

3.5 Building Construction - 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					
Off-Road	0.0589	0.5378	0.6467	1.0800e-003		0.0245	0.0245		0.0231	0.0231	0.0000	92.7396	92.7396	0.0219	0.0000	93.2879
Total	**0.0589**	**0.5378**	**0.6467**	**1.0800e-003**		**0.0245**	**0.0245**		**0.0231**	**0.0231**	**0.0000**	**92.7396**	**92.7396**	**0.0219**	**0.0000**	**93.2879**

3.5 Building Construction - 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	0.0000	0.0000	0.0000	0.0000	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	5.0500e-003	0.2132	0.0510	6.5000e-004	0.0124	2.4000e-004	0.0126	3.4000e-003	2.3000e-004	3.6300e-003	0.0000	63.3361	63.3361	3.7100e-003	0.0000	63.4289
Worker	8.7500e-003	5.3600e-003	0.0611	2.3000e-004	0.0275	1.7000e-004	0.0277	7.3200e-003	1.6000e-004	7.4700e-003	0.0000	20.6839	20.6839	3.8000e-004	0.0000	20.6933
Total	**0.0138**	**0.2185**	**0.1122**	**8.8000e-004**	**0.0399**	**4.1000e-004**	**0.0403**	**0.0107**	**3.9000e-004**	**0.0111**	**0.0000**	**84.0199**	**84.0199**	**4.0900e-003**	**0.0000**	**84.1222**

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	0.0213	0.4365	0.7150	1.0800e-003		3.3800e-003	3.3800e-003		3.3800e-003	3.3800e-003	0.0000	92.7395	92.7395	0.0219	0.0000	93.2878
Total	**0.0213**	**0.4365**	**0.7150**	**1.0800e-003**		**3.3800e-003**	**3.3800e-003**		**3.3800e-003**	**3.3800e-003**	**0.0000**	**92.7395**	**92.7395**	**0.0219**	**0.0000**	**93.2878**

3.5 Building Construction - 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	0.0000	0.0000	0.0000	0.0000	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	5.0500e-003	0.2132	0.0510	6.5000e-004	0.0124	2.4000e-004	0.0126	3.4000e-003	2.3000e-004	3.6300e-003	0.0000	63.3361	63.3361	3.7100e-003	0.0000	63.4289
Worker	8.7500e-003	5.3600e-003	0.0611	2.3000e-004	0.0275	1.7000e-004	0.0277	7.3200e-003	1.6000e-004	7.4700e-003	0.0000	20.6839	20.6839	3.8000e-004	0.0000	20.6933
Total	**0.0138**	**0.2185**	**0.1122**	**8.8000e-004**	**0.0399**	**4.1000e-004**	**0.0403**	**0.0107**	**3.9000e-004**	**0.0111**	**0.0000**	**84.0199**	**84.0199**	**4.0900e-003**	**0.0000**	**84.1222**

3.6 Paving - 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					
Off-Road	0.0264	0.2482	0.3666	5.7000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	49.1409	49.1409	0.0154	0.0000	49.5270
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0264**	**0.2482**	**0.3666**	**5.7000e-004**		**0.0120**	**0.0120**		**0.0111**	**0.0111**	**0.0000**	**49.1409**	**49.1409**	**0.0154**	**0.0000**	**49.5270**

3.6 Paving - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7900e-003	0.1599	0.0383	4.9000e-004	9.2700e-003	1.8000e-004	9.4500e-003	2.5500e-003	1.7000e-004	2.7200e-003	0.0000	47.5020	47.5020	2.7900e-003	0.0000	47.5717
Worker	1.5100e-003	9.2000e-004	0.0105	4.0000e-005	4.7400e-003	3.0000e-005	4.7700e-003	1.2600e-003	3.0000e-005	1.2900e-003	0.0000	3.5662	3.5662	7.0000e-005	0.0000	3.5678
Total	**5.3000e-003**	**0.1608**	**0.0488**	**5.3000e-004**	**0.0140**	**2.1000e-004**	**0.0142**	**3.8100e-003**	**2.0000e-004**	**4.0100e-003**	**0.0000**	**51.0682**	**51.0682**	**2.8600e-003**	**0.0000**	**51.1395**

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	8.7400e-003	0.2355	0.4060	5.7000e-004		8.8000e-004	8.8000e-004		8.8000e-004	8.8000e-004	0.0000	49.1409	49.1409	0.0154	0.0000	49.5269
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.7400e-003**	**0.2355**	**0.4060**	**5.7000e-004**		**8.8000e-004**	**8.8000e-004**		**8.8000e-004**	**8.8000e-004**	**0.0000**	**49.1409**	**49.1409**	**0.0154**	**0.0000**	**49.5269**

3.6 Paving - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7900e-003	0.1599	0.0383	4.9000e-004	9.2700e-003	1.8000e-004	9.4500e-003	2.5500e-003	1.7000e-004	2.7200e-003	0.0000	47.5020	47.5020	2.7900e-003	0.0000	47.5717
Worker	1.5100e-003	9.2000e-004	0.0105	4.0000e-005	4.7400e-003	3.0000e-005	4.7700e-003	1.2600e-003	3.0000e-005	1.2900e-003	0.0000	3.5662	3.5662	7.0000e-005	0.0000	3.5678
Total	**5.3000e-003**	**0.1608**	**0.0488**	**5.3000e-004**	**0.0140**	**2.1000e-004**	**0.0142**	**3.8100e-003**	**2.0000e-004**	**4.0100e-003**	**0.0000**	**51.0682**	**51.0682**	**2.8600e-003**	**0.0000**	**51.1395**

3.7 Architectural Coating - 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					
Archit. Coating	0.4519					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4200e-003	0.0366	0.0543	9.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	7.6598	7.6598	4.3000e-004	0.0000	7.6705
Total	**0.4573**	**0.0366**	**0.0543**	**9.0000e-005**		**1.8300e-003**	**1.8300e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**7.6598**	**7.6598**	**4.3000e-004**	**0.0000**	**7.6705**

3.7 Architectural Coating - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7900e-003	0.1599	0.0383	4.9000e-004	9.2700e-003	1.8000e-004	9.4500e-003	2.5500e-003	1.7000e-004	2.7200e-003	0.0000	47.5020	47.5020	2.7900e-003	0.0000	47.5717
Worker	1.2800e-003	7.9000e-004	8.9600e-003	3.0000e-005	4.0300e-003	2.0000e-005	4.0500e-003	1.0700e-003	2.0000e-005	1.0900e-003	0.0000	3.0313	3.0313	6.0000e-005	0.0000	3.0326
Total	**5.0700e-003**	**0.1607**	**0.0472**	**5.2000e-004**	**0.0133**	**2.0000e-004**	**0.0135**	**3.6200e-003**	**1.9000e-004**	**3.8100e-003**	**0.0000**	**50.5333**	**50.5333**	**2.8500e-003**	**0.0000**	**50.6043**

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	0.4519					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0318	0.0550	9.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	7.6598	7.6598	4.3000e-004	0.0000	7.6705
Total	**0.4535**	**0.0318**	**0.0550**	**9.0000e-005**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**7.6598**	**7.6598**	**4.3000e-004**	**0.0000**	**7.6705**

3.7 Architectural Coating - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7900e-003	0.1599	0.0383	4.9000e-004	9.2700e-003	1.8000e-004	9.4500e-003	2.5500e-003	1.7000e-004	2.7200e-003	0.0000	47.5020	47.5020	2.7900e-003	0.0000	47.5717
Worker	1.2800e-003	7.9000e-004	8.9600e-003	3.0000e-005	4.0300e-003	2.0000e-005	4.0500e-003	1.0700e-003	2.0000e-005	1.0900e-003	0.0000	3.0313	3.0313	6.0000e-005	0.0000	3.0326
Total	**5.0700e-003**	**0.1607**	**0.0472**	**5.2000e-004**	**0.0133**	**2.0000e-004**	**0.0135**	**3.6200e-003**	**1.9000e-004**	**3.8100e-003**	**0.0000**	**50.5333**	**50.5333**	**2.8500e-003**	**0.0000**	**50.6043**

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	0.2550	1.1931	3.1465	0.0126	1.1838	0.0102	1.1940	0.3177	9.4900e-003	0.3272	0.0000	1,160.7846	1,160.7846	0.0378	0.0000	1,161.7307
Unmitigated	0.2550	1.1931	3.1465	0.0126	1.1838	0.0102	1.1940	0.3177	9.4900e-003	0.3272	0.0000	1,160.7846	1,160.7846	0.0378	0.0000	1,161.7307

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,442.79	273.24	140.76	3,181,412	3,181,412
Total	1,442.79	273.24	140.76	3,181,412	3,181,412

4.3 Trip Type Information

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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.580272	0.038274	0.193741	0.109917	0.015100	0.005324	0.018491	0.026678	0.002649	0.002134	0.005793	0.000896	0.000732

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	455.2532	455.2532	0.0206	4.2600e-003	457.0370
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	455.2532	455.2532	0.0206	4.2600e-003	457.0370
NaturalGas Mitigated	0.0276	0.2511	0.2110	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	273.3961	273.3961	5.2400e-003	5.0100e-003	275.0208
NaturalGas Unmitigated	0.0276	0.2511	0.2110	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	273.3961	273.3961	5.2400e-003	5.0100e-003	275.0208

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	5.12325e+006	0.0276	0.2511	0.2110	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	273.3961	273.3961	5.2400e-003	5.0100e-003	275.0208
Total		**0.0276**	**0.2511**	**0.2110**	**1.5100e-003**		**0.0191**	**0.0191**		**0.0191**	**0.0191**	**0.0000**	**273.3961**	**273.3961**	**5.2400e-003**	**5.0100e-003**	**275.0208**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	5.12325e+006	0.0276	0.2511	0.2110	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	273.3961	273.3961	5.2400e-003	5.0100e-003	275.0208
Total		**0.0276**	**0.2511**	**0.2110**	**1.5100e-003**		**0.0191**	**0.0191**		**0.0191**	**0.0191**	**0.0000**	**273.3961**	**273.3961**	**5.2400e-003**	**5.0100e-003**	**275.0208**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.56492e+006	455.2532	0.0206	4.2600e-003	457.0370
Total		**455.2532**	**0.0206**	**4.2600e-003**	**457.0370**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.56492e+006	455.2532	0.0206	4.2600e-003	457.0370
Total		**455.2532**	**0.0206**	**4.2600e-003**	**457.0370**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8538	2.0000e-005	1.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7000e-003	3.7000e-003	1.0000e-005	0.0000	3.9400e-003
Unmitigated	0.8538	2.0000e-005	1.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7000e-003	3.7000e-003	1.0000e-005	0.0000	3.9400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0452					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8084					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8000e-004	2.0000e-005	1.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7000e-003	3.7000e-003	1.0000e-005	0.0000	3.9400e-003
Total	**0.8538**	**2.0000e-005**	**1.9000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.7000e-003**	**3.7000e-003**	**1.0000e-005**	**0.0000**	**3.9400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0452					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8084					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8000e-004	2.0000e-005	1.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7000e-003	3.7000e-003	1.0000e-005	0.0000	3.9400e-003
Total	**0.8538**	**2.0000e-005**	**1.9000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.7000e-003**	**3.7000e-003**	**1.0000e-005**	**0.0000**	**3.9400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	90.5378	1.5632	0.0375	140.8036
Unmitigated	90.5378	1.5632	0.0375	140.8036

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	47.8687 / 0	90.5378	1.5632	0.0375	140.8036
Total		**90.5378**	**1.5632**	**0.0375**	**140.8036**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	47.8687 / 0	90.5378	1.5632	0.0375	140.8036
Total		**90.5378**	**1.5632**	**0.0375**	**140.8036**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	52.1037	3.0792	0.0000	129.0848
Unmitigated	52.1037	3.0792	0.0000	129.0848

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	256.68	52.1037	3.0792	0.0000	129.0848
Total		**52.1037**	**3.0792**	**0.0000**	**129.0848**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	256.68	52.1037	3.0792	0.0000	129.0848
Total		**52.1037**	**3.0792**	**0.0000**	**129.0848**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

USD - Phase 1B Tier 4I

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	270.00	1000sqft	6.20	270,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2026
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

USD - Phase 1B Tier 4I - Bay Area AQMD Air District, Annual

Project Characteristics -

Land Use - Per Applicant

Construction Phase - Per Applicant

Trips and VMT - per applicant

Grading - Per Applicant

Architectural Coating - Per Applicant

Vehicle Trips - Per Applicant

Water And Wastewater - Per Applicant

Construction Off-road Equipment Mitigation - Per Applicant

Area Coating - Per Applicant

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	135,000.00	126,520.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	405,000.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	135000	126520
tblAreaCoating	Area_Nonresidential_Interior	405000	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	230.00	517.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	10.00	23.00
tblGrading	AcresOfGrading	22.50	6.20
tblGrading	MaterialExported	0.00	138,026.00
tblGrading	MaterialExported	0.00	659.00
tblGrading	MaterialImported	0.00	81,993.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,250.00
tblTripsAndVMT	HaulingTripNumber	82.00	1,150.00

tblTripsAndVMT	HaulingTripNumber	17,253.00	2,250.00
tblTripsAndVMT	VendorTripNumber	44.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	62,437,500.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2190	2.4937	1.9514	6.2200e-003	0.4630	0.0845	0.5475	0.2191	0.0786	0.2977	0.0000	571.0319	571.0319	0.0896	0.0000	573.2707
2024	0.2465	2.4820	2.5450	6.6300e-003	0.1575	0.0818	0.2393	0.0423	0.0770	0.1192	0.0000	599.1316	599.1316	0.0856	0.0000	601.2713
2025	0.6043	1.9946	2.0973	5.6800e-003	0.1241	0.0574	0.1816	0.0334	0.0539	0.0873	0.0000	516.5088	516.5088	0.0750	0.0000	518.3837
2026	0.0199	6.3300e-003	3.4400e-003	2.0000e-005	4.9000e-004	6.0000e-005	5.5000e-004	1.3000e-004	6.0000e-005	1.9000e-004	0.0000	1.9397	1.9397	1.1000e-004	0.0000	1.9423
Maximum	**0.6043**	**2.4937**	**2.5450**	**6.6300e-003**	**0.4630**	**0.0845**	**0.5475**	**0.2191**	**0.0786**	**0.2977**	**0.0000**	**599.1316**	**599.1316**	**0.0896**	**0.0000**	**601.2713**

2.1 Overall Construction

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					
2023	0.0891	1.8252	2.2810	6.2200e-003	0.2655	8.0200e-003	0.2736	0.1141	7.9600e-003	0.1221	0.0000	571.0316	571.0316	0.0896	0.0000	573.2704
2024	0.1237	2.1504	2.7686	6.6300e-003	0.1575	0.0126	0.1700	0.0423	0.0125	0.0548	0.0000	599.1312	599.1312	0.0856	0.0000	601.2709
2025	0.5165	1.8908	2.3137	5.6800e-003	0.1241	9.5100e-003	0.1337	0.0334	9.4400e-003	0.0428	0.0000	516.5085	516.5085	0.0750	0.0000	518.3834
2026	0.0198	6.2400e-003	3.4600e-003	2.0000e-005	4.9000e-004	1.0000e-005	5.0000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	1.9397	1.9397	1.1000e-004	0.0000	1.9423
Maximum	**0.5165**	**2.1504**	**2.7686**	**6.6300e-003**	**0.2655**	**0.0126**	**0.2736**	**0.1141**	**0.0125**	**0.1221**	**0.0000**	**599.1312**	**599.1312**	**0.0896**	**0.0000**	**601.2709**

	ROG	NOx	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	**31.26**	**15.82**	**-11.67**	**0.00**	**26.50**	**86.54**	**40.37**	**35.61**	**85.73**	**56.43**	**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	**4-1-2023**	**6-30-2023**	1.1122	0.7227
2	**7-1-2023**	**9-30-2023**	0.8904	0.6229
3	**10-1-2023**	**12-31-2023**	0.7235	0.5753
4	**1-1-2024**	**3-31-2024**	0.6774	0.5646
5	**4-1-2024**	**6-30-2024**	0.6761	0.5633
6	**7-1-2024**	**9-30-2024**	0.6835	0.5695
7	**10-1-2024**	**12-31-2024**	0.6848	0.5708
8	**1-1-2025**	**3-31-2025**	0.6312	0.5543

9	**4-1-2025**	**6-30-2025**	0.6370	0.5593
10	**7-1-2025**	**9-30-2025**	0.5903	0.5490
11	**10-1-2025**	**12-31-2025**	0.7375	0.7428
12	**1-1-2026**	**3-31-2026**	0.0187	0.0186
		Highest	1.1122	0.7428

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	1.0987	2.0000e-005	2.4700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8200e-003	4.8200e-003	1.0000e-005	0.0000	5.1400e-003
Energy	0.0360	0.3276	0.2752	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	950.4121	950.4121	0.0337	0.0121	954.8580
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	67.9614	0.0000	67.9614	4.0164	0.0000	168.3714
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1347**	**0.3276**	**0.2776**	**1.9700e-003**	**0.0000**	**0.0249**	**0.0249**	**0.0000**	**0.0249**	**0.0249**	**67.9614**	**950.4170**	**1,018.3783**	**4.0501**	**0.0121**	**1,123.2345**

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	1.0987	2.0000e-005	2.4700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8200e-003	4.8200e-003	1.0000e-005	0.0000	5.1400e-003
Energy	0.0360	0.3276	0.2752	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	950.4121	950.4121	0.0337	0.0121	954.8580
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	67.9614	0.0000	67.9614	4.0164	0.0000	168.3714
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1347**	**0.3276**	**0.2776**	**1.9700e-003**	**0.0000**	**0.0249**	**0.0249**	**0.0000**	**0.0249**	**0.0249**	**67.9614**	**950.4170**	**1,018.3783**	**4.0501**	**0.0121**	**1,123.2345**

	ROG	NOx	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

USD - Phase 1B Tier 4I - Bay Area AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2023	6/2/2023	5	45	
2	Site Preparation	Site Preparation	6/3/2023	7/5/2023	5	23	
3	Grading	Grading	7/6/2023	9/6/2023	5	45	
4	Building Construction	Building Construction	9/7/2023	8/29/2025	5	517	
5	Paving	Paving	8/30/2025	10/31/2025	5	45	
6	Architectural Coating	Architectural Coating	11/1/2025	1/2/2026	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 6.2

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 126,520; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

USD - Phase 1B Tier 4I - Bay Area AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	6	15.00	0.00	2,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	1,150.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	2,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	113.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Paving	6	15.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Architectural Coating	1	23.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

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					
Off-Road	0.0511	0.4834	0.4420	8.7000e-004		0.0224	0.0224		0.0209	0.0209	0.0000	76.4822	76.4822	0.0214	0.0000	77.0176
Total	**0.0511**	**0.4834**	**0.4420**	**8.7000e-004**		**0.0224**	**0.0224**		**0.0209**	**0.0209**	**0.0000**	**76.4822**	**76.4822**	**0.0214**	**0.0000**	**77.0176**

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	5.7100e-003	0.1867	0.0576	8.3000e-004	0.0190	3.4000e-004	0.0193	5.2300e-003	3.2000e-004	5.5500e-003	0.0000	80.7524	80.7524	3.8200e-003	0.0000	80.8479
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	5.8000e-004	6.4000e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	2.0886	2.0886	4.0000e-005	0.0000	2.0897
Total	**6.6100e-003**	**0.1872**	**0.0640**	**8.5000e-004**	**0.0217**	**3.6000e-004**	**0.0220**	**5.9400e-003**	**3.4000e-004**	**6.2700e-003**	**0.0000**	**82.8411**	**82.8411**	**3.8600e-003**	**0.0000**	**82.9375**

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	0.0131	0.3050	0.5552	8.7000e-004		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	76.4821	76.4821	0.0214	0.0000	77.0175
Total	**0.0131**	**0.3050**	**0.5552**	**8.7000e-004**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**76.4821**	**76.4821**	**0.0214**	**0.0000**	**77.0175**

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	5.7100e-003	0.1867	0.0576	8.3000e-004	0.0190	3.4000e-004	0.0193	5.2300e-003	3.2000e-004	5.5500e-003	0.0000	80.7524	80.7524	3.8200e-003	0.0000	80.8479
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	5.8000e-004	6.4000e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	2.0886	2.0886	4.0000e-005	0.0000	2.0897
Total	**6.6100e-003**	**0.1872**	**0.0640**	**8.5000e-004**	**0.0217**	**3.6000e-004**	**0.0220**	**5.9400e-003**	**3.4000e-004**	**6.2700e-003**	**0.0000**	**82.8411**	**82.8411**	**3.8600e-003**	**0.0000**	**82.9375**

3.3 Site Preparation - 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					0.2078	0.0000	0.2078	0.1142	0.0000	0.1142	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0306	0.3165	0.2098	4.4000e-004		0.0146	0.0146		0.0134	0.0134	0.0000	38.4683	38.4683	0.0124	0.0000	38.7793
Total	**0.0306**	**0.3165**	**0.2098**	**4.4000e-004**	**0.2078**	**0.0146**	**0.2224**	**0.1142**	**0.0134**	**0.1276**	**0.0000**	**38.4683**	**38.4683**	**0.0124**	**0.0000**	**38.7793**

3.3 Site Preparation - 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	2.9200e-003	0.0954	0.0295	4.2000e-004	9.7100e-003	1.7000e-004	9.8900e-003	2.6700e-003	1.6000e-004	2.8400e-003	0.0000	41.2735	41.2735	1.9500e-003	0.0000	41.3223
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	5.5000e-004	3.5000e-004	3.9200e-003	1.0000e-005	1.6400e-003	1.0000e-005	1.6500e-003	4.4000e-004	1.0000e-005	4.4000e-004	0.0000	1.2810	1.2810	2.0000e-005	0.0000	1.2817
Total	**3.4700e-003**	**0.0958**	**0.0334**	**4.3000e-004**	**0.0114**	**1.8000e-004**	**0.0115**	**3.1100e-003**	**1.7000e-004**	**3.2800e-003**	**0.0000**	**42.5545**	**42.5545**	**1.9700e-003**	**0.0000**	**42.6039**

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					0.0935	0.0000	0.0935	0.0514	0.0000	0.0514	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0100e-003	0.1399	0.2640	4.4000e-004		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	38.4683	38.4683	0.0124	0.0000	38.7793
Total	**8.0100e-003**	**0.1399**	**0.2640**	**4.4000e-004**	**0.0935**	**7.1000e-004**	**0.0942**	**0.0514**	**7.1000e-004**	**0.0521**	**0.0000**	**38.4683**	**38.4683**	**0.0124**	**0.0000**	**38.7793**

3.3 Site Preparation - 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	2.9200e-003	0.0954	0.0295	4.2000e-004	9.7100e-003	1.7000e-004	9.8900e-003	2.6700e-003	1.6000e-004	2.8400e-003	0.0000	41.2735	41.2735	1.9500e-003	0.0000	41.3223
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	5.5000e-004	3.5000e-004	3.9200e-003	1.0000e-005	1.6400e-003	1.0000e-005	1.6500e-003	4.4000e-004	1.0000e-005	4.4000e-004	0.0000	1.2810	1.2810	2.0000e-005	0.0000	1.2817
Total	**3.4700e-003**	**0.0958**	**0.0334**	**4.3000e-004**	**0.0114**	**1.8000e-004**	**0.0115**	**3.1100e-003**	**1.7000e-004**	**3.2800e-003**	**0.0000**	**42.5545**	**42.5545**	**1.9700e-003**	**0.0000**	**42.6039**

3.4 Grading - 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					0.1512	0.0000	0.1512	0.0767	0.0000	0.0767	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0385	0.4036	0.3319	6.7000e-004		0.0174	0.0174		0.0160	0.0160	0.0000	58.6364	58.6364	0.0190	0.0000	59.1105
Total	**0.0385**	**0.4036**	**0.3319**	**6.7000e-004**	**0.1512**	**0.0174**	**0.1687**	**0.0767**	**0.0160**	**0.0928**	**0.0000**	**58.6364**	**58.6364**	**0.0190**	**0.0000**	**59.1105**

3.4 Grading - 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	5.7100e-003	0.1867	0.0576	8.3000e-004	0.0190	3.4000e-004	0.0193	5.2300e-003	3.2000e-004	5.5500e-003	0.0000	80.7524	80.7524	3.8200e-003	0.0000	80.8479
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	5.8000e-004	6.4000e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	2.0886	2.0886	4.0000e-005	0.0000	2.0897
Total	**6.6100e-003**	**0.1872**	**0.0640**	**8.5000e-004**	**0.0217**	**3.6000e-004**	**0.0220**	**5.9400e-003**	**3.4000e-004**	**6.2700e-003**	**0.0000**	**82.8411**	**82.8411**	**3.8600e-003**	**0.0000**	**82.9375**

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					0.0681	0.0000	0.0681	0.0345	0.0000	0.0345	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0117	0.2325	0.4273	6.7000e-004		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	58.6363	58.6363	0.0190	0.0000	59.1104
Total	**0.0117**	**0.2325**	**0.4273**	**6.7000e-004**	**0.0681**	**1.0900e-003**	**0.0691**	**0.0345**	**1.0900e-003**	**0.0356**	**0.0000**	**58.6363**	**58.6363**	**0.0190**	**0.0000**	**59.1104**

3.4 Grading - 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	5.7100e-003	0.1867	0.0576	8.3000e-004	0.0190	3.4000e-004	0.0193	5.2300e-003	3.2000e-004	5.5500e-003	0.0000	80.7524	80.7524	3.8200e-003	0.0000	80.8479
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	5.8000e-004	6.4000e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	2.0886	2.0886	4.0000e-005	0.0000	2.0897
Total	**6.6100e-003**	**0.1872**	**0.0640**	**8.5000e-004**	**0.0217**	**3.6000e-004**	**0.0220**	**5.9400e-003**	**3.4000e-004**	**6.2700e-003**	**0.0000**	**82.8411**	**82.8411**	**3.8600e-003**	**0.0000**	**82.9375**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0645	0.5898	0.6660	1.1000e-003		0.0287	0.0287		0.0270	0.0270	0.0000	95.0400	95.0400	0.0226	0.0000	95.6052
Total	**0.0645**	**0.5898**	**0.6660**	**1.1000e-003**		**0.0287**	**0.0287**		**0.0270**	**0.0270**	**0.0000**	**95.0400**	**95.0400**	**0.0226**	**0.0000**	**95.6052**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.2600e-003	0.2223	0.0525	6.7000e-004	0.0127	2.5000e-004	0.0129	3.4900e-003	2.4000e-004	3.7300e-003	0.0000	65.4970	65.4970	3.8600e-003	0.0000	65.5936
Worker	0.0124	7.9100e-003	0.0878	3.2000e-004	0.0366	2.3000e-004	0.0368	9.7400e-003	2.1000e-004	9.9500e-003	0.0000	28.6716	28.6716	5.6000e-004	0.0000	28.6856
Total	**0.0177**	**0.2302**	**0.1403**	**9.9000e-004**	**0.0493**	**4.8000e-004**	**0.0498**	**0.0132**	**4.5000e-004**	**0.0137**	**0.0000**	**94.1686**	**94.1686**	**4.4200e-003**	**0.0000**	**94.2791**

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	0.0219	0.4474	0.7328	1.1000e-003		3.4700e-003	3.4700e-003		3.4700e-003	3.4700e-003	0.0000	95.0398	95.0398	0.0226	0.0000	95.6051
Total	**0.0219**	**0.4474**	**0.7328**	**1.1000e-003**		**3.4700e-003**	**3.4700e-003**		**3.4700e-003**	**3.4700e-003**	**0.0000**	**95.0398**	**95.0398**	**0.0226**	**0.0000**	**95.6051**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.2600e-003	0.2223	0.0525	6.7000e-004	0.0127	2.5000e-004	0.0129	3.4900e-003	2.4000e-004	3.7300e-003	0.0000	65.4970	65.4970	3.8600e-003	0.0000	65.5936
Worker	0.0124	7.9100e-003	0.0878	3.2000e-004	0.0366	2.3000e-004	0.0368	9.7400e-003	2.1000e-004	9.9500e-003	0.0000	28.6716	28.6716	5.6000e-004	0.0000	28.6856
Total	**0.0177**	**0.2302**	**0.1403**	**9.9000e-004**	**0.0493**	**4.8000e-004**	**0.0498**	**0.0132**	**4.5000e-004**	**0.0137**	**0.0000**	**94.1686**	**94.1686**	**4.4200e-003**	**0.0000**	**94.2791**

3.5 Building Construction - 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					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

3.5 Building Construction - 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	0.0000	0.0000	0.0000	0.0000	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	0.0165	0.6981	0.1672	2.1300e-003	0.0405	7.8000e-004	0.0413	0.0111	7.5000e-004	0.0119	0.0000	207.4256	207.4256	0.0122	0.0000	207.7296
Worker	0.0372	0.0228	0.2600	9.7000e-004	0.1170	7.2000e-004	0.1177	0.0311	6.6000e-004	0.0318	0.0000	87.9837	87.9837	1.6100e-003	0.0000	88.0238
Total	**0.0538**	**0.7209**	**0.4271**	**3.1000e-003**	**0.1575**	**1.5000e-003**	**0.1590**	**0.0423**	**1.4100e-003**	**0.0437**	**0.0000**	**295.4093**	**295.4093**	**0.0138**	**0.0000**	**295.7534**

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	0.0699	1.4295	2.3415	3.5300e-003		0.0111	0.0111		0.0111	0.0111	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.0699**	**1.4295**	**2.3415**	**3.5300e-003**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

3.5 Building Construction - 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	0.0000	0.0000	0.0000	0.0000	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	0.0165	0.6981	0.1672	2.1300e-003	0.0405	7.8000e-004	0.0413	0.0111	7.5000e-004	0.0119	0.0000	207.4256	207.4256	0.0122	0.0000	207.7296
Worker	0.0372	0.0228	0.2600	9.7000e-004	0.1170	7.2000e-004	0.1177	0.0311	6.6000e-004	0.0318	0.0000	87.9837	87.9837	1.6100e-003	0.0000	88.0238
Total	**0.0538**	**0.7209**	**0.4271**	**3.1000e-003**	**0.1575**	**1.5000e-003**	**0.1590**	**0.0423**	**1.4100e-003**	**0.0437**	**0.0000**	**295.4093**	**295.4093**	**0.0138**	**0.0000**	**295.7534**

3.5 Building Construction - 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	0.1183	1.0786	1.3913	2.3300e-003		0.0456	0.0456		0.0429	0.0429	0.0000	200.6103	200.6103	0.0472	0.0000	201.7893
Total	**0.1183**	**1.0786**	**1.3913**	**2.3300e-003**		**0.0456**	**0.0456**		**0.0429**	**0.0429**	**0.0000**	**200.6103**	**200.6103**	**0.0472**	**0.0000**	**201.7893**

3.5 Building Construction - 2025

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	0.0108	0.4530	0.1104	1.3900e-003	0.0267	5.0000e-004	0.0272	7.3600e-003	4.8000e-004	7.8400e-003	0.0000	135.8087	135.8087	7.9100e-003	0.0000	136.0063
Worker	0.0232	0.0137	0.1590	6.2000e-004	0.0772	4.7000e-004	0.0777	0.0206	4.3000e-004	0.0210	0.0000	55.7314	55.7314	9.6000e-004	0.0000	55.7554
Total	**0.0340**	**0.4667**	**0.2694**	**2.0100e-003**	**0.1040**	**9.7000e-004**	**0.1049**	**0.0279**	**9.1000e-004**	**0.0288**	**0.0000**	**191.5400**	**191.5400**	**8.8700e-003**	**0.0000**	**191.7617**

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	0.0462	0.9439	1.5461	2.3300e-003		7.3200e-003	7.3200e-003		7.3200e-003	7.3200e-003	0.0000	200.6101	200.6101	0.0472	0.0000	201.7890
Total	**0.0462**	**0.9439**	**1.5461**	**2.3300e-003**		**7.3200e-003**	**7.3200e-003**		**7.3200e-003**	**7.3200e-003**	**0.0000**	**200.6101**	**200.6101**	**0.0472**	**0.0000**	**201.7890**

3.5 Building Construction - 2025

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	0.0108	0.4530	0.1104	1.3900e-003	0.0267	5.0000e-004	0.0272	7.3600e-003	4.8000e-004	7.8400e-003	0.0000	135.8087	135.8087	7.9100e-003	0.0000	136.0063
Worker	0.0232	0.0137	0.1590	6.2000e-004	0.0772	4.7000e-004	0.0777	0.0206	4.3000e-004	0.0210	0.0000	55.7314	55.7314	9.6000e-004	0.0000	55.7554
Total	**0.0340**	**0.4667**	**0.2694**	**2.0100e-003**	**0.1040**	**9.7000e-004**	**0.1049**	**0.0279**	**9.1000e-004**	**0.0288**	**0.0000**	**191.5400**	**191.5400**	**8.8700e-003**	**0.0000**	**191.7617**

3.6 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	0.0206	0.1931	0.3280	5.1000e-004		9.4200e-003	9.4200e-003		8.6600e-003	8.6600e-003	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0206**	**0.1931**	**0.3280**	**5.1000e-004**		**9.4200e-003**	**9.4200e-003**		**8.6600e-003**	**8.6600e-003**	**0.0000**	**45.0433**	**45.0433**	**0.0146**	**0.0000**	**45.4075**

3.6 Paving - 2025

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	2.8000e-003	0.1178	0.0287	3.6000e-004	6.9500e-003	1.3000e-004	7.0800e-003	1.9100e-003	1.3000e-004	2.0400e-003	0.0000	35.3260	35.3260	2.0600e-003	0.0000	35.3774
Worker	8.0000e-004	4.7000e-004	5.4900e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	1.0000e-005	7.2000e-004	0.0000	1.9243	1.9243	3.0000e-005	0.0000	1.9252
Total	**3.6000e-003**	**0.1183**	**0.0342**	**3.8000e-004**	**9.6200e-003**	**1.5000e-004**	**9.7600e-003**	**2.6200e-003**	**1.4000e-004**	**2.7600e-003**	**0.0000**	**37.2503**	**37.2503**	**2.0900e-003**	**0.0000**	**37.3025**

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	7.5200e-003	0.2259	0.3892	5.1000e-004		8.4000e-004	8.4000e-004		8.4000e-004	8.4000e-004	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.5200e-003**	**0.2259**	**0.3892**	**5.1000e-004**		**8.4000e-004**	**8.4000e-004**		**8.4000e-004**	**8.4000e-004**	**0.0000**	**45.0433**	**45.0433**	**0.0146**	**0.0000**	**45.4075**

3.6 Paving - 2025

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	2.8000e-003	0.1178	0.0287	3.6000e-004	6.9500e-003	1.3000e-004	7.0800e-003	1.9100e-003	1.3000e-004	2.0400e-003	0.0000	35.3260	35.3260	2.0600e-003	0.0000	35.3774
Worker	8.0000e-004	4.7000e-004	5.4900e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	1.0000e-005	7.2000e-004	0.0000	1.9243	1.9243	3.0000e-005	0.0000	1.9252
Total	**3.6000e-003**	**0.1183**	**0.0342**	**3.8000e-004**	**9.6200e-003**	**1.5000e-004**	**9.7600e-003**	**2.6200e-003**	**1.4000e-004**	**2.7600e-003**	**0.0000**	**37.2503**	**37.2503**	**2.0900e-003**	**0.0000**	**37.3025**

3.7 Architectural Coating - 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					
Archit. Coating	0.4203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6700e-003	0.0246	0.0389	6.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	5.4895	5.4895	3.0000e-004	0.0000	5.4970
Total	**0.4239**	**0.0246**	**0.0389**	**6.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**5.4895**	**5.4895**	**3.0000e-004**	**0.0000**	**5.4970**

3.7 Architectural Coating - 2025

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	2.6700e-003	0.1126	0.0274	3.5000e-004	6.6400e-003	1.3000e-004	6.7700e-003	1.8300e-003	1.2000e-004	1.9500e-003	0.0000	33.7559	33.7559	1.9700e-003	0.0000	33.8050
Worker	1.1800e-003	6.9000e-004	8.0400e-003	3.0000e-005	3.9100e-003	2.0000e-005	3.9300e-003	1.0400e-003	2.0000e-005	1.0600e-003	0.0000	2.8195	2.8195	5.0000e-005	0.0000	2.8207
Total	**3.8500e-003**	**0.1133**	**0.0355**	**3.8000e-004**	**0.0106**	**1.5000e-004**	**0.0107**	**2.8700e-003**	**1.4000e-004**	**3.0100e-003**	**0.0000**	**36.5754**	**36.5754**	**2.0200e-003**	**0.0000**	**36.6258**

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	0.4203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1700e-003	0.0228	0.0394	6.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	5.4895	5.4895	3.0000e-004	0.0000	5.4970
Total	**0.4214**	**0.0228**	**0.0394**	**6.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**5.4895**	**5.4895**	**3.0000e-004**	**0.0000**	**5.4970**

3.7 Architectural Coating - 2025

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	2.6700e-003	0.1126	0.0274	3.5000e-004	6.6400e-003	1.3000e-004	6.7700e-003	1.8300e-003	1.2000e-004	1.9500e-003	0.0000	33.7559	33.7559	1.9700e-003	0.0000	33.8050
Worker	1.1800e-003	6.9000e-004	8.0400e-003	3.0000e-005	3.9100e-003	2.0000e-005	3.9300e-003	1.0400e-003	2.0000e-005	1.0600e-003	0.0000	2.8195	2.8195	5.0000e-005	0.0000	2.8207
Total	**3.8500e-003**	**0.1133**	**0.0355**	**3.8000e-004**	**0.0106**	**1.5000e-004**	**0.0107**	**2.8700e-003**	**1.4000e-004**	**3.0100e-003**	**0.0000**	**36.5754**	**36.5754**	**2.0200e-003**	**0.0000**	**36.6258**

3.7 Architectural Coating - 2026

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	0.0196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7000e-004	1.1500e-003	1.8100e-003	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.2553	0.2553	1.0000e-005	0.0000	0.2557
Total	**0.0197**	**1.1500e-003**	**1.8100e-003**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.2553**	**0.2553**	**1.0000e-005**	**0.0000**	**0.2557**

3.7 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	5.1500e-003	1.2800e-003	2.0000e-005	3.1000e-004	1.0000e-005	3.1000e-004	9.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.5580	1.5580	9.0000e-005	0.0000	1.5603
Worker	5.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1263	0.1263	0.0000	0.0000	0.1264
Total	**1.7000e-004**	**5.1800e-003**	**1.6300e-003**	**2.0000e-005**	**4.9000e-004**	**1.0000e-005**	**4.9000e-004**	**1.4000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**1.6843**	**1.6843**	**9.0000e-005**	**0.0000**	**1.6867**

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	0.0196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0000e-005	1.0600e-003	1.8300e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.2553	0.2553	1.0000e-005	0.0000	0.2557
Total	**0.0196**	**1.0600e-003**	**1.8300e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.2553**	**0.2553**	**1.0000e-005**	**0.0000**	**0.2557**

3.7 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	5.1500e-003	1.2800e-003	2.0000e-005	3.1000e-004	1.0000e-005	3.1000e-004	9.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.5580	1.5580	9.0000e-005	0.0000	1.5603
Worker	5.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1263	0.1263	0.0000	0.0000	0.1264
Total	**1.7000e-004**	**5.1800e-003**	**1.6300e-003**	**2.0000e-005**	**4.9000e-004**	**1.0000e-005**	**4.9000e-004**	**1.4000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**1.6843**	**1.6843**	**9.0000e-005**	**0.0000**	**1.6867**

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
General Light Industry	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
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.582811	0.037485	0.193775	0.108307	0.014136	0.005301	0.018855	0.027301	0.002669	0.002011	0.005732	0.000906	0.000708

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	593.8085	593.8085	0.0269	5.5600e-003	596.1352
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	593.8085	593.8085	0.0269	5.5600e-003	596.1352
NaturalGas Mitigated	0.0360	0.3276	0.2752	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	356.6037	356.6037	6.8300e-003	6.5400e-003	358.7228
NaturalGas Unmitigated	0.0360	0.3276	0.2752	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	356.6037	356.6037	6.8300e-003	6.5400e-003	358.7228

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	6.6825e+006	0.0360	0.3276	0.2752	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	356.6037	356.6037	6.8300e-003	6.5400e-003	358.7228
Total		**0.0360**	**0.3276**	**0.2752**	**1.9700e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**356.6037**	**356.6037**	**6.8300e-003**	**6.5400e-003**	**358.7228**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	6.6825e+006	0.0360	0.3276	0.2752	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	356.6037	356.6037	6.8300e-003	6.5400e-003	358.7228
Total		**0.0360**	**0.3276**	**0.2752**	**1.9700e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**356.6037**	**356.6037**	**6.8300e-003**	**6.5400e-003**	**358.7228**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.0412e+006	593.8085	0.0269	5.5600e-003	596.1352
Total		**593.8085**	**0.0269**	**5.5600e-003**	**596.1352**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.0412e+006	593.8085	0.0269	5.5600e-003	596.1352
Total		**593.8085**	**0.0269**	**5.5600e-003**	**596.1352**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0987	2.0000e-005	2.4700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8200e-003	4.8200e-003	1.0000e-005	0.0000	5.1400e-003
Unmitigated	1.0987	2.0000e-005	2.4700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8200e-003	4.8200e-003	1.0000e-005	0.0000	5.1400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0440					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0545					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3000e-004	2.0000e-005	2.4700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8200e-003	4.8200e-003	1.0000e-005	0.0000	5.1400e-003
Total	**1.0987**	**2.0000e-005**	**2.4700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.8200e-003**	**4.8200e-003**	**1.0000e-005**	**0.0000**	**5.1400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0440					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0545					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3000e-004	2.0000e-005	2.4700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.8200e-003	4.8200e-003	1.0000e-005	0.0000	5.1400e-003
Total	**1.0987**	**2.0000e-005**	**2.4700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.8200e-003**	**4.8200e-003**	**1.0000e-005**	**0.0000**	**5.1400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	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			
General Light Industry	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	67.9614	4.0164	0.0000	168.3714
Unmitigated	67.9614	4.0164	0.0000	168.3714

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	334.8	67.9614	4.0164	0.0000	168.3714
Total		**67.9614**	**4.0164**	**0.0000**	**168.3714**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	334.8	67.9614	4.0164	0.0000	168.3714
Total		**67.9614**	**4.0164**	**0.0000**	**168.3714**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

USD - Phase 1C Tier 4I

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	200.00	1000sqft	4.59	200,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2027
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

USD - Phase 1C Tier 4I - Bay Area AQMD Air District, Annual

Project Characteristics -

Land Use - Per Applicant

Construction Phase - Per Applicant

Trips and VMT - Per Applicant

Grading - Per Applicant

Architectural Coating - Per Applicant

Vehicle Trips -

Area Coating - Per Applicant

Water And Wastewater -

Construction Off-road Equipment Mitigation - Per Applicant

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	100,000.00	52,015.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	300,000.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	100000	52015
tblAreaCoating	Area_Nonresidential_Interior	300000	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstructionPhase	NumDays	230.00	184.00
tblConstructionPhase	NumDays	20.00	16.00
tblConstructionPhase	NumDays	8.00	7.00
tblConstructionPhase	NumDays	18.00	14.00
tblConstructionPhase	NumDays	5.00	4.00
tblGrading	MaterialExported	0.00	862.00
tblGrading	MaterialExported	0.00	77.00
tblGrading	MaterialImported	0.00	881.00

tblTripsAndVMT	HaulingTripNumber	0.00	800.00
tblTripsAndVMT	HaulingTripNumber	10.00	200.00
tblTripsAndVMT	HaulingTripNumber	218.00	350.00
tblTripsAndVMT	VendorTripNumber	33.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2026	0.1736	1.8699	1.8645	5.0700e-003	0.1549	0.0570	0.2119	0.0575	0.0535	0.1110	0.0000	460.3522	460.3522	0.0696	0.0000	462.0930
2027	0.2019	0.2586	0.2512	7.3000e-004	0.0134	6.7000e-003	0.0201	3.6300e-003	6.2900e-003	9.9200e-003	0.0000	67.4152	67.4152	9.5000e-003	0.0000	67.6528
Maximum	**0.2019**	**1.8699**	**1.8645**	**5.0700e-003**	**0.1549**	**0.0570**	**0.2119**	**0.0575**	**0.0535**	**0.1110**	**0.0000**	**460.3522**	**460.3522**	**0.0696**	**0.0000**	**462.0930**

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					
2026	0.0836	1.6488	2.0843	5.0700e-003	0.1224	8.9900e-003	0.1314	0.0401	8.9400e-003	0.0490	0.0000	460.3520	460.3520	0.0696	0.0000	462.0927
2027	0.1914	0.2493	0.2734	7.3000e-004	0.0134	9.8000e-004	0.0144	3.6300e-003	9.8000e-004	4.6000e-003	0.0000	67.4152	67.4152	9.5000e-003	0.0000	67.6527
Maximum	**0.1914**	**1.6488**	**2.0843**	**5.0700e-003**	**0.1224**	**8.9900e-003**	**0.1314**	**0.0401**	**8.9400e-003**	**0.0490**	**0.0000**	**460.3520**	**460.3520**	**0.0696**	**0.0000**	**462.0927**

	ROG	NOx	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	**26.75**	**10.82**	**-11.44**	**0.00**	**19.33**	**84.36**	**37.19**	**28.51**	**83.40**	**55.66**	**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	4-1-2026	6-30-2026	0.7598	0.6065
2	7-1-2026	9-30-2026	0.6370	0.5585
3	10-1-2026	12-31-2026	0.6377	0.5591
4	1-1-2027	3-31-2027	0.4648	0.4447
		Highest	0.7598	0.6065

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	0.7994	2.0000e-005	1.8300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5700e-003	3.5700e-003	1.0000e-005	0.0000	3.8100e-003
Energy	0.0267	0.2427	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	704.0090	704.0090	0.0250	8.9600e-003	707.3022
Mobile	0.2119	1.0425	2.5708	0.0112	1.1434	8.5400e-003	1.1519	0.3068	7.9600e-003	0.3147	0.0000	1,030.7686	1,030.7686	0.0324	0.0000	1,031.5797
Waste						0.0000	0.0000		0.0000	0.0000	50.3418	0.0000	50.3418	2.9751	0.0000	124.7196
Water						0.0000	0.0000		0.0000	0.0000	14.6730	72.8031	87.4761	1.5104	0.0363	136.0421
Total	**1.0379**	**1.2851**	**2.7764**	**0.0127**	**1.1434**	**0.0270**	**1.1704**	**0.3068**	**0.0264**	**0.3332**	**65.0148**	**1,807.5843**	**1,872.5990**	**4.5429**	**0.0452**	**1,999.6474**

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	0.7994	2.0000e-005	1.8300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5700e-003	3.5700e-003	1.0000e-005	0.0000	3.8100e-003
Energy	0.0267	0.2427	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	704.0090	704.0090	0.0250	8.9600e-003	707.3022
Mobile	0.2119	1.0425	2.5708	0.0112	1.1434	8.5400e-003	1.1519	0.3068	7.9600e-003	0.3147	0.0000	1,030.7686	1,030.7686	0.0324	0.0000	1,031.5797
Waste						0.0000	0.0000		0.0000	0.0000	50.3418	0.0000	50.3418	2.9751	0.0000	124.7196
Water						0.0000	0.0000		0.0000	0.0000	14.6730	72.8031	87.4761	1.5104	0.0363	136.0421
Total	**1.0379**	**1.2851**	**2.7764**	**0.0127**	**1.1434**	**0.0270**	**1.1704**	**0.3068**	**0.0264**	**0.3332**	**65.0148**	**1,807.5843**	**1,872.5990**	**4.5429**	**0.0452**	**1,999.6474**

	ROG	NOx	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

USD - Phase 1C Tier 4I - Bay Area AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2026	4/22/2026	5	16	
2	Site Preparation	Site Preparation	4/23/2026	4/28/2026	5	4	
3	Grading	Grading	4/29/2026	5/7/2026	5	7	
4	Building Construction	Building Construction	5/8/2026	1/20/2027	5	184	
5	Paving	Paving	1/21/2027	2/9/2027	5	14	
6	Architectural Coating	Architectural Coating	2/10/2027	3/2/2027	5	15	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 52,015; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

USD - Phase 1C Tier 4I - Bay Area AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	6	15.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	200.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	350.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	84.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Paving	8	20.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Architectural Coating	1	17.00	50.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Demolition - 2026

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	0.0167	0.1536	0.1554	3.1000e-004		6.8200e-003	6.8200e-003		6.3400e-003	6.3400e-003	0.0000	27.1981	27.1981	7.5900e-003	0.0000	27.3880
Total	**0.0167**	**0.1536**	**0.1554**	**3.1000e-004**		**6.8200e-003**	**6.8200e-003**		**6.3400e-003**	**6.3400e-003**	**0.0000**	**27.1981**	**27.1981**	**7.5900e-003**	**0.0000**	**27.3880**

3.2 Demolition - 2026

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	1.9700e-003	0.0622	0.0207	2.9000e-004	6.7600e-003	1.1000e-004	6.8700e-003	1.8600e-003	1.1000e-004	1.9700e-003	0.0000	28.1007	28.1007	1.3400e-003	0.0000	28.1343
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	2.7000e-004	1.5000e-004	1.8200e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.6589	0.6589	1.0000e-005	0.0000	0.6592
Total	**2.2400e-003**	**0.0624**	**0.0225**	**3.0000e-004**	**7.7100e-003**	**1.2000e-004**	**7.8200e-003**	**2.1100e-003**	**1.2000e-004**	**2.2300e-003**	**0.0000**	**28.7596**	**28.7596**	**1.3500e-003**	**0.0000**	**28.7935**

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	4.6700e-003	0.1085	0.1974	3.1000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	27.1981	27.1981	7.5900e-003	0.0000	27.3880
Total	**4.6700e-003**	**0.1085**	**0.1974**	**3.1000e-004**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**27.1981**	**27.1981**	**7.5900e-003**	**0.0000**	**27.3880**

3.2 Demolition - 2026

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	1.9700e-003	0.0622	0.0207	2.9000e-004	6.7600e-003	1.1000e-004	6.8700e-003	1.8600e-003	1.1000e-004	1.9700e-003	0.0000	28.1007	28.1007	1.3400e-003	0.0000	28.1343
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	2.7000e-004	1.5000e-004	1.8200e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.6589	0.6589	1.0000e-005	0.0000	0.6592
Total	**2.2400e-003**	**0.0624**	**0.0225**	**3.0000e-004**	**7.7100e-003**	**1.2000e-004**	**7.8200e-003**	**2.1100e-003**	**1.2000e-004**	**2.2300e-003**	**0.0000**	**28.7596**	**28.7596**	**1.3500e-003**	**0.0000**	**28.7935**

3.3 Site Preparation - 2026

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					0.0361	0.0000	0.0361	0.0199	0.0000	0.0199	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9500e-003	0.0505	0.0358	8.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	6.6934	6.6934	2.1600e-003	0.0000	6.7475
Total	**4.9500e-003**	**0.0505**	**0.0358**	**8.0000e-005**	**0.0361**	**2.1700e-003**	**0.0383**	**0.0199**	**2.0000e-003**	**0.0219**	**0.0000**	**6.6934**	**6.6934**	**2.1600e-003**	**0.0000**	**6.7475**

3.3 Site Preparation - 2026

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	4.9000e-004	0.0156	5.1700e-003	7.0000e-005	1.6900e-003	3.0000e-005	1.7200e-003	4.6000e-004	3.0000e-005	4.9000e-004	0.0000	7.0252	7.0252	3.4000e-004	0.0000	7.0336
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.5000e-004	0.0000	2.8000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.1977	0.1977	0.0000	0.0000	0.1978
Total	**5.7000e-004**	**0.0156**	**5.7200e-003**	**7.0000e-005**	**1.9700e-003**	**3.0000e-005**	**2.0100e-003**	**5.4000e-004**	**3.0000e-005**	**5.7000e-004**	**0.0000**	**7.2229**	**7.2229**	**3.4000e-004**	**0.0000**	**7.2313**

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					0.0163	0.0000	0.0163	8.9400e-003	0.0000	8.9400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3900e-003	0.0243	0.0459	8.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	6.6934	6.6934	2.1600e-003	0.0000	6.7475
Total	**1.3900e-003**	**0.0243**	**0.0459**	**8.0000e-005**	**0.0163**	**1.2000e-004**	**0.0164**	**8.9400e-003**	**1.2000e-004**	**9.0600e-003**	**0.0000**	**6.6934**	**6.6934**	**2.1600e-003**	**0.0000**	**6.7475**

3.3 Site Preparation - 2026

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	4.9000e-004	0.0156	5.1700e-003	7.0000e-005	1.6900e-003	3.0000e-005	1.7200e-003	4.6000e-004	3.0000e-005	4.9000e-004	0.0000	7.0252	7.0252	3.4000e-004	0.0000	7.0336
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.5000e-004	0.0000	2.8000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.1977	0.1977	0.0000	0.0000	0.1978
Total	**5.7000e-004**	**0.0156**	**5.7200e-003**	**7.0000e-005**	**1.9700e-003**	**3.0000e-005**	**2.0100e-003**	**5.4000e-004**	**3.0000e-005**	**5.7000e-004**	**0.0000**	**7.2229**	**7.2229**	**3.4000e-004**	**0.0000**	**7.2313**

3.4 Grading - 2026

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					0.0230	0.0000	0.0230	0.0118	0.0000	0.0118	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3300e-003	0.0536	0.0509	1.0000e-004		2.1800e-003	2.1800e-003		2.0100e-003	2.0100e-003	0.0000	9.1244	9.1244	2.9500e-003	0.0000	9.1982
Total	**5.3300e-003**	**0.0536**	**0.0509**	**1.0000e-004**	**0.0230**	**2.1800e-003**	**0.0252**	**0.0118**	**2.0100e-003**	**0.0138**	**0.0000**	**9.1244**	**9.1244**	**2.9500e-003**	**0.0000**	**9.1982**

3.4 Grading - 2026

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	8.6000e-004	0.0272	9.0500e-003	1.3000e-004	2.9600e-003	5.0000e-005	3.0100e-003	8.1000e-004	5.0000e-005	8.6000e-004	0.0000	12.2941	12.2941	5.9000e-004	0.0000	12.3087
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	1.2000e-004	7.0000e-005	8.0000e-004	0.0000	4.1000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.2883	0.2883	0.0000	0.0000	0.2884
Total	**9.8000e-004**	**0.0273**	**9.8500e-003**	**1.3000e-004**	**3.3700e-003**	**5.0000e-005**	**3.4300e-003**	**9.2000e-004**	**5.0000e-005**	**9.7000e-004**	**0.0000**	**12.5823**	**12.5823**	**5.9000e-004**	**0.0000**	**12.5971**

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	5.3100e-003	0.0000	5.3100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8200e-003	0.0362	0.0665	1.0000e-004		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	9.1244	9.1244	2.9500e-003	0.0000	9.1982
Total	**1.8200e-003**	**0.0362**	**0.0665**	**1.0000e-004**	**0.0104**	**1.7000e-004**	**0.0105**	**5.3100e-003**	**1.7000e-004**	**5.4800e-003**	**0.0000**	**9.1244**	**9.1244**	**2.9500e-003**	**0.0000**	**9.1982**

3.4 Grading - 2026

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	8.6000e-004	0.0272	9.0500e-003	1.3000e-004	2.9600e-003	5.0000e-005	3.0100e-003	8.1000e-004	5.0000e-005	8.6000e-004	0.0000	12.2941	12.2941	5.9000e-004	0.0000	12.3087
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	1.2000e-004	7.0000e-005	8.0000e-004	0.0000	4.1000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.2883	0.2883	0.0000	0.0000	0.2884
Total	**9.8000e-004**	**0.0273**	**9.8500e-003**	**1.3000e-004**	**3.3700e-003**	**5.0000e-005**	**3.4300e-003**	**9.2000e-004**	**5.0000e-005**	**9.7000e-004**	**0.0000**	**12.5823**	**12.5823**	**5.9000e-004**	**0.0000**	**12.5971**

3.5 Building Construction - 2026

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	0.1162	1.0599	1.3672	2.2900e-003		0.0448	0.0448		0.0422	0.0422	0.0000	197.1315	197.1315	0.0463	0.0000	198.2900
Total	**0.1162**	**1.0599**	**1.3672**	**2.2900e-003**		**0.0448**	**0.0448**		**0.0422**	**0.0422**	**0.0000**	**197.1315**	**197.1315**	**0.0463**	**0.0000**	**198.2900**

3.5 Building Construction - 2026

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	0.0104	0.4379	0.1088	1.3600e-003	0.0263	4.8000e-004	0.0268	7.2300e-003	4.6000e-004	7.6900e-003	0.0000	132.4337	132.4337	7.6500e-003	0.0000	132.6251
Worker	0.0161	9.1600e-003	0.1083	4.3000e-004	0.0564	3.3000e-004	0.0568	0.0150	3.0000e-004	0.0153	0.0000	39.2063	39.2063	6.4000e-004	0.0000	39.2222
Total	**0.0266**	**0.4471**	**0.2172**	**1.7900e-003**	**0.0827**	**8.1000e-004**	**0.0835**	**0.0222**	**7.6000e-004**	**0.0230**	**0.0000**	**171.6400**	**171.6400**	**8.2900e-003**	**0.0000**	**171.8473**

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	0.0454	0.9275	1.5193	2.2900e-003		7.1900e-003	7.1900e-003		7.1900e-003	7.1900e-003	0.0000	197.1313	197.1313	0.0463	0.0000	198.2898
Total	**0.0454**	**0.9275**	**1.5193**	**2.2900e-003**		**7.1900e-003**	**7.1900e-003**		**7.1900e-003**	**7.1900e-003**	**0.0000**	**197.1313**	**197.1313**	**0.0463**	**0.0000**	**198.2898**

3.5 Building Construction - 2026

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	0.0104	0.4379	0.1088	1.3600e-003	0.0263	4.8000e-004	0.0268	7.2300e-003	4.6000e-004	7.6900e-003	0.0000	132.4337	132.4337	7.6500e-003	0.0000	132.6251
Worker	0.0161	9.1600e-003	0.1083	4.3000e-004	0.0564	3.3000e-004	0.0568	0.0150	3.0000e-004	0.0153	0.0000	39.2063	39.2063	6.4000e-004	0.0000	39.2222
Total	**0.0266**	**0.4471**	**0.2172**	**1.7900e-003**	**0.0827**	**8.1000e-004**	**0.0835**	**0.0222**	**7.6000e-004**	**0.0230**	**0.0000**	**171.6400**	**171.6400**	**8.2900e-003**	**0.0000**	**171.8473**

3.5 Building Construction - 2027

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	9.5700e-003	0.0873	0.1126	1.9000e-004		3.6900e-003	3.6900e-003		3.4700e-003	3.4700e-003	0.0000	16.2344	16.2344	3.8200e-003	0.0000	16.3298
Total	**9.5700e-003**	**0.0873**	**0.1126**	**1.9000e-004**		**3.6900e-003**	**3.6900e-003**		**3.4700e-003**	**3.4700e-003**	**0.0000**	**16.2344**	**16.2344**	**3.8200e-003**	**0.0000**	**16.3298**

3.5 Building Construction - 2027

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	8.5000e-004	0.0355	9.0000e-003	1.1000e-004	2.1600e-003	4.0000e-005	2.2000e-003	6.0000e-004	4.0000e-005	6.3000e-004	0.0000	10.8298	10.8298	6.2000e-004	0.0000	10.8453
Worker	1.2600e-003	6.9000e-004	8.3500e-003	3.0000e-005	4.6500e-003	3.0000e-005	4.6700e-003	1.2400e-003	2.0000e-005	1.2600e-003	0.0000	3.1192	3.1192	5.0000e-005	0.0000	3.1204
Total	**2.1100e-003**	**0.0362**	**0.0174**	**1.4000e-004**	**6.8100e-003**	**7.0000e-005**	**6.8700e-003**	**1.8400e-003**	**6.0000e-005**	**1.8900e-003**	**0.0000**	**13.9490**	**13.9490**	**6.7000e-004**	**0.0000**	**13.9658**

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	3.7300e-003	0.0764	0.1251	1.9000e-004		5.9000e-004	5.9000e-004		5.9000e-004	5.9000e-004	0.0000	16.2343	16.2343	3.8200e-003	0.0000	16.3298
Total	**3.7300e-003**	**0.0764**	**0.1251**	**1.9000e-004**		**5.9000e-004**	**5.9000e-004**		**5.9000e-004**	**5.9000e-004**	**0.0000**	**16.2343**	**16.2343**	**3.8200e-003**	**0.0000**	**16.3298**

3.5 Building Construction - 2027

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	8.5000e-004	0.0355	9.0000e-003	1.1000e-004	2.1600e-003	4.0000e-005	2.2000e-003	6.0000e-004	4.0000e-005	6.3000e-004	0.0000	10.8298	10.8298	6.2000e-004	0.0000	10.8453
Worker	1.2600e-003	6.9000e-004	8.3500e-003	3.0000e-005	4.6500e-003	3.0000e-005	4.6700e-003	1.2400e-003	2.0000e-005	1.2600e-003	0.0000	3.1192	3.1192	5.0000e-005	0.0000	3.1204
Total	**2.1100e-003**	**0.0362**	**0.0174**	**1.4000e-004**	**6.8100e-003**	**7.0000e-005**	**6.8700e-003**	**1.8400e-003**	**6.0000e-005**	**1.8900e-003**	**0.0000**	**13.9490**	**13.9490**	**6.7000e-004**	**0.0000**	**13.9658**

3.6 Paving - 2027

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	5.7400e-003	0.0527	0.0852	1.3000e-004		2.4700e-003	2.4700e-003		2.2800e-003	2.2800e-003	0.0000	11.4648	11.4648	3.6000e-003	0.0000	11.5548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.7400e-003**	**0.0527**	**0.0852**	**1.3000e-004**		**2.4700e-003**	**2.4700e-003**		**2.2800e-003**	**2.2800e-003**	**0.0000**	**11.4648**	**11.4648**	**3.6000e-003**	**0.0000**	**11.5548**

3.6 Paving - 2027

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	8.5000e-004	0.0355	9.0000e-003	1.1000e-004	2.1600e-003	4.0000e-005	2.2000e-003	6.0000e-004	4.0000e-005	6.3000e-004	0.0000	10.8298	10.8298	6.2000e-004	0.0000	10.8453
Worker	3.0000e-004	1.6000e-004	1.9900e-003	1.0000e-005	1.1100e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.7427	0.7427	1.0000e-005	0.0000	0.7430
Total	**1.1500e-003**	**0.0357**	**0.0110**	**1.2000e-004**	**3.2700e-003**	**5.0000e-005**	**3.3100e-003**	**8.9000e-004**	**5.0000e-005**	**9.3000e-004**	**0.0000**	**11.5725**	**11.5725**	**6.3000e-004**	**0.0000**	**11.5883**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.0400e-003	0.0549	0.0947	1.3000e-004		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	11.4648	11.4648	3.6000e-003	0.0000	11.5548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.0400e-003**	**0.0549**	**0.0947**	**1.3000e-004**		**2.0000e-004**	**2.0000e-004**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**11.4648**	**11.4648**	**3.6000e-003**	**0.0000**	**11.5548**

3.6 Paving - 2027

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	8.5000e-004	0.0355	9.0000e-003	1.1000e-004	2.1600e-003	4.0000e-005	2.2000e-003	6.0000e-004	4.0000e-005	6.3000e-004	0.0000	10.8298	10.8298	6.2000e-004	0.0000	10.8453
Worker	3.0000e-004	1.6000e-004	1.9900e-003	1.0000e-005	1.1100e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.7427	0.7427	1.0000e-005	0.0000	0.7430
Total	**1.1500e-003**	**0.0357**	**0.0110**	**1.2000e-004**	**3.2700e-003**	**5.0000e-005**	**3.3100e-003**	**8.9000e-004**	**5.0000e-005**	**9.3000e-004**	**0.0000**	**11.5725**	**11.5725**	**6.3000e-004**	**0.0000**	**11.5883**

3.7 Architectural Coating - 2027

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	0.1808					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2800e-003	8.5900e-003	0.0136	2.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	1.9149	1.9149	1.0000e-004	0.0000	1.9176
Total	**0.1821**	**8.5900e-003**	**0.0136**	**2.0000e-005**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**1.9149**	**1.9149**	**1.0000e-004**	**0.0000**	**1.9176**

3.7 Architectural Coating - 2027

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	9.1000e-004	0.0380	9.6500e-003	1.2000e-004	2.3200e-003	4.0000e-005	2.3600e-003	6.4000e-004	4.0000e-005	6.8000e-004	0.0000	11.6033	11.6033	6.7000e-004	0.0000	11.6200
Worker	2.7000e-004	1.5000e-004	1.8100e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0100e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.6764	0.6764	1.0000e-005	0.0000	0.6766
Total	**1.1800e-003**	**0.0382**	**0.0115**	**1.3000e-004**	**3.3300e-003**	**5.0000e-005**	**3.3700e-003**	**9.1000e-004**	**5.0000e-005**	**9.5000e-004**	**0.0000**	**12.2797**	**12.2797**	**6.8000e-004**	**0.0000**	**12.2966**

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	0.1808					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-004	7.9500e-003	0.0137	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.9149	1.9149	1.0000e-004	0.0000	1.9176
Total	**0.1812**	**7.9500e-003**	**0.0137**	**2.0000e-005**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**1.9149**	**1.9149**	**1.0000e-004**	**0.0000**	**1.9176**

3.7 Architectural Coating - 2027

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	9.1000e-004	0.0380	9.6500e-003	1.2000e-004	2.3200e-003	4.0000e-005	2.3600e-003	6.4000e-004	4.0000e-005	6.8000e-004	0.0000	11.6033	11.6033	6.7000e-004	0.0000	11.6200
Worker	2.7000e-004	1.5000e-004	1.8100e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0100e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.6764	0.6764	1.0000e-005	0.0000	0.6766
Total	**1.1800e-003**	**0.0382**	**0.0115**	**1.3000e-004**	**3.3300e-003**	**5.0000e-005**	**3.3700e-003**	**9.1000e-004**	**5.0000e-005**	**9.5000e-004**	**0.0000**	**12.2797**	**12.2797**	**6.8000e-004**	**0.0000**	**12.2966**

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	0.2119	1.0425	2.5708	0.0112	1.1434	8.5400e-003	1.1519	0.3068	7.9600e-003	0.3147	0.0000	1,030.7686	1,030.7686	0.0324	0.0000	1,031.5797
Unmitigated	0.2119	1.0425	2.5708	0.0112	1.1434	8.5400e-003	1.1519	0.3068	7.9600e-003	0.3147	0.0000	1,030.7686	1,030.7686	0.0324	0.0000	1,031.5797

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,394.00	264.00	136.00	3,073,828	3,073,828
Total	1,394.00	264.00	136.00	3,073,828	3,073,828

4.3 Trip Type Information

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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.583837	0.037179	0.193775	0.107679	0.013727	0.005289	0.019008	0.027578	0.002676	0.001943	0.005700	0.000910	0.000698

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	439.8581	439.8581	0.0199	4.1100e-003	441.5816
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	439.8581	439.8581	0.0199	4.1100e-003	441.5816
NaturalGas Mitigated	0.0267	0.2427	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	264.1509	264.1509	5.0600e-003	4.8400e-003	265.7206
NaturalGas Unmitigated	0.0267	0.2427	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	264.1509	264.1509	5.0600e-003	4.8400e-003	265.7206

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	4.95e+006	0.0267	0.2427	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	264.1509	264.1509	5.0600e-003	4.8400e-003	265.7206
Total		**0.0267**	**0.2427**	**0.2038**	**1.4600e-003**		**0.0184**	**0.0184**		**0.0184**	**0.0184**	**0.0000**	**264.1509**	**264.1509**	**5.0600e-003**	**4.8400e-003**	**265.7206**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	4.95e+006	0.0267	0.2427	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	264.1509	264.1509	5.0600e-003	4.8400e-003	265.7206
Total		**0.0267**	**0.2427**	**0.2038**	**1.4600e-003**		**0.0184**	**0.0184**		**0.0184**	**0.0184**	**0.0000**	**264.1509**	**264.1509**	**5.0600e-003**	**4.8400e-003**	**265.7206**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.512e+006	439.8581	0.0199	4.1100e-003	441.5816
Total		**439.8581**	**0.0199**	**4.1100e-003**	**441.5816**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.512e+006	439.8581	0.0199	4.1100e-003	441.5816
Total		**439.8581**	**0.0199**	**4.1100e-003**	**441.5816**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7994	2.0000e-005	1.8300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5700e-003	3.5700e-003	1.0000e-005	0.0000	3.8100e-003
Unmitigated	0.7994	2.0000e-005	1.8300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5700e-003	3.5700e-003	1.0000e-005	0.0000	3.8100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7811					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5700e-003	3.5700e-003	1.0000e-005	0.0000	3.8100e-003
Total	**0.7994**	**2.0000e-005**	**1.8300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5700e-003**	**3.5700e-003**	**1.0000e-005**	**0.0000**	**3.8100e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7811					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5700e-003	3.5700e-003	1.0000e-005	0.0000	3.8100e-003
Total	**0.7994**	**2.0000e-005**	**1.8300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5700e-003**	**3.5700e-003**	**1.0000e-005**	**0.0000**	**3.8100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	87.4761	1.5104	0.0363	136.0421
Unmitigated	87.4761	1.5104	0.0363	136.0421

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	46.25 / 0	87.4761	1.5104	0.0363	136.0421
Total		**87.4761**	**1.5104**	**0.0363**	**136.0421**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	46.25 / 0	87.4761	1.5104	0.0363	136.0421
Total		**87.4761**	**1.5104**	**0.0363**	**136.0421**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	50.3418	2.9751	0.0000	124.7196
Unmitigated	50.3418	2.9751	0.0000	124.7196

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	248	50.3418	2.9751	0.0000	124.7196
Total		**50.3418**	**2.9751**	**0.0000**	**124.7196**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	248	50.3418	2.9751	0.0000	124.7196
Total		**50.3418**	**2.9751**	**0.0000**	**124.7196**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

USD - 8 Operational HDDV and 60kW engine

Bay Area AQMD Air District, 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	10.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2024
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

USD - 8 Operational HDDV and 60kW engine - Bay Area AQMD Air District, Annual

Project Characteristics -

Land Use - Per Applicant

Construction Phase - Per Applicant

Off-road Equipment - Per Applicant

Off-road Equipment - Per Applicant

Off-road Equipment - Per Applicant

Off-road Equipment - Per Applicant

Off-road Equipment - Per Applicant

Off-road Equipment - Per Applicant

Trips and VMT - per applicant

Grading - Per Applicant

Vehicle Trips - Per Applicant

Construction Off-road Equipment Mitigation - Per Applicant

Fleet Mix - Per Applicant

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.03	1.00
tblFleetMix	LDA	0.58	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.3240e-003	0.00
tblFleetMix	MCY	5.7930e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	7.3200e-004	0.00
tblFleetMix	MHD	0.02	0.00

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tblFleetMix	OBUS	2.6490e-003	0.00
tblFleetMix	SBUS	8.9600e-004	0.00
tblFleetMix	UBUS	2.1340e-003	0.00
tblGrading	AcresOfGrading	0.00	10.00
tblLandUse	LotAcreage	0.00	10.00
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	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	80.50
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	2.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00

tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	CW_TL	9.50	20.00
tblVehicleTrips	CW_TTP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	8.00
tblVehicleTrips	SU_TR	0.00	8.00
tblVehicleTrips	WD_TR	0.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	5.3000e-003	0.0000	5.3000e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5.3000e-003**	**0.0000**	**5.3000e-003**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.3900e-003**	**0.0000**	**2.3900e-003**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	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**	**54.91**	**0.00**	**54.91**	**54.39**	**0.00**	**54.39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		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	0.0000	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
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	1.5600e-003	0.1077	0.0152	1.3000e-004	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	12.5182	12.5182	1.4100e-003	0.0000	12.5533
Stationary	3.2800e-003	0.0107	0.0119	2.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	1.5232	1.5232	2.1000e-004	0.0000	1.5285
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	**4.8400e-003**	**0.1184**	**0.0271**	**1.5000e-004**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**14.0414**	**14.0414**	**1.6200e-003**	**0.0000**	**14.0819**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	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	1.5600e-003	0.1077	0.0152	1.3000e-004	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	12.5182	12.5182	1.4100e-003	0.0000	12.5533
Stationary	3.2800e-003	0.0107	0.0119	2.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	1.5232	1.5232	2.1000e-004	0.0000	1.5285
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	**4.8400e-003**	**0.1184**	**0.0271**	**1.5000e-004**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**14.0414**	**14.0414**	**1.6200e-003**	**0.0000**	**14.0819**

	ROG	NOx	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

USD - 8 Operational HDDV and 60kW engine - Bay Area AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/11/2022	5	20	
4	Building Construction	Building Construction	3/12/2022	1/27/2023	5	230	
5	Paving	Paving	1/28/2023	2/24/2023	5	20	
6	Architectural Coating	Architectural Coating	2/25/2023	3/24/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

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

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	0	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Rollers	0	8.00	80	0.38
Architectural Coating	Air Compressors	0	6.00	78	0.48

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	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

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

3.2 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

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

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

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

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

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

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-003	0.0000	5.3000e-003	5.7000e-004	0.0000	5.7000e-004	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**	**5.3000e-003**	**0.0000**	**5.3000e-003**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2022

Unmitigated Construction Off-Site

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

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	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**	**2.3900e-003**	**0.0000**	**2.3900e-003**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2022

Mitigated Construction Off-Site

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

3.5 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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

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

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

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

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

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

3.6 Paving - 2023

Unmitigated Construction On-Site

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

3.6 Paving - 2023

Unmitigated Construction Off-Site

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

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	0.0000	0.0000	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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2023

Mitigated Construction Off-Site

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

3.7 Architectural Coating - 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					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

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

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	0.0000					0.0000	0.0000		0.0000	0.0000	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**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5600e-003	0.1077	0.0152	1.3000e-004	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	12.5182	12.5182	1.4100e-003	0.0000	12.5533
Unmitigated	1.5600e-003	0.1077	0.0152	1.3000e-004	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	12.5182	12.5182	1.4100e-003	0.0000	12.5533

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	8.00	8.00	8.00		
Total	8.00	8.00	8.00		

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	20.00	7.30	7.30	100.00	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	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

5.2 Energy by Land Use - NaturalGas

Mitigated

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

5.3 Energy by Land Use - Electricity

Unmitigated

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

5.3 Energy by Land Use - Electricity

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

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

6.2 Area by SubCategory

Unmitigated

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

Mitigated

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

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

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

7.2 Water by Land Use

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	2	50	80.5	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 (75 - 100 HP)	3.2800e-003	0.0107	0.0119	2.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	1.5232	1.5232	2.1000e-004	0.0000	1.5285
Total	**3.2800e-003**	**0.0107**	**0.0119**	**2.0000e-005**		**4.8000e-004**	**4.8000e-004**		**4.8000e-004**	**4.8000e-004**	**0.0000**	**1.5232**	**1.5232**	**2.1000e-004**	**0.0000**	**1.5285**

11.0 Vegetation

Appendix E

Biological Resource Assessment for On-Site Biological Impacts

(Standby Power BRA for direct use in the ETSU Phase 1 Program IS/MND)

ENVIRONMENTAL COLLABORATIVE

Consultation • Documentation • Restoration
41 Jeanette Court • Walnut Creek, CA 94596
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MEMORANDUM

TO: Mr. Paul Scheidegger
Scheidegger & Associates
201 North Civic Drive, Suite 115
Walnut Creek, California 94608

FROM: Jim Martin
ENVIRONMENTAL COLLABORATIVE

DATE: 14 January 2019

SUBJECT: Biological Resource Assessment
Union Sanitary District Standby Power Generation System Upgrade Project
Union City, California

As you requested, I have conducted a Biological Resource Assessment (BRA) of the proposed Union Sanitary District Standby Power Project (Project) at the Districts Alvarado Wastewater Treatment Plant (WWTP) in Union City, California. The WWTP is located at 5072 Benson Road, along the eastern border of the Old Alameda Creek Channel. The proposed Project is described in detail in Chapter 1, Project Description, of the Initial Study and includes construction of a new building that will house two new minimum rated 3.5 MW standby engine generators, space for two additional future 3.5 MW generators and associated electrical equipment. Two new 30,000 gallon fuel storage tanks, space for a future fuel storage tank, and a future battery storage area will be located just to the south of the generator building. A duct bank corridor will extend along the western border of the WWTP connecting the new generators to a new substation. Demolition activities include removal of the existing tank structure and associated facilities and materials from the generator building site, removal of the existing six generators and associated equipment and piping, and removal of various electrical equipment and structures within the WWTP site. **Figure 1** shows the regional location of the WWTP. **Figure 2** shows the various components of the Project and their location at the WWTP.

The environmental documentation for the Clean Water State Revolving Fund Program administered by the State Water Resources Control Board, Division of Financial Assistance, requires completion of a BRA to confirm presence or absence of any federally-listed species and to ensure compliance with the federal Endangered Species Act, the Clean Water Act, the Migratory Bird Treaty Act, and the Magnuson-Stevens Fishery Conservation and Management Act, among other legislation. This BRA has been prepared to address potential effects of the proposed improvements on biological resources, based on the results of a background information review and field reconnaissance survey. This BRA provides a description of existing conditions in the area of potential affect (APE) at the site, and an assessment of potential effects on biological and wetland resources. **Figures 3** and **4** show the APE for the entire WWTP, together with known occurrences of special-status plants and animal species, respectively, as reported from the California Natural Diversity Data Base (CNDDB) of the California Department

of Fish and Wildlife (CDFW), and designated critical habitat mapped by the U.S. Fish and Wildlife Service (USFWS). No additional field surveys are considered necessary based on the highly disturbed conditions of the APE.

SETTING

Background and Methods

Biological resources associated with the APE were identified through a review of available background information and conduct of field reconnaissance surveys. Available documentation was reviewed to provide information on general resources in the southwestern Alameda County area, presence of sensitive natural communities, and the distribution and habitat requirements of special-status species which have been recorded from or are suspected to occur in the Project vicinity. Literature review included: the occurrence records of the CNDDB; the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants*; and a list of federally-listed and candidate species prepared by the USFWS for Project site vicinity that was prepared as part of the Digester 7 Project for the same APE encompassing the WWTP. Field reconnaissance surveys were conducted by James Martin, a biologist and principal of Environmental Collaborative, on June 15 and September 13, 2018 to determine the vegetation and wildlife resources, presence or absence of any sensitive resources such as potential jurisdictional wetlands, and the suitability of the APE to support populations of special-status species. The CNDDB, USFWS and CNPS species list are contained in **Appendix 1**.

Existing Vegetation and Wildlife Habitat Conditions

The APE has been developed with existing wastewater facilities with no remaining natural habitat. The APE is largely unvegetated, covered in pavement, structures, tanks, and graveled areas. Limited ornamental plantings of turf grass and a few scattered planted trees occur as landscaping in a few locations within the APE. Trees include a row of blackwood acacia (*Acacia melanoxylon*), coast live oak (*Quercus agrifolia*), and eucalyptus (*Eucalyptus* spp.) planted as a windbreak along the western edge of the APE, and scattered plantings of coast live oak, Chinese pistache (*Pistacia chinensis*), and pines (*Pinus* sp.) around the administration building and other locations. Ruderal (weedy) species occur in an unpaved area north of the administration building that is used for storing pipes, construction equipment, gravel, and stockpiled soil. Ruderal plant cover in this area includes: bristly ox tongue (*Picris echioides*), wild oats (*Avena fatua*), bromes (*Bromus* spp.), English plantain (*Plantago lanceolata*), field bindweed (*Convolvulus arvense*), sweet fennel (*Foeniculum vulgare*), Himalayan blackberry (*Rubus armeniacus*) and ivy (*Hedera helix*), among others.

The APE provides very little in terms of possible wildlife habitat given its developed condition, absence of vegetative cover and intensity of human disturbance. Species typical of ruderal and urban habitat occur in the vicinity, including: house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), mourning dove (*Zenaida macroura*), northern mocking bird (*Mimus polyglottos*), American crow (*Corvus brachyrhynchos*), Botta's pocket gopher (*Thomomys bottae*), house mouse (*Mus musculus*), and Norway rat (*Raltus norvegicus*). Numerous rock dove (*Columba livia*) were observed congregating on the towers at the north end of the aeration basins within the WWP. No white wash, feathers, pellets or other indications of occupation by western burrowing owl (*Athene cunicularia hypugaea*) were observed anywhere within the APE during an inspection performed during the field reconnaissance surveys. Western burrowing owl is known to frequently occupy underground burrows of California ground squirrels (*Otospermophilus beecheyi*) for nesting and retreat habitat, although no ground squirrel burrows were observed within the APE. No evidence of nesting by any bird species was observed in any

of the trees in the vicinity of the APE during the field reconnaissance surveys. Netting and other bird nesting deterrents have been installed on perches and other potential nesting areas on buildings within the APE.

Special-Status Species

Special-status species are plants and animals that are legally protected under the State and/or federal Endangered Species Acts[1] 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. Species with legal protection under the Endangered Species Acts often represent major constraints to development, particularly when they are wide-ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take" [2] of these species.

A record search conducted by the CNDDB, together with review of lists from the USFWS and CNPS indicates that occurrences of numerous plant and animal species with special-status have been recorded from or are suspected to occur in the southwestern Alameda County area. **Figures 3** and **4** show the known occurrences of special-status plants and animals, respectively, as mapped by the CNDDB in an approximately four mile radius of the APE. The attached lists from the CNDDB, USFWS, and CNPS (see **Appendix 1**) show the broad list of special-status plants and animals known from a wide range of habitat types found in Santa Clara and Alameda Counties, none of which contain suitable habitat any longer within in the APE due to the extent of past and on-going development and disturbance. The following provides a summary of the plant and animal species suspected to occur in the surrounding area away from the APE where natural habitat remains.

Animal Species. Based on the review of CNDDB data and the USFWS species list (see **Appendix 1**), a total of 30 special-status mammal, birds, reptiles, amphibians, fish, and invertebrate species are known or suspected to occur in the vicinity of the APE. **Table 1** located at the end of this BRA provides a summary of each of these species, their status, typical habitat characteristics, and conclusion regarding absence from the APE. Suitable habitat for all of these species is absent from the APE. This includes absence of suitable aquatic habitat for fish, absence of coastal salt marsh for many of the mammal and bird species known from the Baylands, and suitable nesting habitat for special-status bird species as well as more common bird species protected under the federal Migratory Bird Treaty Act. No evidence of any large stick nests of raptors or for other species that would also be protected under the federal Migratory Bird Treaty Act were observed in the trees that border the western edge of the APE. One grass nest that probably belonged to a house sparrow was observed in the northwest corner of the netted carport structure where vehicles are stored near the center of the APE, but

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[1] The federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California species.

[2] "Take" as defined by the FESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a threatened or endangered species. "Harm" is further defined by the U.S. Fish and Wildlife Service (USFWS) to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modification or degradation. The CDFW also considers the loss of listed species habitat as take, although this policy lacks statutory authority and case law support under the CESA.

this is presumably an old nest that predates the bird netting installed throughout the underside of the eves to the carport.

As indicated in **Table 1** marginal foraging habitat for several special-status bird species occurs in the ruderal field to the north of the administration building. This includes possible foraging by northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), prairie falcon (*Falco mexicanus*), American peregrine falcon (*Falco peregrines anatum*), and western burrowing owl. However, the lack of vegetative cover limits the suitability of the APE for even occasional foraging by most of these species, and suitable nesting habitat is absent. The entire area was inspected for possible sign of burrowing owl (i.e. white wash, feathers, or pellets) during the field reconnaissance surveys, but no evidence was observed and occupation for nesting would be unlikely given the absence of ground squirrel burrows and frequency of vehicle and human activity in this area.

Plant Species. Based on the review of CNDDB data, the USFWS species list, and the CNPS Inventory (see **Appendix 1**), a total of 15 special-status plant species were suspected to occur in the vicinity of the APE. **Table 2** provides a summary of each of these species, their status, typical habitat characteristics, and conclusion regarding absence from the APE. These have varied status, and most are considered rare (list 1B) by the CNPS in their electronic *Inventory of Rare and Endangered Plants of California*. A few have legal protective status under the ESAs, such as the federally-endangered robust spineflower (*Chlorizanthe robusta var. robusta*), Contra Costa goldfields (*Lasthenia conjugens*), and California seablite (*Suaeda californica*). According to the CNPS Inventory, the last confirmed sighting for hairless popcornflower (*Plagiobothrys glaber*) is from 1954.

Suitable habitat for special-status plant species known from the surrounding area is absent from the APE, and none are expected to occur in the APE due to past development and on-going disturbance observed during the field reconnaissance surveys. The entire APE has been completely disturbed by past grading, installation of wastewater treatment facilities, roadways and other improvements, and on-going maintenance and other disturbance, which precludes the possibility of presence of any species-status plant species in the APE.

Jurisdictional Waters

Although definitions vary, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or groundwater, and support vegetation adapted life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration and purification functions. Jurisdiction of the U.S. Army Corps of Engineers (Corps) is established through provisions of Section 404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into "waters of the U.S." without a permit. The Regional Water Quality Control Board (RWQCB) jurisdiction is established through Section 401 of the Clean Water Act, which requires certification or waiver to control discharges in water quality whenever a Corps permit is required under Section 404 of the Clean Water Act, and State waters as regulated under the Porter-Cologne Act. Jurisdictional authority of the CDFW over wetland areas is established under Sections 1600-1607 of the State Fish and Wildlife Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed or bank of any lake, river or stream.

Based on a review of the National Wetland Inventory mapping and the observations made

during the field reconnaissance surveys, there are no potential jurisdictional wetlands or regulated unvegetated "other waters of the U.S." in the vicinity of the APE. The Old Alameda Creek channel occurs to the northwest of the APE, but is separated by a well-maintained gravel road on the top of the adjacent levee.

IMPACT ANALYSIS

Significance Criteria

Resource Category/Significance Criteria	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES. Would the Project:				
1) 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?		X		
2) 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?				X
3) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
4) 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?			X	
5) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
6) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?				X

Discussion

1) **Less than Significant Impact with Mitigation Incorporated.**

Due to the extent of past development and absence of suitable habitat, no special-status species are believed to occur in the APE, and no effects are anticipated. Thus pursuant to CEQA-Plus requirements, no federally-listed species would be affected and there would be no impact relative to the federal ESA as a result of Project implementation.

No evidence of any nesting was observed in the trees in the vicinity of the APE, including burrowing owl and other raptors. The dense row of trees adjacent to the western edge of the APE provides dense screening between the WWTP and sensitive marsh habitat to the west along the Old Alameda Creek Channel. Any birds nesting in the marshlands are already acclimated to on-going activity at the WWTP, and construction-related disturbance would not result in disturbance to nesting and foraging birds given the long distance, dense screening, and acclimation.

Although the limited habitat values and extent of on-going disturbance generally precludes the potential for nesting birds in the APE, there remains a remote possibility that new bird nests could be established in the few scattered trees and other structures in the APE. If construction is initiated during the bird nesting season (February 1 – August 31) construction-related disturbance could result in abandonment of the nests if any are present in the immediate vicinity. If construction-related noise and disturbance resulted in abandonment of a nest in active use and loss of any eggs or young in the nest, this would be a significant adverse impact and violation of the federal Migratory Bird Treaty Act and State Fish and Game Code sections. The mitigation measure below would serve to avoid this potential for violation of federal and state regulations conducting a preconstruction survey and implementing appropriate construction restrictions if any active nests are encountered until any young birds have successfully fledged.

Mitigation Measure BIO-1. *Adequate measures shall be taken to avoid inadvertent take of bird nests protected under the federal Migratory Bird Treaty Act and State Fish and Game Code when in active use. This shall be accomplished by taking the following steps.*

- *If initial construction is proposed during the nesting season (February 1 to August 31), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 7 days prior to the onset of construction in order to determine whether any active nests are present in the APE and surrounding area within 100 feet of proposed construction. The survey shall be reconducted any time construction has been delayed or curtailed for more than 7 days during the nesting season.*
- *If no active nests are identified during the construction survey period, or development is initiated during the non-breeding season (September 1 to January 31), construction may proceed with no restrictions.*
- *If bird nests are found, an adequate setback shall be established around the nest location and construction 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 construction is to be initiated elsewhere in the APE.*
- *A report of findings shall be prepared by the qualified biologist and submitted to the District for review and approval prior to initiation of construction during the nesting season (February 1 to August 31). 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 construction can proceed. No report of findings is required if construction is initiated during the non-nesting season (September 1 to January 31) and continues uninterrupted according to the above criteria.

Implementation of this mitigation measure would ensure that impacts on special-status species would be less-than-significant.

2) **No Impact.**

The APE does not contain any riparian habitat or other sensitive natural community types, and no effects are anticipated.

3) **No Impact.**

The APE does not contain any federally protected wetlands and no effects are anticipated. Thus, pursuant to CEQA-Plus requirements, the Project is consistent with Executive Order 11990 – Protection of Wetlands. Because California does not have a Coastal Barriers Resources System, no impacts relative to the Coastal Barriers Resources Act will occur.

4) **Less than Significant Impact.**

The proposed Project would not have any significant adverse impacts on wildlife movement opportunities or adversely impact native wildlife nursery sites. Wildlife in the vicinity of the APE are already acclimated to human activity at the WWTP, and construction-related disturbance would not cause any significant impacts on possible bird nesting in the surrounding area. Species that utilize the surrounding area for foraging and nesting would continue to use these areas, even during construction, given the long distance, dense screening, and acclimation to human disturbance at the WWTP.

Pursuant to CEQA-Plus requirements, no essential fish habitat would be affected and the Project is consistent with the Magnuson-Stevens Fishery Conservation and Management Act.

5) **No Impact.**

Goals and policies specified in the Union City General Plan address the protection of sensitive biological and wetland resources. There are no sensitive resources in the vicinity of the APE and no conflicts with the City's General Plan are anticipated as a result of Project implementation.

No trees are proposed for removal as part of the Project. Section 12.16.170, Tree Conservation of the Union City Municipal Code addresses the protection of trees of regulated size. As defined by code, protected trees include all trees which have a twelve-inch or greater circumference of any trunk and are located on commercial, office or industrial developed property. The City's code requires a Tree Permit for the removal of any tree of regulated size.

6) **No Impact.**

No habitat conservation plans have been prepared addressing the APE, and the Project would therefore not conflict with any adopted habitat conservation plans. As a result, no impact would occur.

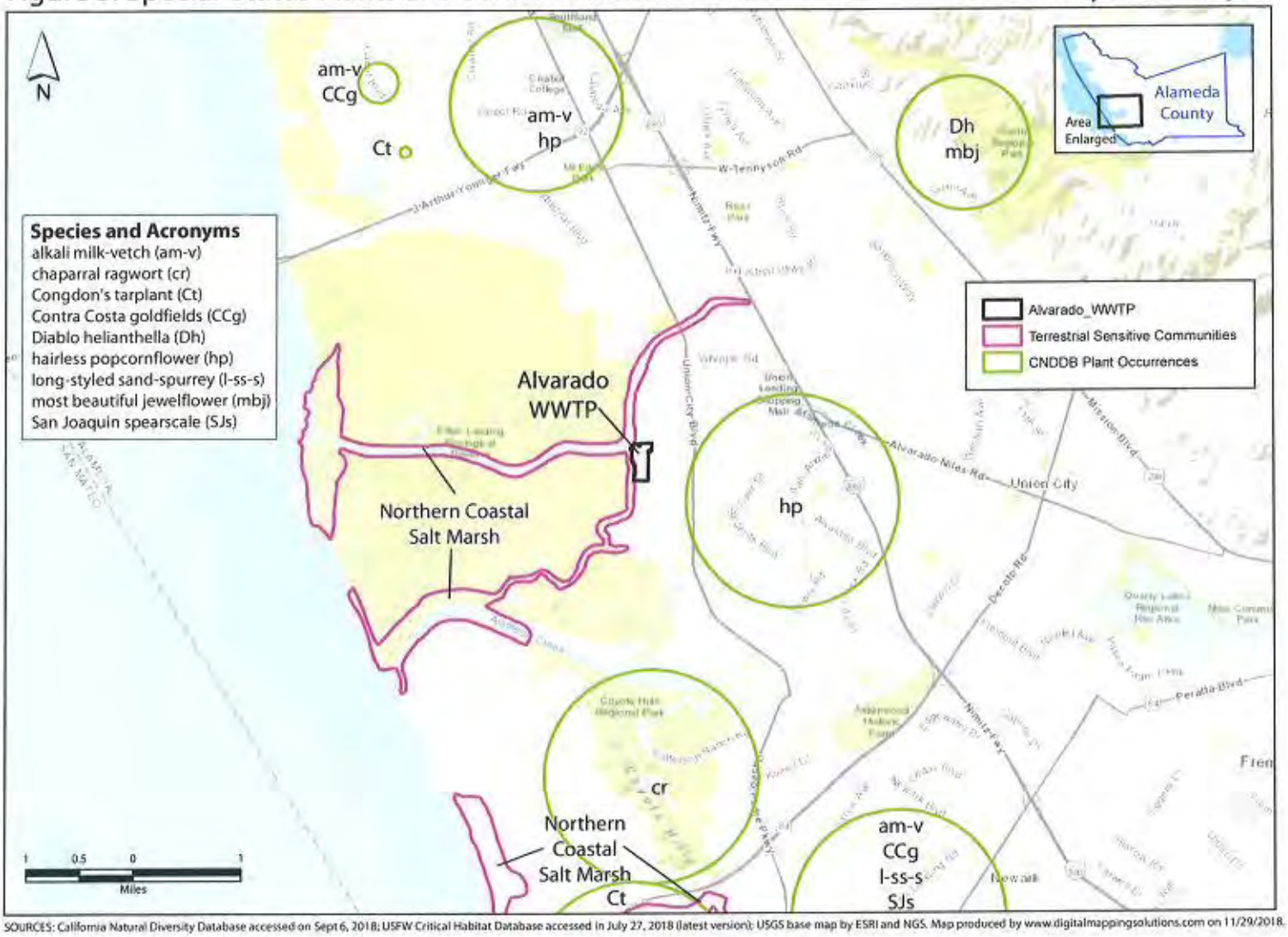
Source: Microsoft, Bing Maps

Figure 1. Regional Location of the Alvarado WWTP

Source: Brown and Caldwell, November 2018

Figure 2. Construction Characteristics of Standby Power Generation System Upgrade Project

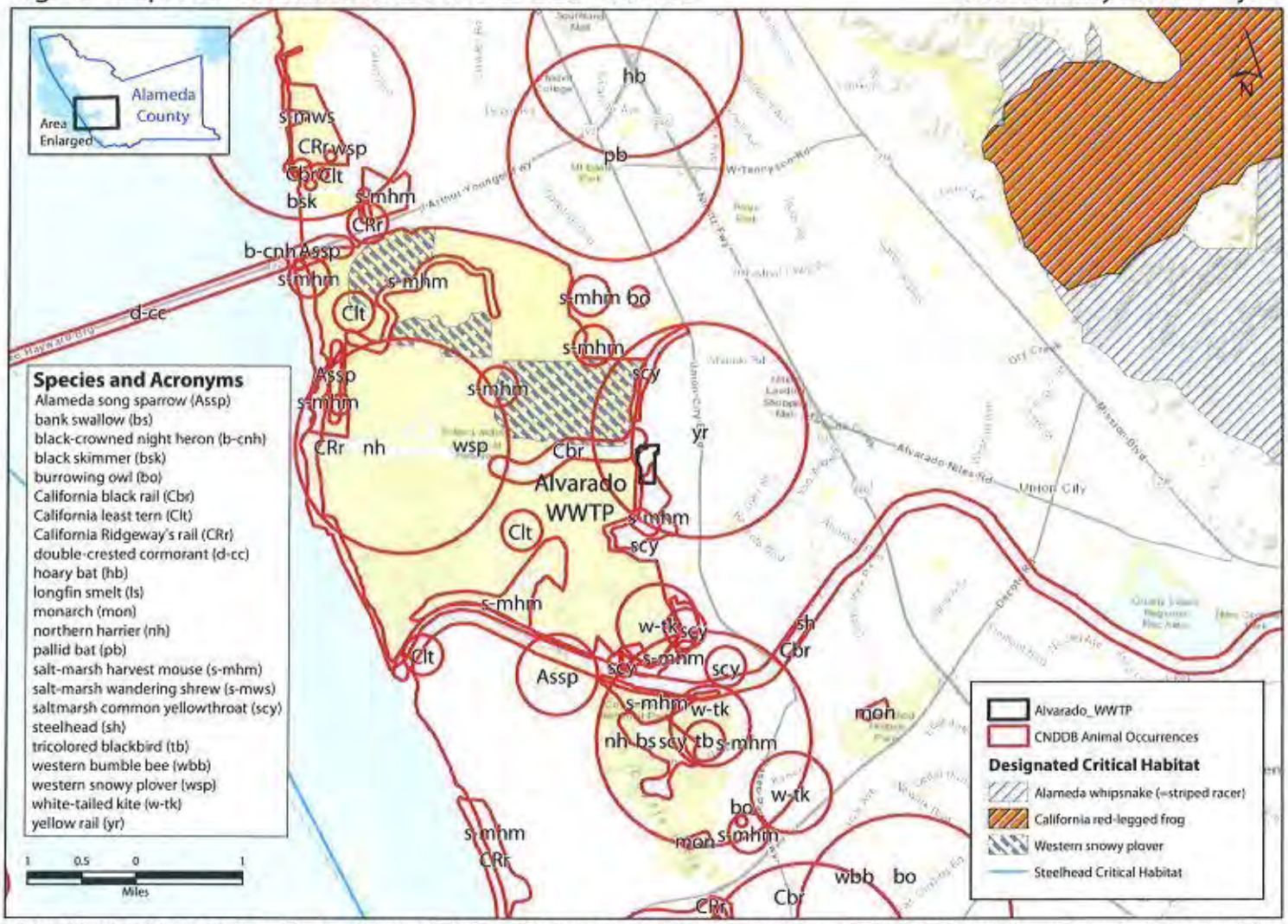
Figure 3. Special-Status Plants and Sensitive Natural Communities USD Standby Power Project



SOURCES: California Natural Diversity Database accessed on Sept 6, 2018; USFW Critical Habitat Database accessed in July 27, 2018 (latest version); USGS base map by ESRI and NGS. Map produced by www.digitalmappingsolutions.com on 11/29/2018.

Figure 4. Special-Status Animals and Critical Habitat

USD Standby Power Project



SOURCES: California Natural Diversity Database accessed on Sept 6, 2018; USFW Critical Habitat Database accessed in July 27, 2018 (latest version); USGS base map by ESRI and NGS. Map produced by www.digitalmappingsolutions.com on 11/29/2018.

TABLE 1
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR IN APE VICINITY

Scientific and Common Names	Status Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in APE
Invertebrates				
Branchinecta conservatio Conservancy fairy shrimp	E/–	Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, and Glenn Counties	Large, deep vernal pools in annual grasslands	None—project area is outside of the species' known range.
Callophrys mossii bayensis San Bruno elfin butterfly	E/–	Restricted to a few small populations on San Francisco Peninsula, with largest occurring on San Bruno Mountain.	Associated with specific broadleaf stonecrop host plants in coastal scrub habitat.	None—no suitable habitat or larval host plant in APE.
Euphydryas editha bayensis Bay checkerspot butterfly	T/–	Disjunct occurrences in San Mateo and Santa Clara Counties.	Associated with specific host plants that typically grow on serpentine soils.	None—no suitable habitat, as there are no serpentine soils in APE.
Lepidurus packardi Vernal pool tadpole shrimp	E/–	Shasta County south to Merced County.	Vernal pools and ephemeral stock ponds.	None—no suitable wetland habitat within APE.
Fish				
Hypomesus transpacificus Delta smelt	T/T	Primarily in the Sacramento-San Joaquin Estuary, but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay.	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand.	None – outside of known range and there is no suitable habitat in APE.
Oncorhynchus mykiss Central California coast steelhead	T/–	Coastal drainages along the central California coast.	Cold, clear water with clean gravel of appropriate size for spawning. Most spawning occurs in headwater streams. Steelhead migrate to the ocean to feed and grow until sexually mature.	None – there is no suitable habitat in APE.
Oncorhynchus mykiss Central Valley steelhead	T/–	Sacramento and San Joaquin River and their tributaries.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18°C (Moyle 2002). Habitat types are riffles, runs, and pools.	None – there is no suitable habitat in APE.
Spirinchus thaleichthys Longfin smelt	C/T	San Francisco Bay-Delta north to the Cook Inlet in Alaska	Pelagic portions of estuaries.	None – there is no suitable habitat in APE.

TABLE 1 (CONTINUED)
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR IN APE VICINITY

Scientific and Common Names	Status Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Amphibians				
Ambystoma californiense California tiger salamander	T/T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Sonoma County south to Santa Barbara County	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	None – there is no suitable habitat in APE.
Rana draytonii California red-legged frog	T/SSC	Found along the coast and coastal mountain ranges of California from Mendocino County to San Diego County and in the Sierra Nevada from Butte County to Stanislaus County.	Permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation; may aestivate in rodent burrows or cracks during dry periods.	None – there is no suitable habitat in APE.
Reptiles				
Emys marmorata Western pond turtle	–/SSC	The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries.	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests. Nests are typically constructed in upland habitat within 0.25 mile of aquatic habitat.	None – there is no suitable habitat in APE.
Masticophis lateralis euryxanthus Alameda whipsnake	T/T	Restricted to Alameda and Contra Costa Counties; fragmented into 5 disjunct populations throughout its range	Valleys, foothills, and low mountains associated with northern coastal scrub or chaparral habitat; requires rock outcrops for cover and foraging	None - There is currently no potential for Alameda whipsnake to occur in APE as there is no suitable habitat.
Mammals				
Reithrodontomys raviventris Salt marsh harvest mouse	E/E	The San Francisco Bay Estuary and Suisun Marsh.	Saline to brackish salt marsh habitat.	None – there is no suitable habitat in APE.
Sorex vagrans halicoetes Salt-marsh wandering shrew	–/SSC	Southern arm of the San Francisco Bay in San Mateo, Santa Clara, Alameda, and Contra Costa Counties.	Salt marshes from 6 to 9 feet above MSL.	None – there is no suitable habitat in APE.

TABLE 1
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR IN APE VICINITY

Scientific and Common Names	Status Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in APE
Vulpes macrotis mutica San Joaquin kit fox	E/T	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent records from 17 counties extending from Kern County north to Contra Costa County	Saltbush scrub, grassland, oak, savanna, and freshwater scrub	None – outside of known range and there is no suitable habitat in APE.
Birds				
Agelaius tricolor Tricolored blackbird	–/SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony	None – there is no suitable habitat in APE.
Aquila chrysaetos Golden eagle	PR/ FP	Foothills and mountains throughout California. Uncommon non-breeding visitor to lowlands such as the Central Valley	Nest on cliffs and escarpments or in tall trees overlooking open country. Forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals	Low (foraging only) – golden eagle has the potential to forage within the marshlands to the south and west of APE. Since there is no nesting habitat within APE and no foraging habitat would be affected, no effects on this species are expected to occur.
Ardea herodias Great blue heron (rookery)	–/–	Nests in suitable habitat throughout California except at higher elevations in Sierra Nevada and Cascade mountain ranges	Widely distributed in freshwater and calm-water intertidal habitats.	None – there is no suitable habitat in APE and no evidence of roosting in trees on western edge of APE.
Athene cunicularia hypugaea Western burrowing owl	–/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows	Low – western burrowing owl is known to occur in the grasslands north of APE. No evidence of burrowing owl in limited ruderal cover within APE.
Charadrius alexandrinus nivosus Western snowy plover	T/SSC	Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent	None – there is no suitable habitat in APE.

TABLE 1
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR IN APE VICINITY

Scientific and Common Names	Status Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in APE
Circus cyaneus Northern harrier	–/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	Low (foraging only) – limited foraging opportunities in small area of ruderal cover within APE. Since no nesting habitat within APE and no foraging habitat would be affected, no effects on this species are expected to occur.
Elanus leucurus White-tailed kite	–/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Low (foraging only) - limited foraging opportunities in small area of ruderal cover within APE. Since no nesting habitat within APE and no foraging habitat would be affected, no effects on this species are expected to occur.
Falco mexicanus Prairie falcon	–/–	Permanent resident in the south Coast, Transverse, Peninsular, and northern Cascade Ranges, the southeastern deserts, Inyo-White Mountains, foothills surrounding the Central Valley, and in the Sierra Nevada in Modoc, Lassen, and Plumas Counties. Winters in the Central Valley, along the coast from Santa Barbara County to San Diego County, and in Marin.	Nests on cliffs or escarpments, usually overlooking dry, open terrain or uplands.	Low (foraging only) – limited foraging opportunities in small area of ruderal cover within APE. Since no nesting habitat within APE and no foraging habitat would be affected, no effects on this species are expected to occur.
Falco peregrinus anatum American peregrine falcon	–/E, FP	Permanent resident along the north and south Coast Ranges. May summer in the Cascade and Klamath Ranges and through the Sierra Nevada to Madera County. Winters in the Central Valley south through the Transverse and Peninsular Ranges and the plains east of the Cascade Range.	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large prey populations.	Low (foraging only) – limited foraging opportunities in small area of ruderal cover within APE. Since no nesting habitat within APE and no foraging habitat would be affected, no effects on this species are expected to occur.
Geothlypis trichas sinuosa Saltmarsh common yellowthroat	–/SSC	Found only in the San Francisco Bay Area in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda Counties.	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover.	None – there is no suitable habitat in APE.
Laterallus jamaicensis coturniculus California black rail	–/T, FP	Found in scattered pairs of North America and the Pacific region of South America.	Usually in coastal salt marshes but also freshwater marshes.	None – there is no suitable habitat in APE.

TABLE 1
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR IN APE VICINITY

Scientific and Common Names	Status Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in APE
Melospiza melodia pusillula Alameda song sparrow	–/SSC	Found only in marshes along the southern portion of the San Francisco Bay	Brackish marshes associated with pickleweed; may nest in tall vegetation or among the pickleweed	None – there is no suitable habitat in APE.
Pelecanus occidentalis californicus California brown pelican	D/E	The Pacific coast from Canada through Mexico.	Coastal areas. Nests on islands. Occasionally along Arizona's lakes and rivers.	None – there is no suitable habitat in APE.
Rallus longirostris obsoletus California clapper rail	E/FP	Found along the Pacific Coast in Monterey and San Luis Obispo Counties.	From tidal mudflats to tidal sloughs.	None – there is no suitable habitat in APE.
Sternula antillarum browni California least tern	E/E	Found along the Pacific Coast of California from San Francisco to Baja California	Nest on open beaches kept free of vegetation by natural scouring from tidal action.	None – there is no suitable habitat in APE.

Notes:

Status explanations:

Federal

E = listed as endangered under the ESA
T = listed as threatened under the ESA
PT = proposed for federal listing as threatened under the ESA
C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded
D = delisted
SC = species of concern
– = no listing

State

E = listed as endangered under CESA
T = listed as threatened under CESA
FP = fully protected under the California Fish and Game Code
SSC = species of special concern in California
D = delisted
– = no listing

Potential Occurrence in the Study Area

High: Known occurrences of the species within APE, or CNDDB, or other documents, records the occurrence of the species within a 2-mile radius of APE and suitable habitat is present
Moderate: CNDDB, or other documents, records the known occurrence of the species within a 2-mile radius of APE and poor quality suitable habitat is present
Low: CNDDB, or other documents, does not record the occurrence of the species within a 2-mile radius of APE but suitable habitat is present in vicinity

TABLE 2
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN REGION OF APE

Scientific and Common Names	Status Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Astragalus tener var. *tener* Alkali milk-vetch	–/–/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, east San Francisco Bay Area	Alkali playas, on adobe clay in valley and foothill grassland, vernal pools on alkaline soils, below 60 meters above MSL	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Atriplex depressa Brittlescale	–/–/1B.2	Western and eastern Central Valley and adjacent foothills on west side of Central Valley	Alkaline clay soils in chenopod scrub, playas, valley and foothill grasslands, meadows and seeps and vernal pools on alkaline, clay soils; below 320 meters above MSL	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Atriplex joaquiniana San Joaquin spearscale	–/–/1B.2	West edge of Central Valley from Glenn County to Tulare County. Also reported from Monterey and San Luis Obispo Counties	Alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland; below 835 meters above MSL	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Atriplex minuscula Lesser saltscale	–/–/1B.1	Sacramento and San Joaquin Valley, Butte County and from Merced County to Kern County. Also recorded from Don Edwards NWR in Alameda County.	Sandy alkaline soils in chenopod scrub, playas, valley and foothill grassland; 15-200 meters above MSL	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.

TABLE 2
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN REGION OF APE

Scientific and Common Names	Status Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Centromadia parryi ssp. congdonii Congdon's tarplant	–/–/1B.2	East San Francisco Bay Area, Salinas Valley, Los Osos Valley	Alkaline soils in annual grassland, on lower slopes, flats, and swales, sometimes on saline soils, below 230 meters above MSL	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Chorizanthe robusta var. robusta Robust spineflower	E/–/1B.1	Coastal central California, from San Mateo to Monterey County	Coastal bluff scrub, coastal dunes openings in cismontane woodland, on sandy soil	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Chloropyron maritimum ssp. palustre (Cordylanthus maritimus ssp. palustris) Point Reyes bird's-beak	–/–/1B.2	Coastal northern California, from Humboldt to Santa Clara County	Coastal salt marsh, tidal salt marsh, below 10 meters above MSL	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Eryngium aristulatum var. hooveri Hoover's button-celery	–/–/1B.1	South San Francisco Bay area, South Coast Ranges in Alameda, San Benito, Santa Clara, and San Luis Obispo Counties	Vernal pools; 3-45 meters above MSL	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities

TABLE 2
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN REGION OF APE

Scientific and Common Names	Status Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Lasthenia conjugens Contra Costa goldfields	E/–/1B.1	Scattered occurrences in Coast Range valleys and southwest edge of Sacramento Valley, Alameda, Contra Costa, Monterey, Marin, Napa, Solano and Sonoma Counties. Presumed extirpated in Mendocino, Santa Barbara and Santa Clara Counties	Wet areas in cismontane woodland, valley and foothill grassland, vernal pools, alkaline playas or saline vernal pools and swales; seasonal wetlands below 470 meters above MSL.	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Malacothamnus arcuatus Arcuate bush mallow	–/–/1B.2	Santa Clara, Santa Cruz, and San Mateo Counties	Chaparral, between 15-355 meters above MSL.	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Malacothamnus hallii Hall's bush mallow	–/–/1B.2	Alameda, Contra Costa, Merced, Santa Clara, and Stanislaus Counties	Chaparral and coastal scrub between 30-2,500	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Navarretia prostrata Prostrate vernal pool navarretia	–/–/1B.1	Western San Joaquin Valley, interior South Coast Ranges, central South Coast, Peninsular Ranges: Alameda, Los Angeles, Merced, Monterey, Orange, Riverside, San Diego, and San Luis Obispo Counties.	Vernal pools and mesic areas in coastal scrub and alkali grasslands, seasonal wetlands in alkaline soils; between 15-700 meters above MSL.	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.

TABLE 2
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN REGION OF APE

Scientific and Common Names	Status Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Plagiobothrys glaber	–/–/1A	Alameda, Marin, San Benito, Santa Clara Counties	Alkaline meadows and seeps, and coastal salt marsh; between 15-180 meters above MSL. Last confirmed sighting in 1954.	None - there is no suitable habitat within APE. Additionally, APE has been heavily disturbed (vehicle traffic, construction of existing facilities) and continually disturbed by maintenance activities.
Suaeda californica California seablite	E/–/1B.1	Morro Bay, San Luis Obispo County, and San Francisco and Contra Costa Counties; historically found in the south San Francisco Bay.	Margins of tidal salt marsh; below 18 meters above MSL.	None; there is no suitable habitat within the project area. Additionally, the project area has been heavily disturbed (vehicle traffic, construction of existing facilities) in 2007 and earlier, and continually disturbed by maintenance activities (e.g., mowing).
Trifolium hydrophilum (*T. depauperatum* var. *hydrophilum*) Saline clover	–/–/1B.2	Sacramento Valley, central western California.	Salt marsh, mesic alkaline areas in Valley and foothill grasslands, vernal pools, marshes and swamps; below 300 meters above MSL.	None; there is no suitable habitat within the project area. Additionally, the project area has been heavily disturbed (vehicle traffic, construction of existing facilities) in 2007 and earlier, and continually disturbed by maintenance activities (e.g., mowing).

TABLE 2
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN REGION OF APE

Scientific and Common Names	Status Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area

Notes:

Status explanations:

Federal

E	=	listed as endangered under the ESA
T	=	listed as threatened under the ESA
–	=	no listing

State

E	=	listed as endangered under CESA
T	=	listed as threatened under CESA
–	=	no listing

CNPS

1A – presumed extinct in California

1B.1 –rare, threatened or endangered in California and elsewhere; seriously threatened in California

1B.2 – rare, threatened or endangered in California and elsewhere; fairly threatened in California

Potential Occurrence in the Study Area

High:	Known occurrences of the species within the APE, or CNDDB, or other documents, records the occurrence of the species within a 2-mile radius of APE and suitable habitat is present within APE
Moderate:	CNDDB, or other documents, records the known occurrence of the species within a 2-mile radius of APE and suitable habitat is present
Low:	CNDDB, or other documents, may record the occurrence of the species within a 2-mile radius of APE, but only marginal or poor quality suitable habitat is present, or species is believed to be extirpated from vicinity of APE

APPENDIX 1

Species Lists from USFWS, CNDDB and CNPS

United States Department of the Interior

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

In Reply Refer To:
Consultation Code: 08ESMF00-2019-SLI-0008
Event Code: 08ESMF00-2019-E-00018
Project Name: Union Sanitary District Digester 7 Project

October 02, 2018

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

To Whom It May Concern:

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

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

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

Project Summary

Consultation Code: 08ESMF00-2019-SLI-0008

Event Code: 08ESMF00-2019-E-00018

Project Name: Union Sanitary District Digester 7 Project

Project Type: Federal Grant / Loan Related

Project Description: The new Digester 7 Project and related facility upgrades will be located on the Union Sanitary District Alvarado Wastewater Treatment Plan at 5072 Benson Road in Union City, California. Digester 7 is being designed as a 1.8 MG tank.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.59164684837418N122.09011275398737W

Counties: Alameda, CA

Endangered Species Act Species

There is a total of 12 threatened, endangered, or candidate species on this species list.

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

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

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

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

Mammals

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

Birds

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

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened

Amphibians

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

Fishes

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

Insects

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

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Contra Costa Goldfields *Lasthenia conjugens*	Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/7058

Critical habitats

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

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Newark (3712251) OR Redwood Point (3712252) OR San Leandro (3712262) OR Hayward (3712261))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Accipiter cooperii Cooper's hawk	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	950 950	115 S:1	0	0	0	0	0	1	0	1	1	0	0
Accipiter striatus sharp-shinned hawk	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	1,180 1,180	22 S:1	1	0	0	0	0	0	1	0	1	0	0
Agelaius tricolor tricolored blackbird	G2G3 S1S2	None Candidate Endangered	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	5 21	951 S:2	0	0	0	0	1	1	2	0	1	1	0
Ambystoma californiense California tiger salamander	G2G3 S2S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	20 20	1176 S:1	0	0	0	0	1	0	1	0	0	0	1
Amsinckia lunaris bent-flowered fiddleneck	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	892 892	86 S:1	0	0	0	0	0	1	0	1	1	0	0
Antrozous pallidus pallid bat	G5 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	30 110	415 S:2	0	0	0	0	0	2	2	0	2	0	0
Aquila chrysaetos golden eagle	G5 S3	None None	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	950 950	320 S:1	1	0	0	0	0	0	1	0	1	0	0
Ardea herodias great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	1 300	155 S:2	1	1	0	0	0	0	1	1	2	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Asio flammeus short-eared owl	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern		10 S:1	0	0	0	0	0	1	1	0	1	0	0
Astragalus tener var. tener alkali milk-vetch	G2T2 S2	None None	Rare Plant Rank - 1B.2	5 70	65 S:6	0	0	0	0	6	0	6	0	0	3	3
Athene cunicularia burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	2 60	1971 S:8	0	3	1	0	2	2	6	2	6	2	0
Balsamorhiza macrolepis big-scale balsamroot	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive USFS_S-Sensitive	500 500	50 S:2	1	0	0	0	0	1	1	1	2	0	0
Bombus crotchii Crotch bumble bee	G3G4 S1S2	None None		700 700	234 S:1	0	0	0	0	0	1	1	0	1	0	0
Bombus occidentalis western bumble bee	G2G3 S1	None None	USFS_S-Sensitive XERCES_IM-Imperiled	10 100	282 S:4	0	0	0	0	0	4	4	0	4	0	0
Centromadia parryi ssp. congdonii Congdon's tarplant	G3T2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	5 40	93 S:5	0	0	1	1	1	2	3	2	4	0	1
Charadrius alexandrinus nivosus western snowy plover	G3T3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	0 15	138 S:9	1	0	0	0	1	7	6	3	8	1	0
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	G4?T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	5 5	68 S:3	0	0	0	0	3	0	3	0	0	3	0
Chorizanthe robusta var. robusta robust spineflower	G2T1 S1	Endangered None	Rare Plant Rank - 1B.1 BLM_S-Sensitive	30 30	20 S:1	0	0	0	0	1	0	1	0	0	1	0
Circus cyaneus northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	5 10	53 S:5	0	1	0	0	0	4	4	1	5	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Coturnicops noveboracensis yellow rail	G4 S1S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern NABCI_RWL-Red Watch List USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	0 20	45 S:4	0	0	0	0	0	4	3	1	4	0	0
Danaus plexippus pop. 1 monarch - California overwintering population	G4T2T3 S2S3	None None	USFS_S-Sensitive	5 150	383 S:7	0	2	2	0	0	3	0	7	7	0	0
Dipodomys venustus venustus Santa Cruz kangaroo rat	G4T1 S1	None None		5 5	14 S:1	0	0	0	0	0	1	1	0	1	0	0
Elanus leucurus white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	5 10	176 S:6	0	0	0	0	0	6	6	0	6	0	0
Eryngium aristulatum var. hooveri Hoover's button-celery	G5T1 S1	None None	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	10 10	16 S:1	0	0	1	0	0	0	0	1	1	0	0
Eryngium jepsonii Jepson's coyote-thistle	G2 S2	None None	Rare Plant Rank - 1B.2	330 330	19 S:1	0	0	0	0	0	1	0	1	1	0	0
Eumops perotis californicus western mastiff bat	G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern WBWG_H-High Priority	120 120	296 S:1	0	0	0	0	0	1	1	0	1	0	0
Extriplex joaquinana San Joaquin spearscale	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	10 10	124 S:1	0	0	0	0	0	1	1	0	1	0	0
Fritillaria liliacea fragrant fritillary	G2 S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	400 550	82 S:4	0	0	1	1	0	2	1	3	4	0	0
Geothlypis trichas sinuosa saltmarsh common yellowthroat	G5T3 S3	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	0 10	112 S:8	1	1	0	0	0	6	7	1	8	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Gilia millefoliata dark-eyed gilia	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive		54 S:1	0	0	0	0	1	0	1	0	0	0	1
Helianthella castanea Diablo helianthella	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	600 900	107 S:3	0	1	1	0	0	1	1	2	3	0	0
Holta strobilina Loma Prieta holta	G2? S2?	None None	Rare Plant Rank - 1B.1		34 S:1	0	0	0	0	0	1	1	0	1	0	0
Holocarpha macradenia Santa Cruz tarplant	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden		37 S:1	0	0	0	0	1	0	1	0	0	1	0
Horkelia cuneata var. sericea Kellogg's horkelia	G4T1? S1?	None None	Rare Plant Rank - 1B.1 USFS_S-Sensitive	20 20	58 S:1	0	0	0	0	1	0	1	0	0	1	0
Lasiurus cinereus hoary bat	G5 S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority		238 S:1	0	0	0	0	0	1	1	0	1	0	0
Lasthenia conjugens Contra Costa goldfields	G1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_UCBBG-UC Berkeley Botanical Garden	5 10	33 S:2	0	0	0	0	1	1	2	0	1	0	1
Laterallus jamaicensis coturniculus California black rail	G3G4T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	1 51	303 S:14	3	2	2	1	1	5	6	8	13	1	0
Masticophis lateralis euryxanthus Alameda whipsnake	G4T2 S2	Threatened Threatened		175 1,280	164 S:17	0	9	2	0	2	4	6	11	15	2	0
Melospiza melodia pusillula Alameda song sparrow	G5T2? S2S3	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	1 40	38 S:18	0	11	0	0	0	7	8	10	18	0	0
Microcina lumi Lum's micro-blind harvestman	G1 S1	None None		400 600	2 S:2	0	0	0	0	0	2	2	0	2	0	0

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Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Monolopia gracilens woodland woollythreads	G3 S3	None None	Rare Plant Rank - 1B.2		57 S:1	0	0	0	0	0	1	1	0	1	0	0
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	G5T2T3 S2S3	None None	CDFW_SSC-Species of Special Concern	700 700	34 S:1	1	0	0	0	0	0	0	1	1	0	0
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	G3 S3.2	None None		10 15	53 S:8	0	1	0	0	0	7	8	0	8	0	0
Nycticorax nycticorax black-crowned night heron	G5 S4	None None	IUCN_LC-Least Concern	10 10	37 S:1	0	0	1	0	0	0	1	0	1	0	0
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	G5T2T3Q S2S3	Threatened None	AFS_TH-Threatened	200 200	44 S:1	0	0	0	0	0	1	0	1	1	0	0
Phalacrocorax auritus double-crested cormorant	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	1 30	38 S:2	1	0	0	0	0	1	1	1	2	0	0
Plagiobothrys glaber hairless popcornflower	GH SH	None None	Rare Plant Rank - 1A	15 20	9 S:2	0	0	0	0	2	0	2	0	0	2	0
Polygonum marinense Marin knotweed	G2Q S2	None None	Rare Plant Rank - 3.1		32 S:1	0	0	0	0	0	1	1	0	1	0	0
Rallus obsoletus obsoletus California Ridgway's rail	G5T1 S1	Endangered Endangered	CDFW_FP-Fully Protected NABCI_RWL-Red Watch List	0 15	98 S:14	3	4	2	0	0	5	6	8	14	0	0
Rana boylii foothill yellow-legged frog	G3 S3	None Candidate Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	120 120	2229 S:1	0	0	0	0	1	0	1	0	0	1	0
Rana draytonii California red-legged frog	G2G3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	45 1,100	1501 S:4	0	2	0	2	0	0	1	3	4	0	0
Reithrodontomys raviventris salt-marsh harvest mouse	G1G2 S1S2	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	1 5	144 S:23	3	2	0	0	0	18	20	3	23	0	0
Riparia riparia bank swallow	G5 S2	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	10 10	297 S:1	0	0	0	0	0	1	1	0	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Rynchops niger black skimmer	G5 S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern NABCI_YWL-Yellow Watch List USFWS_BCC-Birds of Conservation Concern	3 3	7 S:1	1	0	0	0	0	0	1	0	1	0	0
Sanicula maritima adobe sanicle	G2 S2	None Rare	Rare Plant Rank - 1B.1 USFS_S-Sensitive		17 S:1	0	0	0	0	1	0	1	0	0	0	1
Scapanus latimanus parvus Alameda island mole	G5THQ SH	None None	CDFW_SSC-Species of Special Concern	20 20	8 S:1	0	0	0	0	0	1	1	0	1	0	0
Senecio aphanactis chaparral ragwort	G3 S2	None None	Rare Plant Rank - 2B.2		82 S:1	0	0	0	0	0	1	1	0	1	0	0
Setophaga petechia yellow warbler	G5 S3S4	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	280 280	70 S:1	0	1	0	0	0	0	0	1	1	0	0
Sorex vagrans halicoetes salt-marsh wandering shrew	G5T1 S1	None None	CDFW_SSC-Species of Special Concern	1 2	12 S:7	0	0	0	0	0	7	7	0	7	0	0
Spergularia macrotheca var. longistyla long-styled sand-spurrey	G5T2 S2	None None	Rare Plant Rank - 1B.2	10 10	22 S:2	0	0	0	0	0	2	2	0	2	0	0
Spirinchus thaleichthys longfin smelt	G5 S1	Candidate Threatened	CDFW_SSC-Species of Special Concern	0 0	46 S:1	0	0	0	0	0	1	1	0	1	0	0
Sternula antillarum browni California least tern	G4T2T3Q S2	Endangered Endangered	CDFW_FP-Fully Protected NABCI_RWL-Red Watch List	1 6	75 S:8	1	0	0	0	2	5	7	1	6	0	2
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	G2T2 S2	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden USFS_S-Sensitive		103 S:2	0	0	0	0	0	2	1	1	2	0	0
Stuckenia filiformis ssp. alpina slender-leaved pondweed	G5T5 S2S3	None None	Rare Plant Rank - 2B.2	40 40	21 S:1	0	0	0	0	0	1	1	0	1	0	0
Suaeda californica California seablite	G1 S1	Endangered None	Rare Plant Rank - 1B.1		18 S:3	0	0	0	0	2	1	2	1	1	1	1

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Trifolium hydrophilum	G2	None	Rare Plant Rank - 1B.2	10	49	0	0	0	0	1	2	2	1	2	0	1
saline clover	S2	None		10	S:3											
Tryonia imitator	G2	None	IUCN_DD-Data Deficient	0	39	0	0	0	0	1	0	1	0	0	0	1
mimic tryonia (=California brackishwater snail)	S2	None		0	S:1											
Valley Needlegrass Grassland	G3	None		500	45	0	0	1	0	0	0	1	0	1	0	0
Valley Needlegrass Grassland	S3.1	None		500	S:1											

CNPS California Native Plant Society

Plant List

53 matches found. Click on scientific name for details

Search Criteria

Found in Quads 3712262, 3712261, 3712168, 3712252, 3712251, 3712158, 3712242 3712241 and 3712148;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Acanthomintha duttonii	San Mateo thorn-mint	Lamiaceae	annual herb	Apr-Jun	1B.1	S1	G1
Allium peninsulare var. franciscanum	Franciscan onion	Alliaceae	perennial bulbiferous herb	(Apr)May-Jun	1B.2	S1	G5T1
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	1B.2	S2S3	G2G3
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	Mar-Jun	4.2	S3S4	G5?T3T4
Arctostaphylos regismontana	Kings Mountain manzanita	Ericaceae	perennial evergreen shrub	Dec-Apr	1B.2	S2	G2
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2	S2	G2T2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	1B.1	S2	G2
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	4.2	S4	G4
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	4.2	S3?	G3?
Campanula exigua	chaparral harebell	Campanulaceae	annual herb	May-Jun	1B.2	S2	G2
Castilleja ambigua var. ambigua	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	4.2	S4	G4T5
Centromadia parryi ssp. congdonii	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	1B.1	S2	G3T2
Chloropyron maritimum ssp. palustre	Point Reyes bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Oct	1B.2	S2	G4?T2
Cirsium fontinale var. fontinale	Crystal Springs fountain thistle	Asteraceae	perennial herb	(Apr)May-Oct	1B.1	S1	G2T1
Cirsium praeteriens	lost thistle	Asteraceae	perennial herb	Jun-Jul	1A	SX	GX
Clarkia concinna ssp. automixa	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	4.3	S3	G5?T3
Collinsia corymbosa	round-headed Chinese-houses	Plantaginaceae	annual herb	Apr-Jun	1B.2	S1	G1

Collinsia multicolor	San Francisco collinsia	Plantaginaceae	annual herb	(Feb)Mar-May	1B.2	S2	G2
Dirca occidentalis	western leatherwood	Thymelaeaceae	perennial deciduous shrub	Jan-Mar(Apr)	1B.2	S2	G2
Eryngium aristulatum var. hooveri	Hoover's button-celery	Apiaceae	annual / perennial herb	(Jun)Jul(Aug)	1B.1	S1	G5T1
Eryngium jepsonii	Jepson's coyote thistle	Apiaceae	perennial herb	Apr-Aug	1B.2	S2?	G2?
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2	G2
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Hesperolinon congestum	Marin western flax	Linaceae	annual herb	Apr-Jul	1B.1	S1	G1
Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	1B.1	S1	G1
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G1
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	4.2	S4?	G4?
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	3	S3?	G3?
Malacothamnus arcuatus	arcuate bush-mallow	Malvaceae	perennial evergreen shrub	Apr-Sep	1B.2	S2	G2Q
Malacothamnus davidsonii	Davidson's bush-mallow	Malvaceae	perennial deciduous shrub	Jun-Jan	1B.2	S2	G2
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	perennial evergreen shrub	(Apr)May-Sep(Oct)	1B.2	S2	G2
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	annual herb	Mar-May	3.2	S3S4	G3G4
Monardella antonina ssp. antonina	San Antonio Hills monardella	Lamiaceae	perennial rhizomatous herb	Jun-Aug	3	S1S3	G4T1T3Q
Monolopia gracilens	woodland woolythreads	Asteraceae	annual herb	(Feb)Mar-Jul	1B.2	S3	G3
Navarretia myersii ssp. myersii	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	1B.1	S2	G2T2
Navarretia paradoxiclara	Patterson's navarretia	Polemoniaceae	annual herb	May-Jun(Jul)	1B.3	S2	G2
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G2
Piperia michaelii	Michael's rein orchid	Orchidaceae	perennial herb	Apr-Aug	4.2	S3	G3
Plagiobothrys chorisianus var. chorisianus	Choris' popcornflower	Boraginaceae	annual herb	Mar-Jun	1B.2	S2	G3T2Q
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	1A	SH	GH
Polemonium carneum	Oregon polemonium	Polemoniaceae	perennial herb	Apr-Sep	2B.2	S2	G3G4
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	4.2	S3	G4

Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	2B.2	S2	G3
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	1B.2	S2	G2T2
Stuckenia filiformis ssp. alpina	slender-leaved pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	2B.2	S3	G5T5
Suaeda californica	California seablite	Chenopodiaceae	perennial evergreen shrub	Jul-Oct	1B.1	S1	G1
Trifolium amoenum	two-fork clover	Fabaceae	annual herb	Apr-Jun	1B.1	S1	G1
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2
Tropidocarpum capparideum	caper-fruited tropidocarpum	Brassicaceae	annual herb	Mar-Apr	1B.1	S1	G1

Suggested Citation

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Appendix F

Biological Resource Assessment for Off-Site Biological Impacts

March 2, 2021

Paul Scheidegger
Scheidegger & Associates
P.O. Box 331
Danville, California 94526

Re: Biological Resource Assessment (BRA) of potential off-site biological impacts from the Enhanced Treatment and Site Upgrade (ETSU) Phase 1 Program.

Dear Mr. Paul Scheidegger:

The purpose of this BRA is to describe potential off-site impacts to biological resources from the ETSU Phase 1 Program. Issues addressed include increased discharge of wastewater to Old Alameda Creek, and the effects of increased construction of noise and vibration levels on special-status species that may be present in the Eden Landing Ecological Reserve to the west of the Alvarado Wastewater Treatment Plant (WWTP).

PROJECT LOCATION

Figure 1 shows the location of the WWTP where the assessed Phases of the ETSU Phase 1 Program will be located. Figure 2 shows the current WWTP facility. Chapter 1 of the Project Initial Study and Mitigated Negative Declaration (IS/MND) provides a discussion of existing WWTP operations. All figures referred to herein are included in Attachment 1.

EXISTING EFFLUENT DISPOSAL SYSTEM

Currently, USD discharges treated water at three discharge points:

- East Bay Discharger's Authority (EBDA) system
- Hayward Marsh
- Old Alameda Creek, during storm events only

The EBDA outfall provides the primary treated water disposal capability for USD, with Hayward Marsh and Old Alameda Creek providing essential wet weather capability as well. The Alvarado WWTP has an average dry weather flow (ADWF) of 23 million gallons per day (mgd) and is permitted through EBDA and the San Francisco Bay Regional Water Quality Control Board (RWQCB) to discharge 33 mgd ADWF and 42.9 mgd peak daily flow to the EBDA common outfall. On average, about 3 mgd of effluent from USD as a fresh water source is discharged from the EBDA pipeline to the Hayward Marsh which is owned and operated by the East Bay Regional Park District (EBRPD). During wet weather, WWTP treated water flows greater than 42.9 mgd are diverted to the Hayward Marsh.

In addition to Hayward Marsh, during wet weather USD can discharge via the emergency outfall to Old Alameda Creek under NPDES Permit No. CA0038733. This 5-year permit was set to expire on November 30, 2020, but was renewed on October 14, 2020 by the RWQCB for a new 5-year period ending on November 30, 2025. A Report of Waste Discharge

(ROWD) was prepared in support of the permit renewal process. The ROWD was prepared under the assumption that wet weather discharges to the Hayward Marsh will be eliminated and discharges to Old Alameda Creek will be increased immediately.

PROPOSED ETSU PHASE 1 PROGRAM

The ETSU Phase 1 Program is comprised of the following projects:

- Phase 1 A – Aeration Basin (AB) Improvements
- Phase 1A – Campus Building
- Phase 1B – Secondary Clarifiers and Effluent Facilities
- Phase 1C – Plant Equalization Storage

All phases are discussed in Chapter 1 of the IS/MND. Traditional construction activities are associated with the Phase 1 Program. Additionally, pile driving may be needed for Phase 1A – Campus Building and Phase 1B Secondary Clarifiers and Effluent Facilities. Phase 1 is projected to start construction at the end of the second quarter of 2021 and be completed by the end of the first quarter of 2027.

ASSESSMENT OF BIOLOGICAL RESOURCES and RECOMMENDED MEASURES

Habitat in the Project Area

The site is located in and near the tidally influenced portion of the marshes that exist along the periphery of the San Francisco Bay. The area that will be subjected to increased treated wastewater discharge into Alameda Creek, which has connectivity to surrounding tidal areas, but itself is a conveyance of freshwater that runs off from portions of the southern and eastern Bay area. Freshwater flows through Alameda Creek at substantially higher rates during the winter rainy season. The areas surrounding Alameda Creek vary in their exposure to tidal influence, though biological communities are best classified as tidal marsh in this area. In addition, because the Phase 1 Program includes no construction activities outside the WWTP site, no direct impacts to habitat will occur.

Potential Effects on Habitat

<u>Alameda Creek</u>

Under NPDES permit No.CA0038133, increased discharge of treated wastewater during peak wet weather flow periods to Alameda Creek will occur over time. Most of this increased discharge will occur during the winter rainy season, when salinity is naturally reduced because of runoff into the creek from its surrounding watershed. Due to the relatively modest increase in freshwater discharge, primarily at a time when salinity would already be low, it is expected that the discharged, treated freshwater will not adversely affect or otherwise alter the habitat in Alameda Creek or its surrounding areas.

Potential Effects for Biological Resources

Species Descriptions of Species with Potential to occur and be affected

California Ridgway's (clapper) rail (Rallus obsoletus obsoletus). Federal-listed Endangered, State-listed Endangered, CDFW Fully Protected Species.

The California Ridgway's rail (CRR), formerly known as California clapper rail (*R. longirostris obsoletus*), is the resident Ridgway's/clapper rail subspecies of northern and central California. Although more widespread in the past, it is currently restricted to the San Francisco Bay estuary. The CRR occurs only within salt and brackish marshes. Important CRR habitat components are: 1) well-developed tidal sloughs and secondary channels; 2) beds of cordgrasss (*Spartina* spp.) in the lower marsh zone; 3) dense salt marsh vegetation for cover, nest sites, and brooding areas; 4) intertidal mudflats, gradually sloping banks of tidal channels, and cordgrass beds for foraging; 5) abundant invertebrate food resources; and 6) transitional vegetation at the marsh edge to serve as a refuge during high tides. In south and central San Francisco Bay and along the perimeter of San Pablo Bay, CRR typically inhabits salt marshes dominated by pickleweed and cordgrasss. Nesting occurs from March through July, with peak activity in late April to late May. CRR nests, constructed of wetland vegetation and platform-shaped, are placed near the ground in clumps of dense vegetation, usually in the lower marsh zone near small tidal channels. This species has potential to occur in tidal marsh habitat outside areas where construction will occur.

California black rail (Laterallus jamaicensis coturniculus), State-listed threatened, CDFW fully protected species.

The California black rail is the resident black rail subspecies that occurs in California coastal salt and brackish marshes from Bodega Bay to Morro Bay, with additional populations known from freshwater marshes near or in the northern Sierra Nevada foothills. Important habitat elements for this species within the San Francisco Bay estuary are: 1) emergent marsh dominated by pickleweed (*Salicornia* sp.), marsh gumplant (*Grindelia stricta*), bulrush (Scirpus maritimus), rushes (*Juncus* spp.), and/or cattails (*Typha* spp.); 2) high density of vegetation below four inches in height; 3) high marsh elevation with transitional upland vegetation; 4) large total area of contiguous marsh; 5) proximity to a major water source; and, 6) isolation from disturbance. This species feeds primarily on invertebrates. Black rails are extremely secretive and very difficult to glimpse or flush; identification typically relies on voice. Nests are placed on the ground in dense wetland vegetation.

There are documented occurrences of California black rail near the Project area and suitable habitat for the species is present in the tidal marshes. However, no suitable habitat is located within the Project area.

Other Nesting Birds
Non-status birds have potential to nest in the Project Area and its surrounding areas. Most nesting bird species are protected by state and federal statutes (Migratory Bird Treaty Act; Fish and Game Code) and as such, avoidance of active bird nests is generally required of all projects.

Effects Analysis for Special-status Species with Potential to be impacted

The potential for individual special-status species to occur and be affected by the project is assessed in Attachment 2. Maps of documented occurrences of wildlife and plants from the

California natural biodiversity database for these species within five miles of the Project area are included as Figures 4 and 5, respectively. Species that have no potential to occur or will not be affected are not described further.

Alameda Creek

Several special-status species have potential to occur in the tidal marshes around Alameda Creek and within the creek itself. However, none of these species will be affected by the increased discharge of treated water because the discharge will not affect the extent or quality of habitat for these species.

Eden Landing Ecological Preserve

For the Phase 1 Program, general construction activities will be associated with all projects. These types of activities have routinely occurred at the WWTP, including the new Digester 7 Project along the WWTP western fence line which is scheduled to be completed in the summer of 2021. General Phase 1 construction activities have the potential to cause noise and vibration levels that could affect sensitive species, including special-status Ridgeway's rail and black rail within the preserve, but the impact would be less than significant. This is because potentially suitable habitat is more than 500 feet away from where Phase 1 construction will occur, shielding is provided by the western boundary of the WWTP, which includes a fence and Eucalyptus grove, and the individuals present in the preserve are likely somewhat acclimated to past construction activity at the plant and existing operational noise generation.

Pile driving, may be used during the construction of the Phase 1A Campus Building and Phase 1B- Secondary Clarifiers and Effluent Facilities. Pile driving, particularly impact pile driving, may produce loud and unusual, punctuated noise in the WTTP. This noise could affect rails to the west of the WTTP if the noise is sufficiently disturbing to adversely affect nesting. The accepted nesting season for rails is February 1 through August 31. However, as discussed in Chapter 1 of the IS/MND, conventional impact pile driving will not be used during the nesting season for construction of the Phase 1A Campus Building and noise/vibratory disturbance generated during the nesting period for rails will not exceed baseline construction disturbance levels. Because the disturbances from construction of the Phase 1A Campus Building will be of a level equivalent to normal construction activities and due to the work areas being more than 500 feet from potentially suitable rail habitat, and due to the presence of noise attenuating structures (e.g. Eucalyptus grove and fence) between the work areas and rail habitat, and because rails in this area are presumably acclimatized to the baseline operational disturbance already present at the WTTP, impacts to off-site special status species (including rails) and non-status nesting birds within the preserve will be less than significant.

Conventional pile driving for Phase 1B, however, is projected to start in May 2021 and require 2.5 months to complete and this activity will coincide with the nesting season for rails and non-status birds that may be in the preserve. Introduction of noise and vibrational disturbance during the rail nesting season could result in a significant adverse impact. However, as design of Phase 1B, which is considered on a program level in the IS/MND, advances, methods to minimize the disturbance caused by louder than base-level construction activities will need to be developed to minimize disturbances.

As a result, Mitigation Measure 1 is recommended for Phase 1B to reduce impacts to less-than-significant levels.

Recommended Mitigation Measures to Avoid Impacts to Special-status Species

Mitigation Measure 1

During the design of the Phase 1B project where impact pile-driving will likely occur in the rail breeding season, a Noise and Vibration Mitigation Plan will be developed. The Plan will include a detailed timing assessment of pile driving and a study of the sound attenuation from pile driving at the construction site. If necessary, the following will be implemented; an analysis of alternative drilling technologies; and an assessment of different shielding methods such as temporary sound walls, shrouds, and jackets for effectiveness in abating noise and vibration levels in areas where rails may be present. As a result of this analysis, project-specific mitigation measures will be developed and implemented to minimize potential effects to rails to less than significant levels.

CONCLUSION

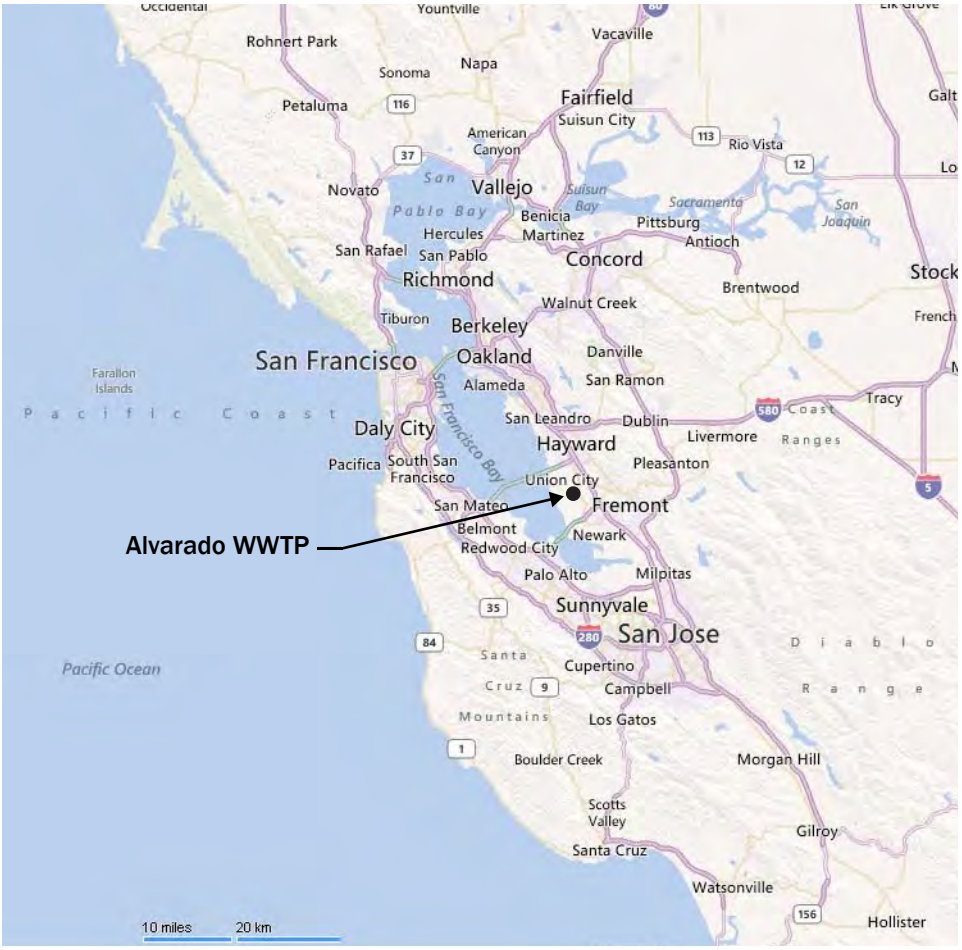
Due to the small amount of increased freshwater discharge expected to be released into Alameda Creek and due to the timing of the majority of the releases which will be during winter when salinity is naturally low, it is not anticipated that the increased discharge would have an impact on the habitats in the creek or its surrounding areas. No construction activities would occur in sensitive tidal marsh or within Alameda Creek. The project will not alter biological communities or habitat in a substantial way and impacts would be less than significant. However, during construction phase of the Phase 1B Project, some disturbance of federal-listed Ridgway's rail and/or state-listed California black rail could occur from pile-driving activities, and these activities could adversely affect rail nesting, which would be a significant impact. For rails, additional studies of pile-driving activities are recommended to determine methods to minimize impacts during the breeding season, if pile-driving must occur during that period.

Please feel free to contact me if you have any questions or concerns.

Brian Freiermuth
Associate Wildlife Biologist

Attachment 1: Figures
Attachment 2: Species Potential Table
Attachment 3: Database Search Reports

Attachment 1: Figures

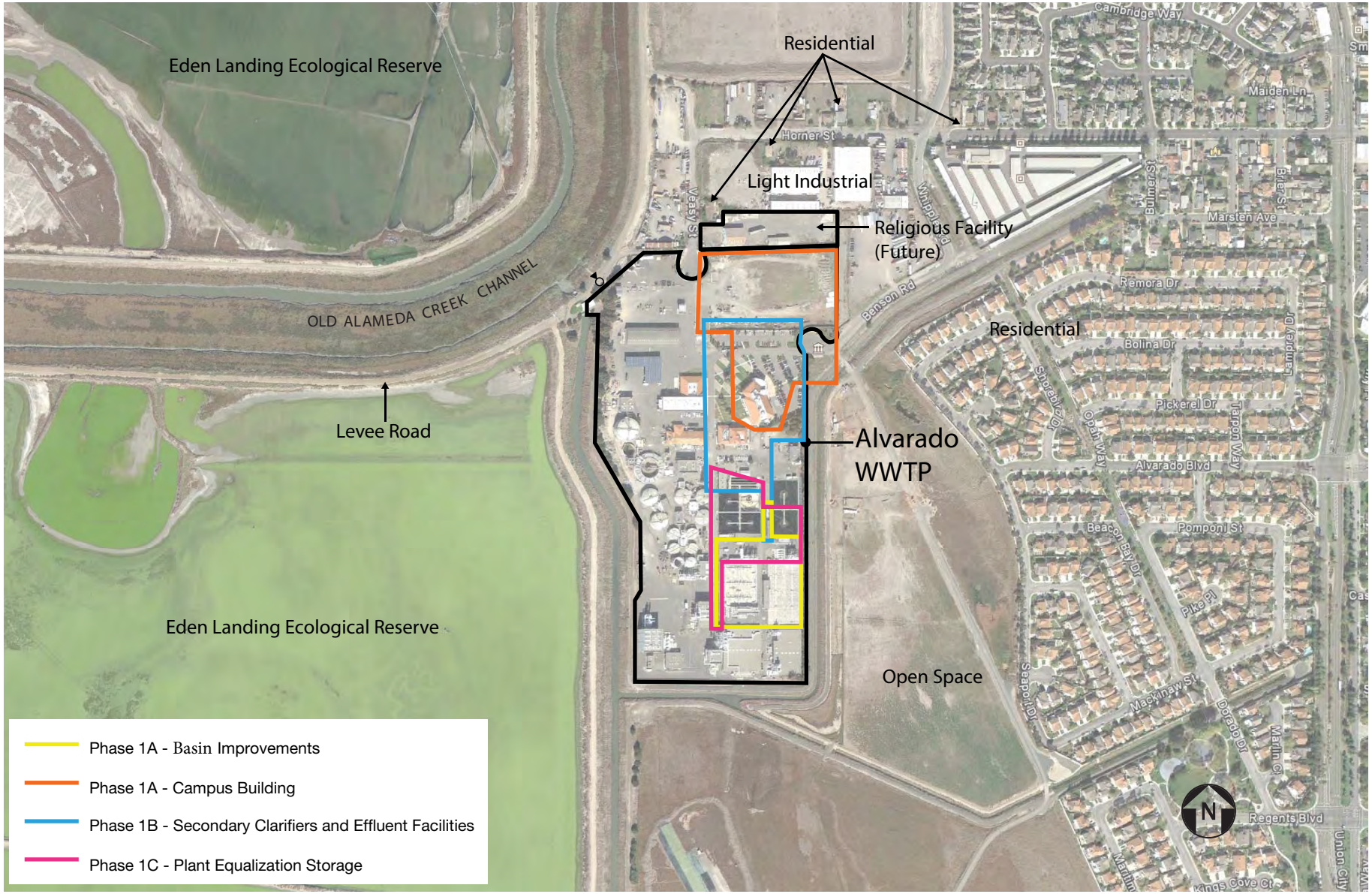


Source: Microsoft, Bing Maps

Figure 1. Regional Location of the Alvarado WWTP

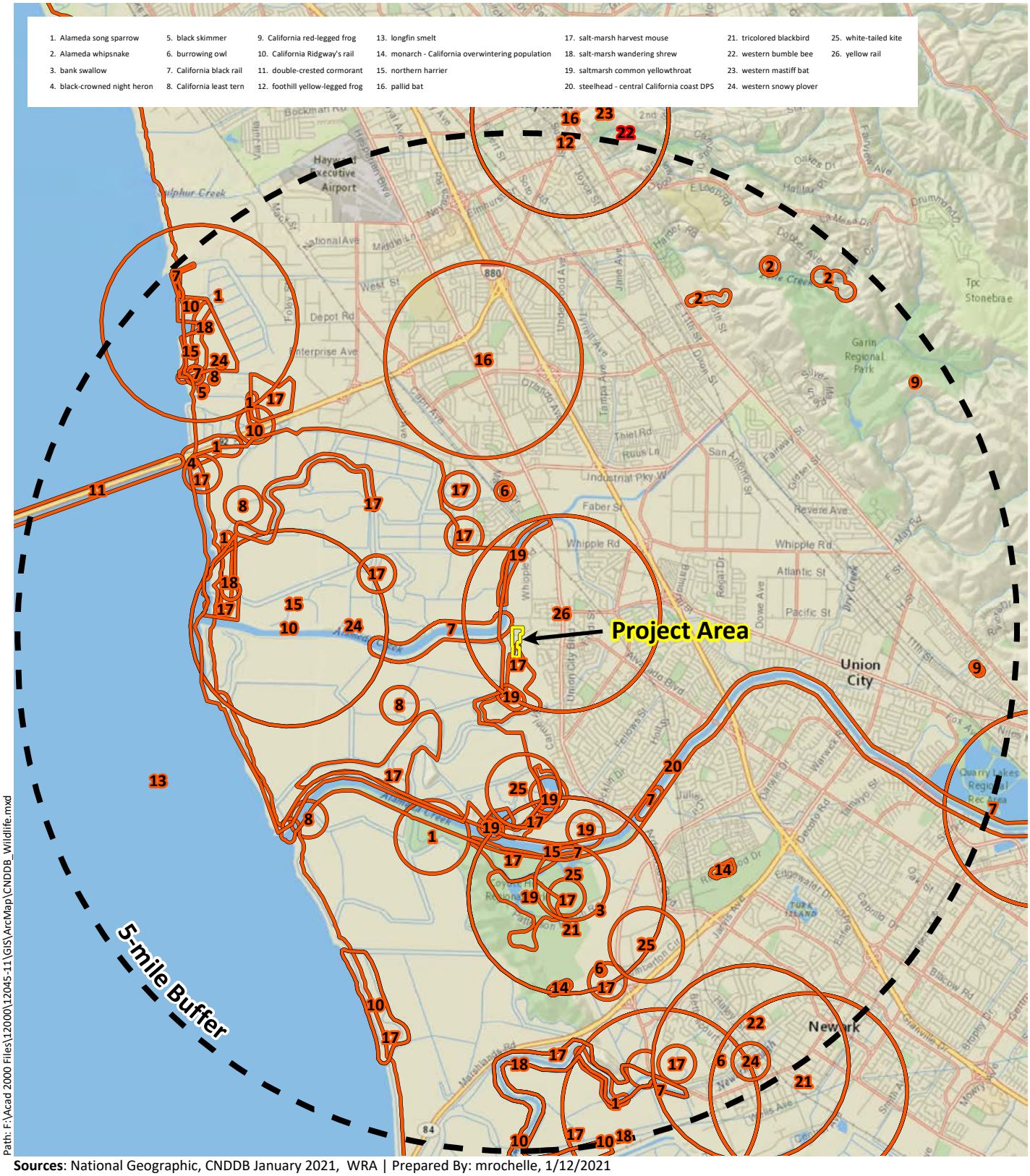
Source: USD, October 2020

Figure 2. Existing Alvarado WWTP Site Plan



Source: Scheidegger & Associates, October 2020

Figure 3. Phase 1 ProjectAreas



Sources: National Geographic, CNDDB January 2021, WRA | Prepared By: mrochelle, 1/12/2021

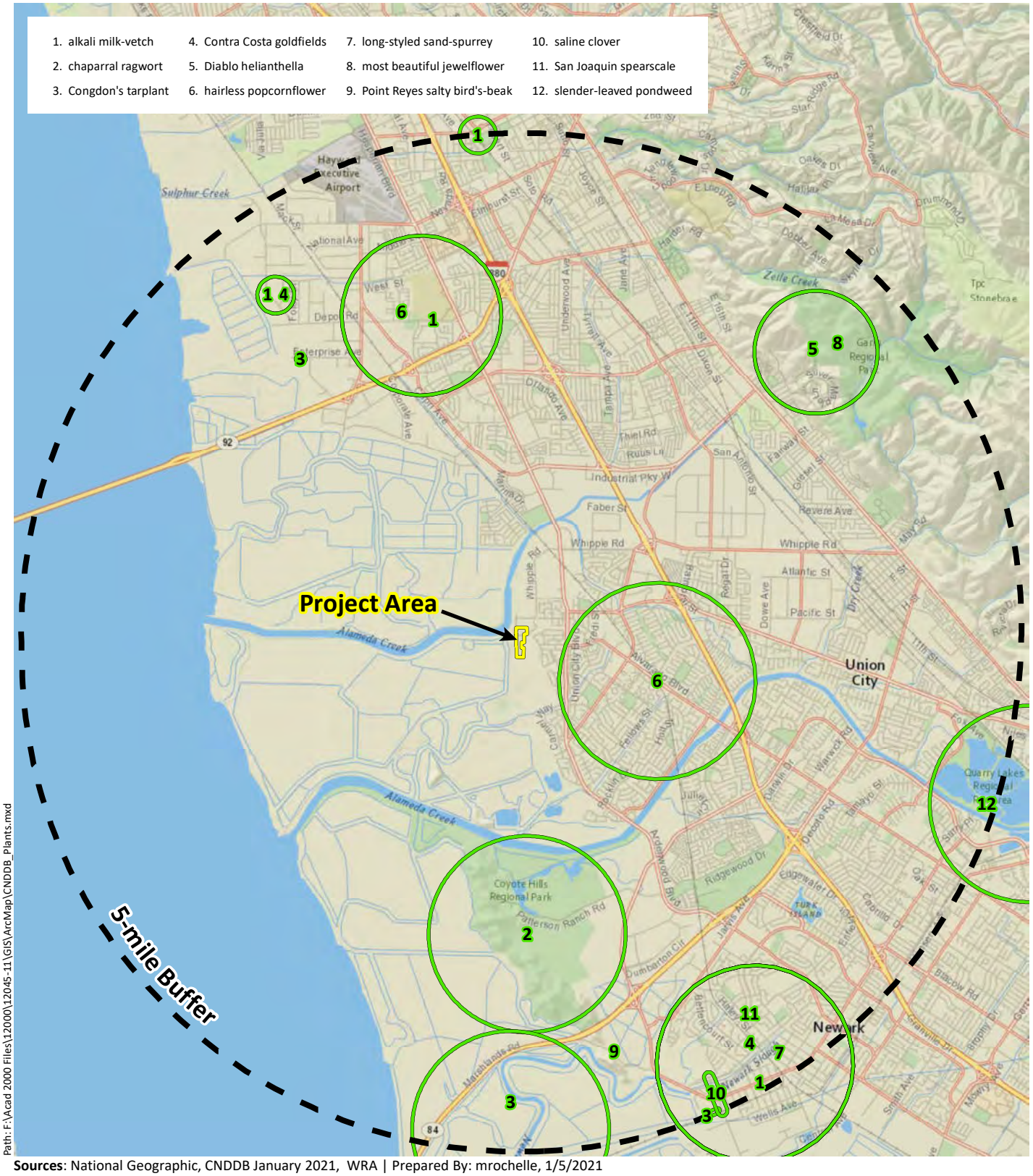
Figure 4. Special-Status Wildlife Species Documented within 5 Miles of the Project Area

Union Sanitary District Enhanced Treatment and Site Upgrade Program
Union City in Alameda County, California

0 1 2 Miles

N

ENVIRONMENTAL CONSULTANTS



Sources: National Geographic, CNDDB January 2021, WRA | Prepared By: mrochelle, 1/5/2021

Figure 5. Special-status Plant Species Documented within 5 Miles of the Project Area

Union Sanitary District Enhanced Treatment and Site Upgrade Program
Union City in Alameda County, California

0 1 2 Miles

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ENVIRONMENTAL CONSULTANTS

Attachment 2: Species Potentials Table

Attachment 2. Potential for special-status wildlife and plants to occur onsite or sufficiently nearby to be affected by the Project

PLANTS				
alkali milk-vetch *Astragalus tener var. tener*	Rank 1B	Playas, valley and foothill grasslands, and vernal pool habitats; derived from adobe clay and alkaline substrates. Elevation range: 0 -195 feet. Blooms: March – June.	**No Potential.** The Project Area does not contain playas, valley or foothill grasslands, or vernal pools.	**Not Present**. No further recommendations for this species.
chaparral ragwort *Senecio aphanactis*	Rank 2B	Chaparral, cismontane woodland, and coastal scrub habitats; sometimes located on alkaline soils. Elevation range: 45 – 2625 feet. Blooms: Jan – April (May).	**Not Potential.** The Project Area does not contain chaparral, cismontane woodland. The Project Area is significantly below the elevation range for this species.	**Not Present**. No further recommendations for this species.
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	Rank 1B	Valley and foothill grassland habitats; located on alkaline soils. Elevation range: 0 – 755 feet. Blooms: May – October (November).	**No Potential.** The Project Area does not contain valley or foot hill grassland habitat.	**Not Present**. No further recommendations for this species.
Contra Costa goldfields *Lasthenia conjugens*	FE; Rank 1B	Valley and foothill grassland, vernal pools, cismontane woodland; located in pools, swales, and depressions in mesic grassy sites underlain by alkaline substrate. Elevation range: 0 – 1530 feet. Blooms: March – June.	**No Potential.** The Project Area does not contain seasonal wetland habitat that may support this species.	**Not Present.** No further recommendations for this species.
hairless popcornflower *Plagiobothrys glaber*	Rank 1A	Alkaline meadows and seeps and coastal salt marshes and swamps. Elevation range: 45 – 590 feet. Blooms: March – May.	**No Potential.** The Project Area does not contain alkaline meadow or seeps or costal salt marsh or swamp habitat. The species is presumed extinct (last confirmed sighting in 1954).	**Not Present.** No further recommendations for this species.

Hoover's button-celery *Eryngium aristulatum* var. *hooveri*	Rank 1B	Vernal pools, alkaline depressions, roadside ditches, and other mesic habitats near the coast. Elevation range: 5 – 150 feet. Blooms: (June) July (August)	**No Potential.** The Project Area does not contain vernal pools, alkaline depressions, roadside ditches, or other mesic habitats.	**Not Present.** No further recommendations for this species.
long-styled sand-spurrey *Spergularia macrotheca* var. *longistyla*	Rank 1B	Alkaline meadows, seeps, marshes, and swamps. Elevation range: 0 – 835 feet. Blooms: February – May (June).	**No Potential.** The Project Area does not contain alkaline meadow, seep, marsh, or swamp habitats.	**Not Present.** No further recommendations for this species.
Point Reyes bird's beak *Chloropyron maritimum* ssp. *palustre*	Rank 1B	Brackish and coastal salt influenced marshes and swamps. Elevation range: 0 – 35 feet. Blooms: June – October.	**No Potential.** The Project Area does not contain marshes or swamps.	**Not Present.** No further recommendations for this species.
saline clover *Trifolium hydrophilum*	Rank 1B	Marshes and swamps, mesic portions of alkali vernal pools, mesic, alkali valley and foothill grassland. Elevation range: 0 – 985 feet. Blooms: April – June.	**No Potential.** The Project Area does not contain seasonal wetland habitat that may support this species.	**Not Present.** No further recommendations for this species.
San Joaquin spearscale *Extriplex joaquinana*	Rank 1B	Chenopod scrub, meadows and seeps, playas, and valley and foothill grasslands; located on alkaline soils. Elevation range: 0 – 2740 feet. Blooms: April – October.	**Unlikely.** The Project Area does not contain chenopod scrub, meadows and seeps, playas, or valley and foothill grasslands.	**Not Present.** No further recommendations for this species.

slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	Rank 2B	Shallow freshwater marshes and swamps. Elevation range: 980 – 7055 feet. Blooms: May – July.	**No Potential**. The Project Area does not contain freshwater marshes and swamps that support this species. The Project Area is significantly below the elevation range for this species.	**Not Present.** No further recommendations for this species.
MAMMALS				
pallid bat *Antrozous pallidus*	SSC, WBWG High	Variety of habitats ranging from grasslands to mixed forests, favoring open and dry, rocky areas. Roost sites include crevices in rock outcrops and cliffs, caves, mines, and also hollow trees and various manmade structures such as bridges, barns, and buildings (including occupied buildings). Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Unlikely.** Undisturbed structures and/or cavities that could support establishment of a maternity or hibernacula roost are absent from the Project Area. This species may occasionally forage in the area.	No further actions are recommended for this species.
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, WBWG High	Associated with a wide variety of habitats from deserts to higher-elevation mixed and coniferous forests. Females form maternity colonies in buildings, caves and mines, and males roost singly or in small groups. Foraging typically occurs at edge habitats near wooded areas, e.g., along streams.	**Unlikely.** Undisturbed structures and/or cavities that could support establishment of a maternity or hibernacula roost are absent from the Project Area. This species may occasionally forage in the area.	No further actions are recommended for this species.

western mastiff bat *Eumops perotis*	SSC, WBWG High	Found in a wide variety of open, arid and semi-arid habitats. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	**Unlikely.** Rock outcroppings or cliffs that could support establishment of a maternity or hibernacula roost are absent from the Project Area. This species may occasionally forage in the area.	No further actions are recommended for this species.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Forest habitats of moderate canopy and moderate to dense understory. Also in chaparral habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	**No Potential.** The Project Area is developed and provides no suitable habitat.	No further actions are recommended for this species.
big free-tailed bat *Nyctinomops macrotis*	SSC, WBWG Med-High	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	**Unlikely.** Rock outcroppings or cliffs that could support establishment of a maternity or hibernacula roost are generally absent from the Project Area. This species may occasionally forage over the Project Area.	No further actions are recommended for this species.

salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Endemic to emergent salt and brackish wetlands of the San Francisco Bay estuary. Pickleweed marshes are primary habitat; also occurs in various other wetland communities with dense vegetation. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**Unlikely (Project Area); Present (adjacent to Project Area).** The Project Area is developed and provides no suitable habitat for this species. While this species is considered present in tidal wetland and the wetland basin to the south of the Project Area (CDFW 2021), movement into the Project Area is unlikely.	No further actions are recommended for this species.
Alameda Island mole *Scapanus latimanus parvus*	SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.	**No Potential.** The Project Area is outside of the known range of this species.	No further actions are recommended for this species.
salt-marsh wandering shrew *Sorex vagrans halicoetes*	SSC	Salt marshes of the south arm of San Francisco Bay. Medium high marsh 6 to 8 feet above sea level where abundant driftwood is scattered among *Salicornia*.	**Unlikely.** The Project Area is developed and provides no suitable habitat for this species. Tidal wetland along OLD ALAMEDA CREEK may be occupied, though movement into the Project Area is unlikely..	No further actions are recommended for this species.
American badger *Taxidea taxus*	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**No Potential.** The Project Area is developed and highly disturbed; surrounding urban development and bayland-waters habitats preclude presence.	No further actions are recommended for this species.

Attachment 2. Potential for special-status wildlife and plants to occur onsite or sufficiently nearby to be affected by the Project

Birds				
tricolored blackbird *Agelaius tricolor*	ST, SSC	Nearly endemic to California, where it is most numerous in the Central Valley and vicinity. Highly colonial, nesting in dense aggregations over or near freshwater in emergent growth or riparian thickets. Also uses flooded agricultural fields. Abundant insect prey near breeding areas essential.	**Unlikely.** The Project Area is developed and provides no habitat for this species; marsh along the Old Alameda Creek is saline and unlikely to support nesting.	No further actions are recommended for this species.
grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident. Breeds in open grasslands in lowlands and foothills, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	**No Potential.** The Study Area is developed and lacks open expanses of grassland.	No further actions are recommended for this species.
golden eagle *Aquila chrysaetos*	CFP, BGEPA	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	**No Potential.** No Suitable canyons or large trees are present within the Project Area or in the vicinity to support nesting by this species; development precludes foraging.	No further actions are recommended for this species.
great egret *Ardea alba*	none (breeding sites protected by CDFW); CDF sensitive	Year-round resident. Nests colonially or semi-colonially, usually in trees, occasionally on the ground or elevated platforms. Breeding sites usually in close proximity to foraging areas: marshes, lake margins, tidal flats, and rivers. Forages primarily on fishes and other aquatic prey, also smaller terrestrial vertebrates.	**Unlikely.** The Project Area is developed and highly disturbed; on-site trees are unlikely to support a nesting colony, nor has any evidence of such been observed.	No further actions are recommended for this species.

great blue heron *Ardea herodias*	none (breeding sites protected by CDFW)	Year-round resident. Nests colonially or semi-colonially in tall trees and on cliffs, also sequestered terrestrial substrates. Breeding sites usually in close proximity to foraging areas: marshes, lake margins, tidal flats, and rivers. Forages primarily on fishes and other aquatic prey, also smaller terrestrial vertebrates.	**Unlikely.** The Project Area is developed and highly disturbed; on-site trees are unlikely to support a nesting colony, nor has any evidence of such been observed.	No further actions are recommended for this species.
short-eared owl *Asio flammeus*	SSC	Occurs year-round, but primarily as a winter visitor; breeding very restricted in most of California. Found in open, treeless areas (e.g., marshes, grasslands) with elevated sites for foraging perches and dense herbaceous vegetation for roosting and nesting. Preys mostly on small mammals, particularly voles.	**Unlikely (Project Area); Present (wintering adjacent to Project Area).** This species was observed along OLD ALAMEDA CREEK during field work performed by WRA in 2018 (outside the breeding season). While individuals may winter in nearby bayland habitats, local breeding is unlikely and development within the Project Area precludes foraging.	No further actions are recommended for this species.
burrowing owl *Athene cunicularia*	SSC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	**Unlikely.** The Project Area is developed and provides no typical nesting or foraging habitat. No indication of suitable refugia or wintering individuals observed by WRA along the levee road adjacent to the Project Area during field work in 2018.	No further actions are recommended for this species.

western snowy plover *Charadrius nivosus (alexandrines) nivosus*	FT, SSC	Federal listing applies only to the Pacific coastal population. Year-round resident and winter visitor. Occurs on sandy beaches, salt pond levees, and the shores of large alkali lakes. Nests on the ground, requiring sandy, gravelly or friable soils.	**No Potential.** The Project Area is developed and does not provide any suitable habitat for this species. Although nesting occurs at the Eden Landing Preserve (located approximately 1.7 miles to the west; CDFW 2021), nesting adjacent to the Project Area is highly unlikely given levee disturbances and otherwise densely vegetated marsh.	No further actions are recommended for this species.
northern harrier *Circus hudsonius (cyaneus)*	SSC	Year-round resident and winter visitor. Found in open habitats including grasslands, prairies, marshes and agricultural areas. Nests on the ground in dense vegetation, typically near water or otherwise moist areas. Preys on small vertebrates.	**Unlikely.** The Project Area is developed and provides no habitat for this species. Presumably present in nearby bayland habitats, though nesting adjacent to the Project Area is unlikely.	No further actions are recommended for this species.
yellow rail *Coturnicops noveboracensis*	SSC	Summer resident in eastern Sierra Nevada in Mono County, breeding in shallow freshwater marshes and wet meadows with dense vegetation. Also a rare winter visitor along the coast and other portions of the state. Extremely cryptic.	**No Potential.** The Project Area is developed and provides no suitable habitat; unlikely to winter in the immediate vicinity.	No further actions are recommended for this species.

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white-tailed kite *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Unlikely.** Trees present within the Project Area are structurally suitable but development and routine disturbances likely preclude nesting. May forage adjacent to the Project Area.	No further actions are recommended for this species.
American peregrine falcon *Falco peregrinus anatum*	FD, SD, CFP	Year-round resident and winter visitor. Occurs in a wide variety of habitats, though often associated with coasts, bays, marshes and other bodies of water. Nests on protected cliffs and also on man-made structures including buildings and bridges. Preys on birds, especially waterbirds. Forages widely.	**Unlikely.** The Project Area lacks any typical nesting substrates (cliffs, tall buildings). Likely forages over bayland habitats in the vicinity.	No further actions are recommended for this species.
San Francisco common yellowthroat *Geothlypis trichas sinuosa*	SSC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Unlikely.** The Project Area is developed and provides no marsh habitat for this species. Present nearby in marsh along the Old Alameda Creek, as observed by WRA during field work in 2018.	No further actions are recommended for this species.
loggerhead shrike *Lanius ludovicianus*	SSC, BCC	Year-round resident in open woodland, grassland, savannah and scrub. Prefers areas with sparse shrubs, trees, posts, and other suitable perches for foraging. Preys upon large insects and small vertebrates. Nests are well-concealed in densely-foliaged shrubs or trees.	**Unlikely.** The Project Area is developed and provides no suitable habitat.	No further actions are recommended for this species.

California black rail *Laterallus jamaicensis coturniculus*	ST, CFP	Year-round resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground; regional breeding populations primarily in the northern portion of the San Francisco Bay estuary. Prefers larger, undisturbed marshes that have an extensive upper zone and are close to a major water source. Extremely secretive and cryptic.	**No Potential (Project Area); Present (adjacent to Project Area).** The Project Area is developed and provides no habitat for this species. Observed by WRA in adjacent tidal marsh along Old Alameda Creek during field work in 2018; local breeding status is unknown.	See text for a discussion of impacts and mitigation recommendations for this species.
Alameda song sparrow *Melospiza melodia pusillula*	SSC	Year-round resident of salt marshes bordering the south arm of San Francisco Bay. Inhabits primarily pickleweed marshes; nests placed in marsh vegetation, typically shrubs such as gumweed.	**Unlikely.** The Project Area is developed and provides no marsh habitat for this species. Presumed to be present nearby in marsh along Old Alameda Creek.	No further actions are recommended for this species.
black-crowned night heron *Nycticorax nycticorax*	none (breeding sites protected by CDFW)	Year-round resident. Nests colonially, usually in trees but also in patches of emergent vegetation. Rookery sites are often on islands and usually located adjacent to foraging areas: margins of lakes and bays.	**Unlikely.** The Project Area is developed and highly disturbed; on-site trees are unlikely to support a nesting colony, nor has any evidence of such been observed.	No further actions are recommended for this species.
Bryant's savannah sparrow *Passerculus sandwichensis alaudinus*	SSC	Year-round resident associated with the coastal fog belt, primarily between Humboldt and northern Monterey Counties. Occupies low tidally influenced habitats and adjacent areas; often found where wetland communities merge into grassland. May also occur in drier grasslands. Nests near the ground in taller vegetation, including along roads, levees, and canals.	**Unlikely.** The Project Area is developed and provides no suitable habitat. Typical open grassland/grassland-wetland interface is not present adjacent to the Project Area. Likely winters in the vicinity.	No further actions are recommended for this species.

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California Ridgway's rail *Rallus obsoletus obsoletus*	FE, SE, CFP	Year-round resident in tidal marshes of the San Francisco Bay estuary. Requires tidal sloughs and intertidal mud flats for foraging, and dense marsh vegetation for nesting and cover. Typical habitat features abundant growth of cordgrass and pickleweed. Feeds primarily on molluscs and crustaceans.	**Unlikely (Project Area); Present (adjacent to Project Area).** The Project Area is developed and provides no suitable habitat. However, this species is known to be present, including nesting, in tidal marsh along the Old Alameda Creek(CDFW 2021, WRA unpublished data).	USFWS typically considers potential noise/vibratory impacts from construction during the breeding season. See text for a discussion of impacts and mitigation recommendations for this species.
bank swallow *Riparia riparia*	ST	Summer resident in riparian and other lowland habitats near rivers, lakes and the ocean in northern California. Nests colonially in excavated burrows on vertical cliffs and bank cuts (natural and manmade) with fine-textured soils. Historical nesting range in southern and central areas of California has been eliminated by habitat loss. Currently known to breed in Siskiyou, Shasta, and Lassen Cos., portions of the north coast, and along Sacramento River from Shasta Co. south to Yolo Co.	**No Potential.** The Project Area is outside of the known breeding range of this species and does not provide any suitable nesting habitat.	No further actions are recommended for this species.
black skimmer *Rynchops niger*	SSC	Found primarily in southern California; South San Francisco Bay has a small resident population. Nests colonially on gravel bars, low islets, and sandy beaches, often with tern species.	**No Potential.** The Project Area is developed and provides no suitable terrestrial or aquatic habitat for this species.	No further actions are recommended for this species.

(Brester's) yellow warbler *Setophaga petechia (brewsteri)*	SSC	Summer resident throughout much of California. Breeds in riparian vegetation close to water, including streams and wet meadows. Microhabitat used for nesting variable, but dense willow growth is typical. Occurs widely on migration.	**Unlikely.** The Project Area is developed and does not contain riparian vegetation. Some individuals may pass through during migration.	No further actions are recommended for this species.
California least tern *Sternula antillarum browni*	FE, SE, CFP	Summer resident along the coast from San Francisco Bay south to northern Baja California; inland breeding also very rarely occurs. Nests colonially on barren or sparsely vegetated areas with sandy or gravelly substrates near water, including beaches, islands, and gravel bars. In San Francisco Bay, has also nested on salt pond margins.	**No Potential.** The Project Area is developed and provides no suitable terrestrial or aquatic habitat for this species. Unlikely even to occur (e.g., forage)on or near Old Alameda Creek. The nearest current nesting colony site is at Eden Landing Reserve (1.7 miles to the west).	No further actions are recommended for this species.
Reptiles and Amphibians				
western pond turtle *Actinemys marmorata*	SSC	Thoroughly aquatic, favoring ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Require basking sites such as partially submerged logs, vegetation mats, or open mud banks, and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	**Unlikely.** The Project Area is developed, with no typical freshwater or upland nesting habitat in the immediate vicinity. Incidental presence likely precluded by surrounding urban development.	No further actions are recommended for this species.

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California tiger salamander *Ambystoma californiense*	FE/FT, ST	Populations in Santa Barbara and Sonoma counties currently listed as endangered; threatened in remainder of range. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Adults are fossorial and utilize mammal burrows and other subterranean refugia. Breeding occurs primarily in vernal pools and other seasonal water features.	**No Potential.** The Project Area is developed, with no suitable upland or aquatic habitat. The nearest known population is located nearly 9 miles to the south in Fremont (CDFW 2021).	No further actions are recommended for this species.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings where shrubs form a vegetative mosaic with oak trees and grasses and small mammal burrows provide basking and refuge.	**No Potential.** The Project Area is outside of the known local range of this species and is developed with no suitable habitat present.	No further actions are recommended for this species.
foothill yellow-legged frog *Rana boylii*	SC, SSC	Found in or adjacent to rocky streams in a variety of habitats. Prefers partly-shaded, shallow streams and riffles with a rocky substrate; requires at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Feeds on both aquatic and terrestrial invertebrates.	**No Potential.** No suitable freshwater stream (aquatic) habitat is present within the Project Area or in the immediate vicinity.	No further actions are recommended for this species.
California red-legged frog *Rana draytonii*	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Disperses through upland habitats after rains.	**No Potential.** No suitable freshwater aquatic habitat is present within the Project Area or in the immediate vicinity; surrounding urban development precludes presence during upland movements.	No further actions are recommended for this species.

San Francisco garter snake *Thamnophis sirtalis tetrataenia*	FE, SE, CFP	Vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	**No Potential.** The Project Area is outside of the known range of this species and is developed, with no suitable habitat present.	No further actions are recommended for this species.

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Fishes				
tidewater goby *Eucyclogobius newberryi*	FE, SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches; requires fairly still but not stagnant water and high oxygen levels.	**No Potential.** The Project Area is developed and provides no suitable aquatic habitat; this species is considered extirpated from the San Francisco Bay estuary.	No further actions are recommended for this species.
steelhead - central CA coast DPS *Oncorhynchus mykiss irideus*	FT	Anadromous. Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**No Potential (Project Area); Present (adjacent to Project Area).** The Project Area is developed and provides no habitat. However, this species is known from the Alameda Creek watershed and may be present adjacent to the Project Area in the Old Alameda Creek during in- and out-migrations; no impacts anticipated from increased discharge of treated freshwater during the winter because: (1) the flow in the creek will not be changed in a way that would affect fish migration and (2) the water is stripped of potentially harmful contaminants prior to release.	No further actions are recommended for this species.

longfin smelt *Spirinchus thaleichthys*	FC, ST, SSC	Anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater. Spawns in freshwater streams and rivers.	**No Potential.** The Project Area is developed and provides no suitable aquatic habitat.	No further actions are recommended for this species.
Invertebrates				
Crotch bumblebee *Bombus crotchii*	SC	Range largely restricted to California, favoring grassland and scrub habitats. Typical of bumble bees, nests are usually constructed underground.	**No Potential.** This species is generally considered to be extirpated from the San Francisco Bay Area. Terrestrial substrates likely to host a colony are absent from the Project Area.	No further actions are recommended for this species.
western bumble bee *Bombus occidentalis*	SC	Formerly common throughout much of western North America; populations from southern British Columbia to central California have nearly disappeared (Xerces 2020). Occurs in a wide variety of habitat types. Nests are constructed annually in pre-existing cavities, usually on the ground (e.g., mammal burrows). Many plant species are visited and pollinated.	**No Potential.** This species is generally considered to be extirpated from the San Francisco Bay Area. Terrestrial substrates likely to host a colony are absent from the Project Area.	No further actions are recommended for this species.
monarch butterfly *Danaus plexippus*	none (winter roost sites protected by CDFW)	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, Monterey cypress), with nectar and water sources nearby.	**No Potential.** No large trees are present within the Project Area to provide suitable roost locations for this species.	No further actions are recommended for this species.

Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *O. purpurscens* are the secondary host plants.	**No Potential.** The Project Area is outside of this species' known local range and is developed, with no suitable habitat present.	No further actions are recommended for this species.
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	FE	Restricted to the fog belt of northern Marin and southernmost Sonoma County, including the Point Reyes peninsula; extirpated from coastal San Mateo County. Occurs in coastal prairie, dunes, and grassland. Larval foodplant is typically *Viola adunca*. Adult flight season may range from late June to early September.	**No Potential.** The Project Area is outside of this species' known range and is developed, with no suitable habitat present.	No further actions are recommended for this species.

***Key to status codes:**

FC	Federal Candidate for Listing
FE	Federal Endangered
BGEPA	Bald and Golden Eagle Protection Act Species
FT	Federal Threatened
SC	State Candidate for Listing
SE	State Endangered
CFP	State Fully Protected Animal
SR	State Rare
SSC	State Species of Special Concern
ST	State Threatened
Rank 1A	CNPS Rank 1A: Plants presumed extinct in California
Rank 1B	CNPS Rank 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2A	CNPS Rank 2A: Plants presumed extirpated in California, but more common elsewhere
Rank 2B	CNPS Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3	CNPS Rank 3: Plants about which CNPS needs more information (a review list)
Rank 4	CNPS Rank 4: Plants of limited distribution (a watch list)
WBWG	Western Bat Working Group High or Medium-high Priority Species

Potential to Occur:

Attachment 2. Potential for special-status wildlife and plants to occur onsite or sufficiently nearby to be affected by the Project

No Potential. Habitat on and adjacent to the Project Area is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, Project Area history, disturbance regime).
Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the Project Area is unsuitable or of very poor quality. The species is not likely to be found on the Project Area.
Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the Project Area is unsuitable. The species has a moderate probability of being found on the Project Area.
High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the Project Area is highly suitable. The species has a high probability of being found on the Project Area.
Present: The species is documented to breed and/or reside on the Project Area based on recent surveys or multiple reliable documented database occurrences.

Appendix 3: Database Reports

Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Newark (3712251))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAABH01022	***Rana draytonii*** California red-legged frog	Threatened	None	G2G3	S2S3	SSC
ABNKC06010	***Elanus leucurus*** white-tailed kite	None	None	G5	S3S4	FP
ABNKC11011	***Circus hudsonius*** northern harrier	None	None	G5	S3	SSC
ABNME01010	***Coturnicops noveboracensis*** yellow rail	None	None	G4	S1S2	SSC
ABNME03041	***Laterallus jamaicensis coturniculus*** California black rail	None	Threatened	G3G4T1	S1	FP
ABNME05011	***Rallus obsoletus obsoletus*** California Ridgway's rail	Endangered	Endangered	G5T1	S1	FP
ABNNB03031	***Charadrius alexandrinus nivosus*** western snowy plover	Threatened	None	G3T3	S2S3	SSC
ABNNM08103	***Sternula antillarum browni*** California least tern	Endangered	Endangered	G4T2T3Q	S2	FP
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S3	SSC
ABPAU08010	***Riparia riparia*** bank swallow	None	Threatened	G5	S2	
ABPBX1201A	***Geothlypis trichas sinuosa*** saltmarsh common yellowthroat	None	None	G5T3	S3	SSC
ABPBXA301S	***Melospiza melodia pusillula*** Alameda song sparrow	None	None	G5T2?	S2S3	SSC
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	Threatened	G2G3	S1S2	SSC
AFCHA0209G	***Oncorhynchus mykiss irideus pop. 8*** steelhead - central California coast DPS	Threatened	None	G5T2T3Q	S2S3	
AFCHB03010	***Spirinchus thaleichthys*** longfin smelt	Candidate	Threatened	G5	S1	
AMABA01071	***Sorex vagrans halicoetes*** salt-marsh wandering shrew	None	None	G5T1	S1	SSC
AMACC10010	***Antrozous pallidus*** pallid bat	None	None	G5	S3	SSC
AMAFF02040	***Reithrodontomys raviventris*** salt-marsh harvest mouse	Endangered	Endangered	G1G2	S1S2	FP

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
IIHYM24250	***Bombus occidentalis*** western bumble bee	None	Candidate Endangered	G2G3	S1	
IILEPP2012	***Danaus plexippus pop. 1*** monarch - California overwintering population	None	None	G4T2T3	S2S3	
IMBIV19010	***Gonidea angulata*** western ridged mussel	None	None	G3	S1S2	
PDAPI0Z043	***Eryngium aristulatum var. hooveri*** Hoover's button-celery	None	None	G5T1	S1	1B.1
PDAST4R0P1	***Centromadia parryi ssp. congdonii*** Congdon's tarplant	None	None	G3T1T2	S1S2	1B.1
PDAST5L040	***Lasthenia conjugens*** Contra Costa goldfields	Endangered	None	G1	S1	1B.1
PDAST8H060	***Senecio aphanactis*** chaparral ragwort	None	None	G3	S2	2B.2
PDBOR0V0B0	***Plagiobothrys glaber*** hairless popcornflower	None	None	GX	SX	1A
PDCAR0W062	***Spergularia macrotheca var. longistyla*** long-styled sand-spurrey	None	None	G5T2	S2	1B.2
PDCHE041F3	***Extriplex joaquinana*** San Joaquin spearscale	None	None	G2	S2	1B.2
PDFAB0F8R1	***Astragalus tener var. tener*** alkali milk-vetch	None	None	G2T1	S1	1B.2
PDFAB400R5	***Trifolium hydrophilum*** saline clover	None	None	G2	S2	1B.2
PDSCR0J0C3	***Chloropyron maritimum ssp. palustre*** Point Reyes salty bird's-beak	None	None	G4?T2	S2	1B.2
PMPOT03091	***Stuckenia filiformis ssp. alpina*** slender-leaved pondweed	None	None	G5T5	S2S3	2B.2

Record Count: 32

CNPS California Native Plant Society

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

10 matches found. *Click on scientific name for details*

Search Criteria

Found in Quad 3712251

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2	S1	G2T1
Centromadia parryi ssp. congdonii	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	1B.1	S1S2	G3T1T2
Eryngium aristulatum var. hooveri	Hoover's button-celery	Apiaceae	annual / perennial herb	(Jun)Jul(Aug)	1B.1	S1	G5T1
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G1
Navarretia paradoxiclara	Patterson's navarretia	Polemoniaceae	annual herb	May-Jun(Jul)	1B.3	S2	G2
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	1A	SH	GH
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	2B.2	S2	G3
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May(Jun)	1B.2	S2	G5T2
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2

Suggested Citation

California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 12 January 2021].

CalPhotos

Questions and Comments

rareplants@cnps.org

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Alameda County, California

Local offices

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

San Francisco Bay-Delta Fish And Wildlife

(916) 930-5603
(916) 930-5654

650 Capitol Mall
Suite 8-300
Sacramento, CA 95814

http://kim_squires@fws.gov

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Salt Marsh Harvest Mouse Reithrodontomys raviventris — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/613

Birds

NAME	STATUS

California Clapper Rail Rallus longirostris obsoletus — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4240

California Least Tern Sterna antillarum browni — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8104

Western Snowy Plover Charadrius nivosus nivosus — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/8035

Reptiles

NAME	STATUS

Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus — Threatened
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/5524

Amphibians

NAME	STATUS

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

California Tiger Salamander Ambystoma californiense — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/2076

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

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

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Contra Costa Goldfields Lasthenia conjugens Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7058	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED,

WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird Selasphorus sasin — Breeds Feb 1 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9637

Black Swift Cypseloides niger — Breeds Jun 15 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8878

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any

week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE WETLAND

E2SBNx

FRESHWATER EMERGENT WETLAND

PEM1Ch

FRESHWATER POND

PUBKx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix G

Phase 1 Cultural Resource Assessment for the ETSU Phase 1 Program

DRAFT

PHASE I CULTURAL RESOURCES EVALUATION

For the Union Sanitary District Enhanced Treatment and Site Upgrade Phase I Program, Alvarado Wastewater Treatment Plant, Union City, Alameda County, California

Submitted to:

Paul Scheidegger

Scheidegger & Associates

201 N. Civic Drive

Walnut Creek, CA 94596

Submitted by:

Archeo-Tec Inc.

5283 Broadway

Oakland, CA 94618

January 4, 2021

Table of Contents

Introduction

This document presents the methods and findings of a Phase I Cultural Resources Evaluation for the Union Sanitary District Enhanced Treatment and Site Upgrade (ETSU) Program (hereafter known as the Project) at the Alvarado Wastewater Treatment Plant, Union City, Alameda County, California. The plant is located in the western portion of Union City, between Union City Boulevard and the San Francisco Bay shoreline (Figure 1). The Union Sanitary District (USD) ETSU Program, as currently proposed, would consist of a phased sequence of modifications, retrofits, and new construction of facilities within the USD Alvarado Wastewater Treatment Plant. The proposed Project encompasses most of the eastern half of the campus.

This Phase I Cultural Resources Evaluation addresses the area's potential for archaeological resources and the protocol for discovery of human remains. The initial background research, survey, and Native American consultation for the entire campus were completed as part of the scope of the USD Emergency Outfall Project (Archeo-Tec 2018); this study was completed in the spring of 2018. The scope of that project consisted of archival research and historic map review, a review of documents on file at the Northwest Information Center (NWIC) at Sonoma State University, consultation with the Native American Heritage Commission (NAHC) and interested Native American representatives, and a pedestrian surface survey of the Area of Potential Effects (APE). An updated records search was undertaken in the fall of 2020 to ensure that any very recent studies were also included. The results of both the original and updated phases of research are presented herein.

This Phase I Cultural Resources Evaluation found no evidence of identified archaeological resources within the APE. Therefore, pursuant to Section 106 of the National Historic Preservation Act (NHPA), a finding of "No historic properties affected" as pertains to archaeological resources is appropriate.

Proposed Ground Disturbance

Project plans call for a phased construction approach (Phases 1A-1C). Specifically, Phase 1A would entail modifications to the Aeration Basin and the construction of a new Campus Building. Phase 1B would focus on the construction of new Secondary Clarifiers and Effluent Facilities. Phase 1C would retrofit existing Secondary Clarifiers for Plant Equalization Storage. Figure 2 shows the areas of proposed ground disturbance (as well as the project location in relation to earlier projects for which Phase I archaeological studies have already been completed). For a more detailed view, including utilities and landscaping, see Appendix A, Figures A1-A4 of the ETSU Phase 1 Initial Study Report (Scheidegger & Associates 2021).

Summary of Proposed Maximum Depths of Ground Disturbance

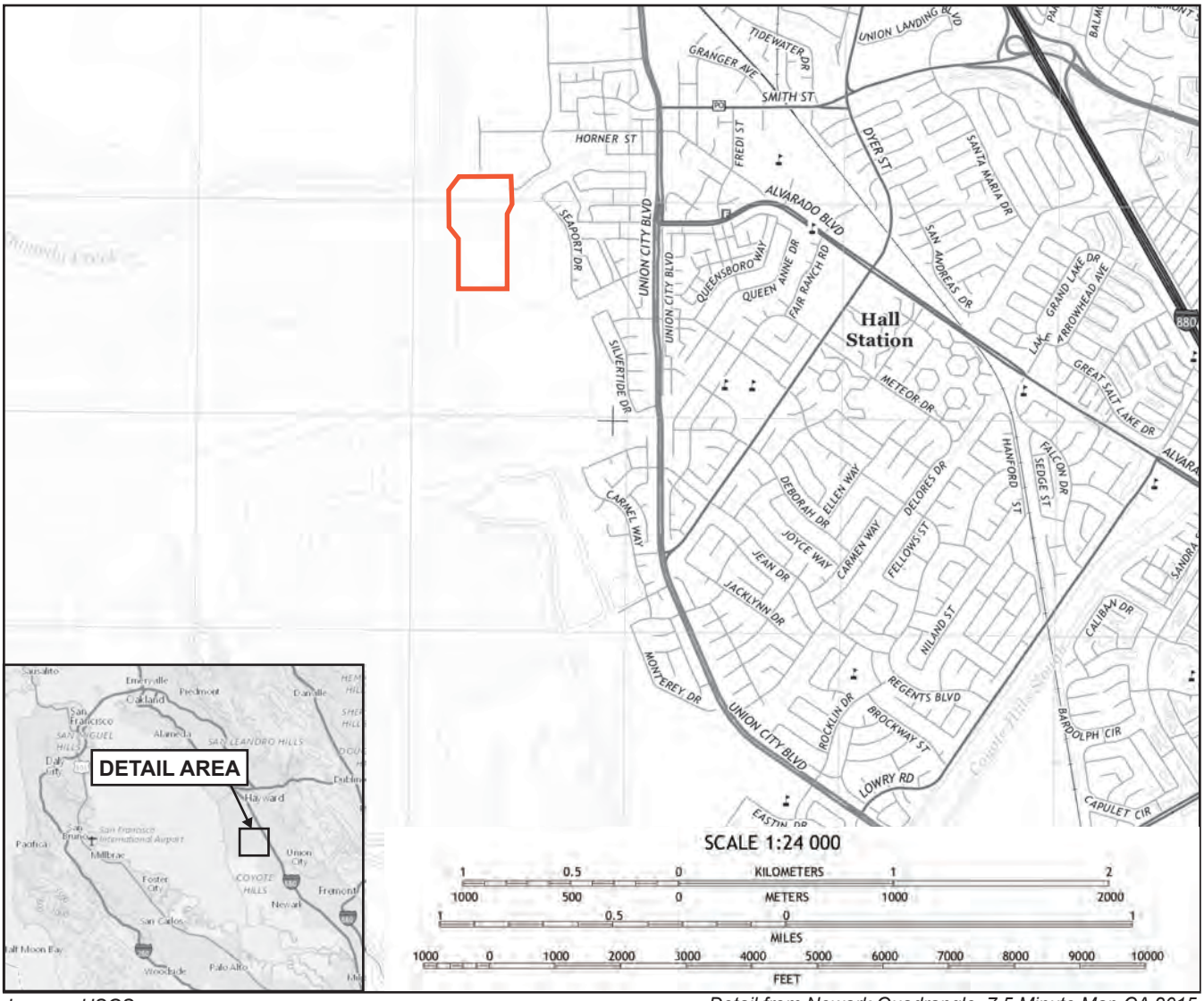
Proposed maximum depths of mass excavation for each phase are as follows. Structures may be supported by driven pile foundations to 60 feet below surface; however, final foundation plans have not yet been finalized.

Phase 1A

- Aeration Basin: 25 feet below surface for structure, up to 20 feet for utilities.
- New Campus Building: 5 feet of mass excavation below surface for structure. Maximum of 5 feet of excavation for utilities.

Phase 1B

- Secondary Clarifiers: 25 feet below surface for structures and pump stations.
- Effluent Facilities: 26 feet below surface for structure, up to 20 feet for utilities.



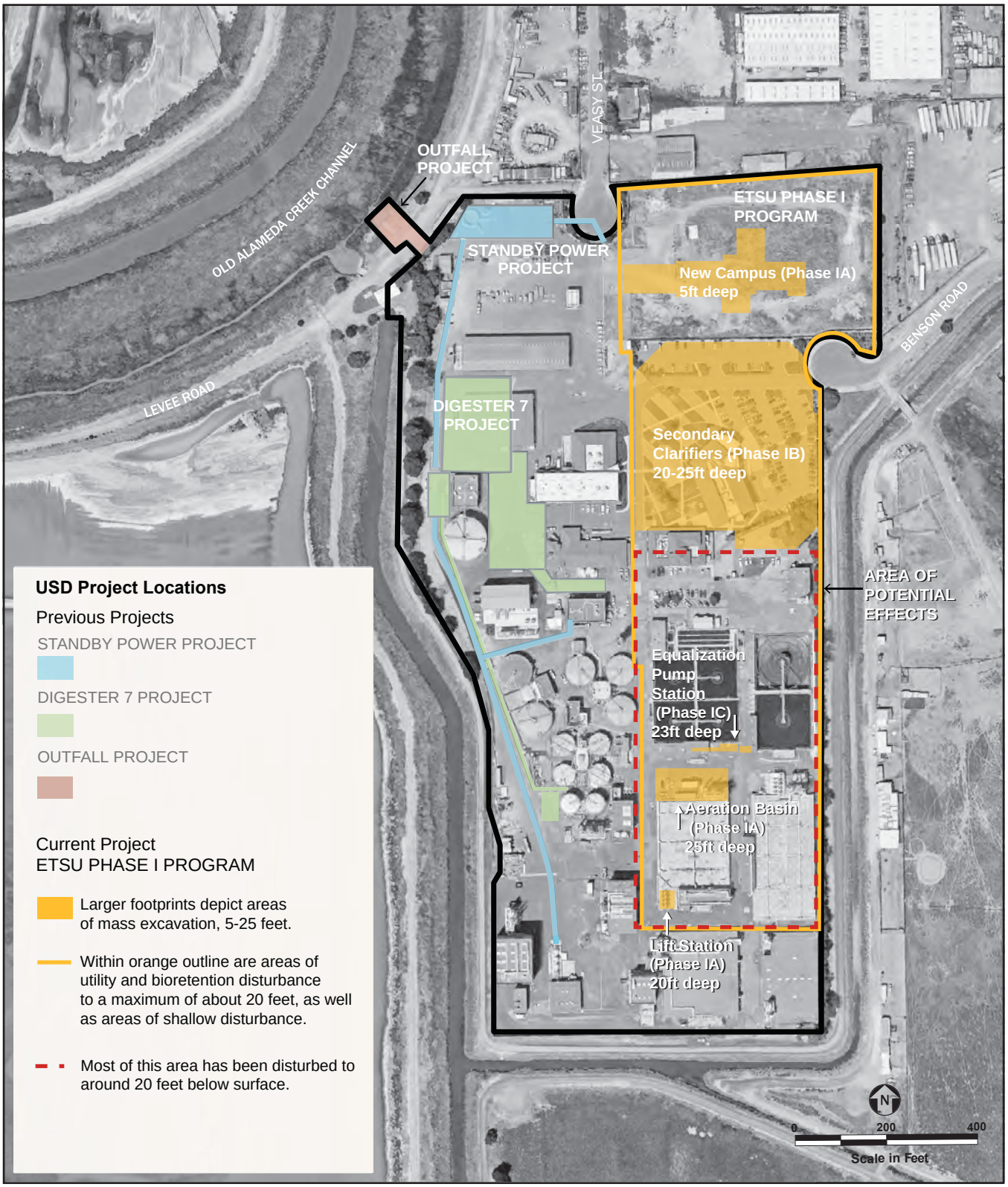
Images: USGS.gov

Detail from Newark Quadrangle, 7.5 Minute Map CA 2015

Project Boundaries

1. Project Location Map
Union Sanitary District ETSU Phase I Program

ARCHEO-TEC
CONSULTING ARCHAEOLOGISTS



Sources: Brown & Caldwell, Hazen and Sawyer

2. Area of Potential Effects
Union Sanitary District ETSU Phase I Program

ARCHEO-TEC
CONSULTING ARCHAEOLOGISTS

Phase 1C

- Plant Equalization Storage: 23 feet below surface for structure, up to 10 feet for utilities.

The following detailed descriptions of project plans are taken from Figures A1-A4 of Appendix A of the in-progress ETSU Phase 1 Initial Study Report (Scheidegger & Associates 2021); these figures contain graphical depictions of all ground disturbance described below. Length and width dimensions describe the footprint of ground disturbance, and depth describes the maximum proposed ground disturbance from surface. Though minor discrepancies between the maps and other project plans and descriptions were occasionally observed, every attempt was made to remain accurate and, when in doubt, assume maximum disturbance.

Additionally, small changes in the areas and depths of excavation may take place prior to the commencement of excavation. Such changes are unlikely to alter the recommendations of this study.

Phase 1A: Aeration Basin Modifications and New Campus Building

Phase 1A would consist of retrofits to existing Aeration Basins 1 through 7 and construction of Aeration Basin 8. The new Campus Building would be constructed north of the existing Administration and Control buildings. New utilities would be installed throughout the area to an estimated maximum depth of 30 feet. Ground disturbance from mass excavation for building foundations would reach a maximum of 26 feet within the area of Aeration Basin modifications and 5 feet in the proposed new Campus Building area. Additional foundation disturbance in the form of driven piles up to 60 feet deep may be implemented.

Aeration Basin Modifications

East and West Aeration Basin Modifications

Proposed East Aeration Basin modifications include the installation of a Return Activated Sludge (RAS) pipe adjacent to the south side of Aeration Basin 1-4[1] (60 feet long by 10 feet wide, 10 feet deep); a 42-inch RAS line in the northeast corner of Aeration Basins 1-4 (100 feet long by 5.7 feet wide, 10 feet deep); and Carbon System Vessels atop a mat slab adjacent to the northern side of Aeration Basins 1-4 (slab is 60 by 45 feet, 1 foot deep). A new RAS Control Box would also be constructed within the area of the Carbon System Vessels (450 square feet, 4.5 feet of excavation). Under the proposed plans, Lift Station #2 would also be modified, with excavation measuring 45 feet long by 30 feet wide, to a depth of 20 feet.

Proposed West Aeration Basin modifications include a 36-inch RAS (Return line near the southwest corner of Aeration Basins 5-8; a 6-inch Surface Waste Activated Sludge (SWAS) line central to Aeration Basins 1-4 and 5-8 (buried portion: 122 feet long and 2.5 feet wide, 5 feet deep); and Carbon System Vessels near the northwest corner of Aeration Basins 5-8 (56 long by 20 feet wide, 2 feet deep).

Aeration Basin 8

Aeration Basin 8 is proposed to be constructed adjacent to the north side of existing Aeration Basins 5-7 (157 feet long by 80 feet wide, 25 feet deep). Odor control fans would be constructed directly north of Aeration Basin 8 (56 feet long by 20 feet wide, 2 feet deep).

[1] Aeration Basins are also referred to as BNR basins in other reports. BNR stands for Biological Nutrient Removal.

East and West Blower Modifications

Much of the modification to the east and west blowers would be above grade. Subgrade electrical conduit for each building is expected.

Electrical Power for Campus Building

To support the new Campus Building, an electrical switch pad (10 by 10 feet, 1 foot deep) is proposed near the northeast corner of Generator Building 3. New duct bank (900 feet long and 5.7 feet wide, 2 feet deep) would extend north from the new electrical switch pad to the new Campus Building.

New Campus Building

The proposed new Campus Building would be constructed north of the existing Administration and Control building in the open area between Veasy Street and Benson Road. It would encompass 35,000 square feet and would require mass excavation to a depth of at least 5 feet. The foundation specifications have not yet been finalized, although driven piles (roughly 60 feet deep) would likely be required. Covered parking for the new Campus Building would be supported by steel columns (20 inches in diameter, 8 feet) embedded in concrete and would have solar photovoltaic arrays. Subsurface utilities would generally be confined to the southwestern portion of the new Campus Building area and would be limited to a maximum depth of 5 feet. Bioretention areas and stormwater drains would be placed around the northern, eastern, and southern perimeters and would require excavation to a maximum depth of 5 feet.

Phase 1B: Secondary Clarifiers and Effluent Facilities

Phase 1B would entail the construction of new Secondary Clarifiers, a Primary Sludge Clarifier Drain, and a RAS/WAS (Return Activated Sludge/Waste Activated Sludge) Pump Station to the north of the new Effluent Facility (currently the existing Administration and Control buildings, which are slated for demolition).

A New Effluent Facility, Reclaimed Water Pump Station, and drain manhole would encompass an area of 29,000 square feet north of existing Secondary Clarifiers 1-4. New utilities would be installed throughout the area. Ground disturbance from mass excavation would reach a maximum of 26 feet.

Secondary Clarifiers, Clarifier Drain Pump Station, and RAS/WAS Pump Station

Secondary Clarifiers (4 each)

Four (4) Secondary Clarifiers would be constructed within the footprint of the existing Administrative and Control buildings after their demolition. They would measure 160 feet in diameter, would be at least 25 feet deep, and would likely be supported by a driven pile foundation (roughly 60 feet deep) 14 inches in diameter.

RAS/WAS Pump Station

The RAS/WAS Pump Station (50 feet long by 25 feet wide, 20 feet deep) would be located within the footprint of the proposed Secondary Clarifiers and would be supported by a driven pile foundation (roughly 60 feet deep). An 8-inch WAS (880 feet long and 5 feet wide, 5 feet deep) would be installed going from the new RAS/WAS Pump Station towards the Thickeners and Digesters. A 42-inch RAS line (buried portion 340 feet long and 7.5 feet wide, 5 feet deep) would also be installed going from the RAS/WAS Pump Station towards Aeration Basins 1-4.

Secondary Clarifier Drain Pump Stations

Two (2) Secondary Clarifier Drain Pump Stations (25 feet deep) would be located in the central area of the new Secondary Clarifiers and would include a manhole measuring 12 feet in diameter.

Electrical Distribution Facility

A new Electrical Distribution Facility (63 feet long by 23 feet wide, 4 feet deep) would serve the new Effluent Facility and Secondary Clarifier area. A new electrical duct bank (590 feet long by 5.7 feet wide, 2 feet deep) would run from Generator Building 3 to the RAS/WAS Pump Station would also be installed.

Mixed Liquor Distribution Box

A new Mixed Liquor Distribution Box (30 by 30 feet, 16 feet deep) would be located on the same driven pile foundation as the RAS/WAS Pump Station. A 54-inch Mixed Liquor line (buried portion 1,320 feet long and 8.5 feet wide, 15 feet deep) would travel from the Mixed Liquor Distribution Box to the Aeration Basins.

Effluent Facility, Reclaimed Water Pump Station, Drain Manhole

Effluent Facility

A new Effluent Facility (175 feet long by 100 feet wide, 21 feet deep) would likely be supported by a driven pile foundation (14-inch diameter, depth to be roughly 60 feet below surface) and would be located adjacent to the southern side of proposed Secondary Clarifier 1. The Effluent Pump Station (26 feet deep) would be located within the footprint of the New Effluent Facility. The 60-inch effluent line reroute (940 feet long, 9 feet wide, 10 feet deep) would travel from the New Effluent Facility and around the proposed Secondary Clarifiers. A new Old Alameda Creek (OAC) line (240 feet long and 7.5 feet wide, 20 feet deep) would also be installed near the southern and western perimeters of the new Effluent Facility. A new 72-inch Equalization Influent (EQI) line (84 feet long by 10 feet wide, 18 feet deep) would be installed running south from the southeastern corner of the Effluent Facility area.

Reclaimed Water Facility

A new Reclaimed Water Facility, measuring 27 feet long by 53 feet wide and 21 feet deep, is proposed. A 12-inch Plant Service Water Line (W3) (96 feet long by 5 feet wide, 15 feet deep) would enter on the south side.

Drain Manhole

The new drain manhole would be 12 feet in diameter and 23 feet deep.

Phase 1C: Primary Flow Equalization

Phase 1C would consist of a new Equalization Pump Station to be located between the proposed new Aeration Basin 8, the existing Secondary Clarifiers 1-4, and an Electrical Building to support it located near the southeast corner of existing Secondary Clarifiers 1-4. New utilities would be installed throughout the area. Ground disturbance from mass excavation would reach a maximum of 23 feet.

Equalization Pump Station

A new Equalization Pump Station (95 feet long by 17 feet wide, 23 feet deep) would be constructed between the proposed new Aeration Basin 8 and the existing Secondary Clarifiers 1-4. A 36-inch EQI line (25 feet long and 7 feet wide, 10 feet deep) and a 16-inch Equalization Return line (EQR) (52 feet long and 5.3 feet wide, 10 feet deep) would be installed between the Equalization Pump Station and Aeration Basins 5-8. Two 30-inch EQIs (325 feet long and 6.5 feet wide, 10 ft deep) would be placed between Aeration Basins 5-8 to Aeration Basins 1-4 and between the Equalization Pump Station and Aeration Basins 1-4. A new 18-inch EQR (70 feet long and 5.5 feet wide, 10 feet deep) would be placed along the south side of Aeration Basins 5-8.

Equalization Pump Station Electrical Building

A new Equalization Pump Station Electrical Building (26 feet long by 15 feet wide, 23 feet deep) would be constructed within the southeast corner of the footprint of the existing Secondary Clarifiers. A new electrical duct bank (275 feet long by 5.7 feet wide, 2 feet deep) would run north between the new Equalization Pump Station Electrical Building and the new Electrical Distribution Facility (Phase 1B).

Regulatory Context

This study has been completed to ensure compliance with both the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act of 1966 ("Section 106"), in consideration of the effects of its undertakings on cultural resources.

CEQA-Plus Definition

A portion of the Project's funding may be supplied by the Clean Water State Revolving Fund (CWSRF) Loan Program, which is administered by the State Water Resources Control Board (SWRCB). As the CWSRF Loan Program is partially funded by the United States Environmental Protection Agency (EPA), it is subject to "cross-cutting" federal environmental regulations, including Section 106, in addition to state environmental regulations. To this end, the EPA and the SWRCB have entered into an Operating Agreement that combines CEQA guidelines with applicable federal statutes to create the "CEQA-Plus" process, which simultaneously fulfills both state and federal environmental review requirements.

CEQA defines a lead agency as the agency that carries out a project, while a responsible agency has some bearing on preparing environmental review documents. The Union Sanitary District is the Lead Agency for the Enhanced Treatment and Site Upgrade Program, and SWRCB is a Responsible Agency. The EPA has delegated lead federal agency responsibility to SWRCB for carrying out the Section 106 requirements.

The National Register of Historical Places

The National Register is a listing of properties that are important to the history of our nation. To be eligible for listing, a property must typically be 50 years of age or more; it must possess historic significance; and it must possess integrity of location, design, setting, materials, workmanship, feeling and association. Historic significance is the importance of a property to the history, architecture, archaeology, engineering, or cultural aspects of a community. These significant resources can be in the form of districts, sites, buildings, or structures. To qualify for the National Register, a property must be significant to American history at the local, state, or federal level(s) (36 CFR 60.4(a-d)), and must:

A) be associated with events that have made a significant contribution to the broad patterns of history;
B) be associated with the lives of persons significant to our past;
C) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D) have yielded, or may be likely to yield, information important to prehistory or history.

Archaeological resources are typically eligible under Criterion D for their informational value. Once a cultural resource is determined to exist or potentially exist within the boundaries of the project site, the identified historic property is then evaluated for its potential National Register eligibility.

Personnel Qualifications

All work was overseen by Principal Investigator Allen G. Pastron, Ph.D. Archival research and consultation were completed by Michelle Staley and Emily Wick. The pedestrian survey was completed by Michelle Staley. Juliana Quist contributed to the analysis of the area's geography. Elizabeth Tjoa contributed to the analysis of the current Project impacts.

Dr. Pastron earned his Ph.D. in Anthropology from the University of California at Berkeley in 1977. He has over four decades of experience with both prehistoric and historic archaeological sites in the Bay Area. Michelle Staley earned a master's degree in Anthropological Science from Stanford University and has over 15 years of experience in San Francisco Bay Area archaeology. Emily Wick earned an interdisciplinary bachelor's degree from the University of Redlands and has 20 years of experience in Bay Area archaeology. Juliana Quist has a B.S. in Anthropology from the University of New Mexico and a Masters in GIS from North Carolina State University. She has twelve years of archaeological field experience, including five years in the Bay Area. Elizabeth Tjoa earned a bachelor's degree from the University of California, Santa Cruz and. She has seven years of experience in Bay Area archaeology.

Historical Context

The subject property is situated in a rural marshland setting in western Alameda County along the eastern shore of the San Francisco Bay. Most of the flat topography is subject to flooding during the rainy season. The area's climate is characterized by cool moist winters and warm dry summers.

Ethnography

At the start of the historic era, the Project site was situated within the territory of the Ohlone people, previously referred to as Costanoan (the Spanish derivative for "coastal people") in anthropological literature (Kroeber 1925). The Costanoan designation now primarily refers to the area's language groups.

The San Francisco Bay Area is all considered part of San Francisco Bay Costanoan language, traditionally separated into distinct regional dialects: Ramaytush on the San Francisco Peninsula, Tamyen in the Santa Clara Valley, Chochenyo in much of the East Bay, and Karkin near the Carquinez Strait (Golla 2011:32). This places the Project site near the southern border of the Chochenyo region, just north of the Tamyen region. However, Milliken (1995:24–26) notes that though these dialects "have all been suggested as distinctive linguistic Costanoan sub-groups…Such distinct groups did not exist in the past, and certainly reflect the amalgamation of later Costanoan speakers at the various missions." He proposes, based on early explorer accounts, that neighboring Ohlone tribes (within about a hundred-mile radius) likely understood each other, and that regional differences in the Bay Area were probably akin to strong accents (Milliken 1995:26).

The largest social unit throughout most of California was the tribelet (Kroeber 1962), and in this respect, the Ohlone were no exception. The tribelet, or group of interrelated villages under the leadership of a single headman, consisted of about 200 to 400 people (Levy 1978; Milliken 1995:21). Each tribelet – of which there may have been several – served as an autonomous political unit, presumably for enforcing equal access to resources for its members and for protection from hostile neighbors.

At the time of contact, the Project site was located within the territory of the Tubin Ohlone, which was located along the southeastern shore of what is now the San Francisco Bay. To the north was the territory

of the Jalquin/Irgin Ohlone, to the east was the Causen Ohlone, and to the south was the Alson Ohlone (Milliken et al. 2007:100).

The Ohlone were primary collectors and hunters of fish and game (Levy 1978:487). Of major importance to the aboriginal diet, as documented both ethnographically and archaeologically, were molluscan resources: ocean and bay mussels (*Mytilus californianus* and *M. edulis*), clam (especially *Macoma nasuta*), and oysters (especially *Ostrea lurida*) were extensively exploited. Many other littoral resources, including varieties of gastropods and crustaceans, contributed protein to the diet, as documented in detail by Levy (1978:481), other sources of meat included all manner of land and waterfowl, and terrestrial and sea mammals, both large and small. Fish contributed a large measure of protein to the Ohlone diet, and were taken by net, trap, hook, spear, and poison (Harrington 1921; Crespi 1927:280; Font 1930; Bolton 1933). Ocean and estuarine environments yielded a wide variety of species including salmon and steelhead (*Oncorhynchus* sp.), sturgeon (*Acipenser* sp.), salmon ray (*Myliobatis californica*), lamprey (*Entosphenus tridentatus*) and varieties of small sharks, perches, and smelts (Follett 1975:73; Levy 1978:491–492).

In common with most aboriginal groups in California, plant foods probably contributed the majority of calories to the Ohlone diet. The staple was the acorn, pounded by stone mortar and pestle to form a mush, a gruel, or bread, following the complex technique of leaching tannic acids (Gifford 1965). Buckeye (*Aesculus californica*) yielded edible nuts. A variety of berries were harvested for direct consumption, for flavoring the bland acorn starch, and for cider (Harrington 1921; Merriam 1966-1967:3). Roots, shoots, and seeds were savored, including wild onion (*Allium* sp.), cattail (*Typha latifolia*), wild carrot (*Daucus pusillus*), dock (*Rumex* sp.), tarweed (*Madia* sp.), chia (*Salvia columbariae*), and other species (Levy 1978:491). Controlled burning of the land was practiced in order to renew the succession of plant communities (Kroeber 1925:467; Crespi 1927; Galvan 1968; Lewis 1973).

In addition to providing primary subsistence, the flora and fauna of a rich natural habitat provided life's material necessities for the Ohlone. Tules (*Scirpus lacustris*) provided building materials for structures (Kroeber 1925:468) and for balsas (Heizer and Massey 1953). The balsa canoe was instrumental in fishing (Font 1933), waterfowling, and probably the hunting of sea mammals (cf. Kroeber 1925:835) These also facilitated navigation of the salt marshes and permitted transportation across the bay (Kroeber 1925:468). Vegetal resources also provided the fabric for net and cord manufacture and especially, basket making. These latter were used in their various forms as cooking containers and utensils, storage containers, seed beaters, water jugs, cradles (Merriam 1967; Broadbent 1972:63), fish traps (Crespi 1927:280), trays for leaching and drying acorn meal (Kroeber 1925:467), and for burden (Kroeber 1925:468; Levy 1978:493).

Animal remains – bone, tooth, beak, and claw – provided awls, pins, daggers, scraping and cutting knives, and other tools. Pelts and feathers provided clothing and bedding (Kroeber 1925:467; Levy 1978:493). Sinew was used for bow support and bow strings (Harrington 1921). Feather, bone, and especially shell were used for items of ornamentation, such as beads, pendants, hair bangles, septum inserts, earrings and the like (Mason 1916:433–435).

Local rock and mineral sources provided cherts and metamorphic and igneous stones for tool manufacture. Local sandstone, highly indurated, provided suitable material for grinding and pounding tools. Exotic materials, such as steatite and particularly obsidian, could be obtained in trade, using for barter such locally available commodities as cinnabar and hematite (Heizer and Treganza 1972). Other

valuable resources used to obtain exotic materials in trade with non-coastal peoples included salt, shellfish meat, and shell for ornament manufacture (Davis 1961:23).

In 1770, the area's indigenous population numbered at most around 10,000 people (Levy 1978:485), perhaps fewer (Kroeber 1925:464). But forty years later, by about 1810, their traditional ways of life were destroyed by European encroachment and its devastating impacts – disease, warfare, displacement, and, above all, the California mission system (Cook 1943; Cook 1957).

Historical Period

The first European explorers to the region were Jose Francisco Ortega in 1769 and Anza and Font in 1776. The former expedition did not leave a substantial record, but the latter remarked on the optimal settlement conditions of the present Project site: a geographically flat area at the southern tip of the San Francisco Bay. Anza and Font noted three indigenous villages of about 70 people each, as well as pathways to the south. Spanish settlement in the area soon followed; the Pueblo de San José and the Mission of Santa Clara de Asís were founded in 1777 (Bowden 2012:17).

Beginning in the first decade of the nineteenth century and continuing until the 1840s, the lands surrounding the Project site were part of the extensive East Bay ranch holdings of Mission San Jose (Milliken 1995:153). Mission San Jose was established June 9, 1797, and its headquarters were about 10 miles to the southeast of the Project site. A vast swath of the land surrounding Mission San Jose, encompassing the entire eastern shore of the San Francisco Bay and extending into the Coast Ranges further to the east, was used to support the Mission by grazing sheep and cattle and growing grain (Hendry and Bowman 1940:487). As with all the Mission's activities, much of this ranch work depended upon the coerced and forced labor of indigenous people, both from local villages and from raided communities throughout Northern and Central California.

Rancho Era (1821-1848)

Following the transition of California from Spanish to Mexican rule in 1821, cattle ranching became the primary industry in Alta California. The hide and tallow trade was the principal foundation for early commercial interest on the California coast and the San Francisco Bay (Phelps 1983:25), to the extent that hides were sometimes called "California bank notes" (Nickel 1978). After the California missions were secularized in 1834, mission lands were privatized by the Mexican government and distributed to prominent families who established large ranchos and claimed the missions' animals and equipment.

With the rancho system as the primary socioeconomic institution of the state, the Native American populations, deprived of their right to mission lands, and, in many cases, unable to return to tribal life, had few other options but to enter employment as rancho laborers. This arrangement ranged from slavery to wage labor. Typically, a system of peonage was created where a rancher provided housing, food, and basic support for an Indian in exchange for labor. Mission records show that rancho families brought in "orphans" (i.e., children of non-Christian parents) to be baptized, and there is some evidence that capture of children from remaining hunter-gatherer communities was a common practice (Milliken et al. 2009:153–167).

In 1844, Augustin Alviso and Tomas Pacheco were granted Rancho Potrero de los Cerritos, which means "pasture of the little hills." The rancho, which ultimately measured 10,610 acres, was located just north of the landholdings of the former Mission San Jose. Roughly triangular in shape, it was bordered on the west by the San Francisco Bay, on the north/northeast by Alameda Creek, and on the south/southeast on

the south by the Sanjon de los Alisos Creek (Lewis 1860). The Project site's location near the mouth of Alameda Creek placed it at the rancho's northwestern end.

The date of July 8, 1846 marked the conversion of the hamlet of San Francisco from Mexican to American jurisdiction. On this day, a landing party from the sloop-of-war *Portsmouth*, under the command of Captain John B. Montgomery, waded ashore at the town of Yerba Buena and raised the stars and stripes to the top of the flagpole in the town's dusty plaza, thereby claiming California for the United States.

American Period (1848 - Present)

California was claimed for the United States in 1846 during the Mexican-American War; the Treaty of Guadalupe Hidalgo confirmed the transfer in 1848. In the years after the American conquest of "Upper California", large portions of rancho lands were divided and sold. The Project site was initially part of a hundred-acre tract of land purchased in 1850 by John M. Horner.

The New-Jersey-born Horner, a Mormon who arrived in 1846 on the ship *Brooklyn*, was among the first American-period landowner-farmers in the state. A farmer by trade, Horner arrived with little but seed potatoes and a pistol to his name, the latter of which he traded for a pair of oxen. Initially settling near Mission San Jose, he bought land from, and employed, formerly missionized Native Americans. Over the course of his period of prosperity, he built over a dozen miles of public road, laid out eight towns, and was active in growing and trading produce (Justesen 1991).

Horner named the hundred acres containing the Project site "Union City" after his newly purchased steamship *Union*, and built a landing with warehouses at the bend in Alameda Creek just north of the Project site. Union City's location at the mouth of Alameda Creek made it well-positioned for shipping to and from San Francisco and Benicia. Horner and *Union* exported produce from Horner's land and brought back hardware, manufactured items, and mail (Swenson 2009).

The small village of Union City thrived until Horner was hit hard by the post-Gold-Rush economic crash of 1853. After pouring large amounts of money into his properties—securing his titles in a time of rapid cultural change, building fences by hiring laborers to cut down redwood trees—he was largely unable, due to lack of financial infrastructure in the growing region, to borrow against them. Despite extensive land holdings in the East Bay, South Bay, and San Francisco, he was financially ruined and never fully recovered. Horner was forced to sell his steamer, mill, and most of his property at a loss (Justesen 1991; Nickel 1978).

Alameda County was founded in 1853. In 1854, the nearby village of New Haven was combined with Union City to form the town of Alvarado. Alvarado was the first county seat of Alameda County as well as the regional center of night life, which was rumored to have rivaled the Barbary Coast in splendor and debauchery. Even after the area that included Horner's original settlement was absorbed into Alvarado, many people continued to refer to it as Union City, and maps as late as 1927 divided Union City from Alvarado (Swenson 2009).

As Alvarado grew, the Union City neighborhood waned. Horner scaled back his farming and no longer grew enough for export. He thus ceased his steamboat runs; residents and even houses themselves were moved to the center of Alvarado (Swenson 2009:7). In an 1859 letter to her New England family, an early resident of Alvarado named Marion Dyer wrote:

> Most of the buildings here in Alvarado were hauled from Union City. The latter place is getting rather shorn of its ancient glory while the former is in the ascendant. Mr. John Horner was the founder of Union City and Henry Smith of Alvarado. They are now both poor [Swenson 2009:10].

In 1878, James J. Stokes bought the property that now includes the Project site, and it became known as Stokes' Landing (Swenson 2008). From Stokes' Landing, beer, salt, and sugar from the county's growing industrial operations were shipped to San Francisco via Alameda Creek.

During the mid-19th through the much of the 20th century, large portions of surrounding marsh areas on the southeastern shore of the San Francisco Bay in the southern portion of Alameda County were used in the salt industry. The salt production operations were located north and west of the Project site. Salt production continued well into the modern era.

Alvarado flooded annually, which was a major factor for moving the county seat from Alvarado to San Leandro in the mid-1850s; it was ultimately moved to Oakland in 1875. As flooding, erosion, and deposition changed the course of Alameda Creek (Nickel 1978), the Project site's position relative to the bend in the creek may have changed over time; likewise, flooding may have re-deposited soils into the Project site itself. Natural disasters were not limited to flooding events: the 1868 earthquake on the nearby Hayward Fault was severe throughout Alvarado (United States Geological Survey 2008).

By the end of the 19th Century, the Union City area of Alvarado consisted of a scattering of domiciles, a pump station (located north of the Project site), and a stove foundry. No known development took place within the Project site during the later nineteenth century (Sanborn-Perris Map Company 1896); however, mapping was not continuous and structures or activities may have gone unrecorded. The Project site and its immediate vicinity changed little from the late nineteenth to the mid-twentieth century (Sanborn Map Company 1944). The Union Sanitary District was founded in 1918 to provide sewage treatment to southern Alameda County.

The modern municipality of Union City was formed in 1959 by uniting Alvarado with the nearby town of Decoto. After over a hundred years as the former Union City area of Alvarado, the neighborhood thus became part of the Alvarado area of Union City. (Reflecting this reversal in nomenclature is the Project site itself, which is known as the "Alvarado Wastewater Treatment Plant": one facility among many within the greater Union Sanitary District.)

The first treatment plant within the Project site was constructed in 1962 to serve Union City; the current 33-acre Alvarado Wastewater Treatment Plant was completed in 1981 and still services the towns of Union City, Newark, and Fremont (Union Sanitary District 2016).

Archaeological Record

Prehistoric research in the San Francisco Bay Area is one of the oldest archaeological traditions in California. When U.C. Berkeley archaeologist N.C. Nelson conducted the first intensive archaeological survey of the region between 1907 and 1908, he recorded no fewer than 425 shellmounds on or near the shoreline of the bay (Nels C. Nelson 1909). It is also useful to cite Nelson's discussion concerning the wide variety of environmental settings in which prehistoric sites were located throughout the San Francisco Bay region:

> [Shellmounds were] situated in a great variety of places; but, on the whole, the positions may be characterized as "convenient" rather than in any sense "strategic." Many of the largest mounds are located at the head of the sheltered coves, yet not a few deposits lie in thoroughly exposed places, out on the bluff and higher headlands. Occasionally a hillside, with or without any accommodating shelf or hollow, has been chosen, doubtless on account of some small spring issuing in the vicinity… Some mounds are found in apparently unnatural situations, such as on the plain where no streams pass, or out in the salt-marsh, where fresh water could not be had, [but] normally shell heaps lie close to sea level.
>
> The fact is that nearly all the mounds lie within fifty feet of the surface of the bay water… but exceptions occur, [some] mounds lie very far above the normal zone…[and] at least ten of the known deposits extend below sea [N. C. Nelson 1909:328–329].

As the passage above emphasizes, shellmounds have been found in places, such as marshlands, that did not seem suitable for habitation.

Coyote Hills Sites

Approximately three miles south of the Project site lies the Coyote Hills Slough, where Alameda Creek empties into the San Francisco Bay. This was an area of intensive prehistoric settlement and resource exploitation (Garaventa et al. 1991). Major sites include CA-ALA-12, CA-ALA-13, CA-ALA-328, CA-ALA-329 and CA-ALA-341. Please note that these sites are described to offer a comprehensive picture of the centers of activity in the vicinity of the Project site. The Coyote Hills area and its immediate surroundings were not part of the Project's study area and were not included in either the original 2018 records search or the 2020 update. Recent sites may not be included.

CA-ALA-12 was first recorded in 1949 by Fenenga, who described it as a "small low shell mound" with "burials washed out in wave cut west bank"; Rackerby conducted excavations at the site in 1965 (Fenenga and Rackerby 1965). In 1985, Peter Banks firmly established the site boundaries after a program of test trench and auger excavations at the site. Banks describes CA-ALA-12 as, "one of at least four prehistoric sites situated along an un-named tributary…and within the Coyote Hills Regional Park". The 1985 investigations determined that the site midden varied from 2 to 4 feet thick (Banks 1985).

Between 1965 and 1991, CA-ALA-13 was investigated, excavated, and studied numerous times (Rackerby and Whelan 1967; Jackson 1973; Banks and Fredrickson 1977; Clark et al. 1984; Banks 1985; Garaventa et al. 1991).

The Garaventa study indicated CA-ALA-13 extended 1.5 to 1.7 meters in depth and is in an area of "extreme and high sensitivity" (Garaventa et al. 1991:1). In 1965, archaeologists from San Francisco State University removed 108 burials and several thousand artifacts, including bone tools and shell ornaments. (Jackson 1973). Later, Clark, Wiberg, and Holman located cultural deposits associated with CA-ALA-13 covering approximately 1 acre (1984). The Banks investigations included field reconnaissance and auger testing within the Project site; those investigations located the extents of both CA-ALA-12 CA-ALA-13 in the aftermath of a channelization project in the fall of 1982 (Banks 1985).

Nelson originally recorded CA-ALA-328 as mound #328. Excavations within this large shellmound have been recorded by Wedel in 1935, Treganza in 1949–1968, Hayward State University in 1966–1968, and Banks in 1977. At least 517 burials and over 3,500 artifacts were recovered during excavations at this site.

It is described as a “major habitation site” and, according to Banks, was inhabited from 380 BC to the historic era. Banks stated that the site “may be the best preserved shellmound in the Bay Area” (1977).

CA-ALA-329, Nelson Mound #329, is another large midden site and is located directly to the south of CA-ALA-13. The site was discovered during the construction of a reservoir in 1925 and is characterized by ashy soil, shell, animal bone, and fire-altered rock (Coberly 1973). This habitation and burial site was studied intensively by University of California and Stanford field courses between 1947 and 1968 (Jackson 1973). The recorded dimensions of the mound as observable at the time of excavation measure approximately 450 by 300 feet. Roughly 300 burials were removed. In 1984, the site of CA-ALA-329 was augered during marsh restoration monitoring to further determine its limits (Clark et al. 1984).

CA-ALA-341 was described by Rackerby (1965) as a, “buried midden site exact dimensions unknown, the mound shape rises 3-4 feet above flood plain but there is three feet of silt on top of the midden”. The mound was most likely destroyed by the Army Corps of Engineers in the 1960s.

Records Search Results

Prior to the commencement of the archaeological field reconnaissance, maps and other archival documents concerning previous archaeological studies that took place within a one-mile radius of the Project site were consulted at the Northwest Information Center (NWIC) (Access Agreement File #17-1956) California Historical Resources Information System. Michelle Staley of Archeo-Tec conducted this documentary research on February 2, 2018. An updated record search was performed in October of 2020 by the Northwest Information Center staff (Access Agreement File #20-0543).

Resources

One prehistoric period archaeological resource was identified within a one-mile radius of the Project site: CA-ALA-326. No details are known aside from the site’s location, which was recorded by Nelson as lying approximately 1 mile to the east of the current Project site (N. C. Nelson 1909). The site’s location has not been confirmed.

Historic-period archaeological resources within the study area are related to the area’s early salt industry: The Eden Landing Salt Works Historic Landscape District (Speulda-Drews and Valentine 2007), which consists of multiple historic sites related to the salt industry, and the J. Quigley Alvarado Salt Works (Speulda-Drews et al. 2007), which is located within the Eden Landing Salt Works Historic Landscape District.

The Eden Landing Salt Works Historic Landscape District is located between Mount Eden Creek and Coyote Hills Slough. The District was recorded by Lou Ann Spuelda-Drews and Nicholas Valentine of the U.S. Fish and Wildlife service in 2007 (Speulda-Drews and Valentine 2007).

The Project site is located just east of the District, which encompasses the salt flats along the edge of San Francisco Bay. From the 1850s to the early 1900s, multiple salt harvesting operations – consisting of levees constructed to contain salt water – were constructed. In 1910, 25 separate salt works operations consolidated into one salt works operation, which was owned by the Leslie-California Salt Co (1927-1978) and the Cargill Salt Incorporated (1978-2003). In 2003, the land was sold to the State of California and became the Eden Landing Ecological Reserve.

Nine historic sites were identified within the Eden Landing Salt Works, four of which have been formally deemed significant. Two have associated artifact scatters. The first, CA-ALA-P-2257, was located just over

two and a half miles northwest of the Project site. The site consisted of a historic refuse scatter containing Asian domestic materials (Speulda-Drews and Valentine 2007).

The J. Quigley Alvarado Salt Works site, recorded in 2007, is approximately one mile west of the Project site. Located along the south side of the Alameda Creek levee at the boundary of two salt ponds, the site consisted of a domestic artifact scatter consisting of glass and ceramic fragments, structural remnants (foundation, wooden pilings, boardwalk, scattered brick), and railroad ties. The ceramic fragments from the artifact scatter were Asian in origin. Archaeological monitoring of ground disturbance at the site took place from 2012 to 2017, but it does not appear that any additional cultural materials were found (Speulda-Drews et al. 2007).

Reports

Numerous studies have been conducted within the one-mile radius surrounding the Project site: S-727, S-814, S-0848, S-1479, S-2916, S-7047, S-8690, S-9768, S-10046, S-13769, S-14619, S-15236, S-18217, S-18903, S-25275, S-27516, S-27866, S-27987, S-30882, S-31419, S-31708, S-31919, S-33061, S-32329, S-33699, S-34861, S-36278, S-027866, S-034861, S-033061, and S-046129. None of these studies resulted in the discovery of significant archaeological resources.

Two studies included analysis of the present Project site. The first, conducted in the early 1990s by Origer & Associates, consisted of a negative archaeological survey of the Alvarado Wastewater Treatment Plant, which includes the present Project site. The ground surface was largely inaccessible due to buildings and pavement. Of the open areas, only fill soils were observable. According to a worker at the Treatment Plant, the construction efforts included the removal of approximately 20 feet of bay mud. The mud was replaced with fill, and the treatment plant constructed atop the fill (Origer 1992).

Later that same year, David Chavez conducted a study across several sites within the Union Sanitary District, one of which was the “Alvarado Plant Site”. After citing the negative results of the Origer and Associates study (1992), the report states that their “investigations were limited to reviewing the outfall location and pipeline alignment, which consisted of highly disturbed terrain with extensive fill present. No evidence of archaeological or historical resources was observed” (Chavez 1992).

Native American Consultation

As part of the present cultural resources evaluation, Archeo-Tec consulted with the staff of the Native American Heritage Commission (NAHC) in Sacramento with the intention of determining whether any portion of the present Project site may encroach upon any cultural sites deemed sacred by members of the local Native American Community. A letter was sent to the NAHC on January 29, 2018 to formally request that the Native American Heritage Commission consult its Sacred Lands File (SLF).

On February 21, 2018, the NAHC responded via email. The email contained an attached letter dated February 20, 2018; the letter read that the records search of the Sacred Lands File (SLF) was negative. Nonetheless, the above-referenced letter cautioned that the "absence of specific site information in the SLF does not indicate the absence of cultural resources in any Project site" and included contact information for tribal representatives in the area. A copy of the NAHC letter of February 20, 2018, is included in Appendix I of this report.

On February 22, 2018, Archeo-Tec sent individual letters via email to each of the tribal representatives on the NAHC's list. No responses were received. Per the recommendations of the list, follow-up telephone calls were placed to all individuals after a two-week period.

On March 8, 2018, all individuals were contacted by phone. Messages were left for Andrew Galvan of The Ohlone Indian Tribe, Ann Marie Sayers of the Indian Canyon Mutsun Band of Costanoan, and Katherine Perez of the North Valley Yokuts Tribe. Rosemary Cambra, of the Muwekma Ohlone Indian Tribe, did not answer the phone and her voicemail box was full; a second number listed for her was out of service. Tony Cerda of the Costanoan Rumsen Carmel tribe was driving when he answered. He requested that the e-mail be re-sent for his review. The email was re-sent that same day; no response was received. Irenne Zwierlein of the Amah Mutsun Tribal Band of Mission San Juan Bautista requested that all crew be culturally trained, and requested that if an archaeologist was required to monitor, an Indian monitor should also be present.

Review of Geotechnical Borings

Several dozen geotechnical testing locations were investigated within the Project site between 1976 and 2001. However, no geotechnical investigations have ever been undertaken from within the new Campus Building area (located in the northern portion of the Project site). In 2020, a report by DCM Consulting compiled previous subsurface data from the 1976-2001 testing within the southern portion of the Project site—which is now developed with existing buildings—into a summary of stratigraphy encompassing all available data to date (DCM Consulting Inc. 2020).

However, modern engineered fills now encompass the upper 8-20 feet beneath existing structures in the southern portion of the site. Specifically, the DCM geotechnical study (2020) reports that Woodward-Clyde-Sherard's 1962 soil investigation called for the removal of all soft bay mud from areas where structures were to be built.

The following stratigraphy reflects investigations prior to the construction of existing buildings, and is useful in estimating stratigraphy of untested, undisturbed areas at the northern end of the site.

- From the surface to about 6 to 8 feet, a layer of **imported and disturbed historic-era fill**, consisting primarily of clay with varying amounts of gravels, sand, peat, and other debris, was observed.

- Underlying the historic and imported fill, at around 13 to 20 feet below surface, a 7- to 10-foot-thick layer of **bay mud** was observed. The mud was described as clay with varying amounts of silt and sand.

- The bay mud is underlain by **alluvial soils** washed down from Alameda Creek. This alluvial deposit has been observed from a minimum depth of about 13 feet to over 150 feet (the approximate maximum depth of testing); the alluvium is estimated to be several hundred feet thick. It is characterized by of very stiff sandy clay to medium dense clayey sand. Within the alluvium, starting at around 20 to 25 feet below surface, is a 15- to 20-foot-thick layer of shallow, clean **sands.** This sand layer has been observed at various depths and locations, most notably under the area of the existing administration and control buildings.

• The **Newark Aquifer** was encountered at approximately 50 to 60 feet below surface. Its soils consist of clean dense sands, gravels, and cobbles with high permeability. The granular aquifer soils are bounded by finer alluvial clays above and below (Hazen and Sawyer 2020:Appendix: B).

Additional subsurface data from an area adjacent to the Project site was reviewed: a geotechnical study from the Union Sanitary District's Standby Power Generation System Upgrade Project (Myers and Vital 2018), located was directly west of the proposed Campus Building, encountered similar stratigraphy to that reported by DCM (2020) in the southern portion of the Project site. It is likely that the subsurface stratigraphy of the new Campus Building footprint (located at the northern end of the site) would generally reflect what was observed directly to its south and west.

Survey

An archaeological reconnaissance survey of the proposed Project site was completed by Michelle Staley on March 7, 2018. Ms. Staley examined all unpaved and accessible surfaces; no exposed ground in or around the Enhanced Treatment and Site Upgrade Program site, nor anywhere else in the USD campus, yielded any evidence of potentially significant cultural resources or human remains.

Conclusions and Recommendations

No cultural resources were observed on the ground surface in or around the Project site during the archaeological survey. Historical research does not indicate any activities that took place in the era of Euro-American settlement likely to have deposited significant archaeological resources within the Project site; however, mapping was not continuous, nor did detailed mapping take place during early settlement of the general area.

Estimated prehistoric archaeological sensitivity is based on environmental setting, proximity to nearby sites, and site stratigraphy. In terms of geographic setting, an area in proximity to a creek is typically sensitive for prehistoric sites; in this case, however, the presence of mud flats rendered the area less suitable for habitation. The area is not located in close proximity to any known prehistoric archaeological sites: the nearest reported deposit, CA-ALA-326, is estimated to lie about 1 mile to the east of the Project site. The closest known area of intensive indigenous settlement, Coyote Hills, is located several miles away and in an environment with a more stable living surface.

In terms of near-surface prehistoric sites within the bay mud, it is likely that the area was traversed, perhaps during hunting or fishing expeditions, and it is possible that such activity resulted in the deposition of cultural resources within the bay mud. However, in the unlikely event that such resources are present, they are likely to be isolated artifacts or small deposits, rather than intact, multi-component habitation sites. In summary, it is unlikely that archaeological resources remain within the bay mud, though such a possibility cannot be ruled out completely.

Below the bay mud, buried alluvial strata may represent stable periods during which the landscape was more conducive to human habitation. Potential cultural resources associated with the buried alluvium, which may be found intact, would be of significant antiquity, and such resources are very rare in the Bay Area. It is therefore important to ensure that in the unlikely event that such resources are present, a mitigation plan is in place to identify them.

A program of intermittent ("spot-check") archaeological monitoring and construction crew training is recommended for the following areas (Figure 3):

- Phase IA - Aeration Basin Modifications: Intermittent monitoring recommended for excavation below about 15 feet (the approximate depth of modern disturbance). Total ground disturbance will reach up to 25 feet.
- Phase IA - New Campus building: Intermittent monitoring recommended for all mass excavation as well as foundation disturbance (if soils are observable). Total depth will be about 5 feet for mass excavation, up to 60 feet for foundation.
- Phase IB - Secondary Clarifiers: Intermittent monitoring recommended for excavation below six (6) feet. Total ground disturbance will reach up to 25 feet for mass excavation, up to 60 feet for foundation.
- Phase IC – Plant Equalization Storage: Intermittent monitoring recommended for excavation below about 15 feet (the approximate depth of modern disturbance). Total ground disturbance will reach up to 23 feet.

Spot monitoring consists of intermittent inspections of excavation by an on-site archaeologist. The specific monitoring plan for each Phase I project will be developed as design is finalized and prior to construction. This monitoring program will be supplemented by a brief cultural resources training to be given to construction crews regarding identification of potential archaeological resources. The training will include the distribution of an archaeological "Alert Sheet" to ground-disturbing construction crews. The Alert Sheet describes potential archaeological resources and outlines procedures for contacting an archaeologist in the event that archaeological resources are uncovered. Compliance with the California Health and Safety Code and California Public Resources Code as detailed below must be maintained. This Alert Sheet shall be distributed in a brief, on-site education session conducted by an archaeologist. As construction proceeds, the monitoring program for all Phase I project may be terminated if initially observed subsurface conditions preclude the possible presence of cultural resources.

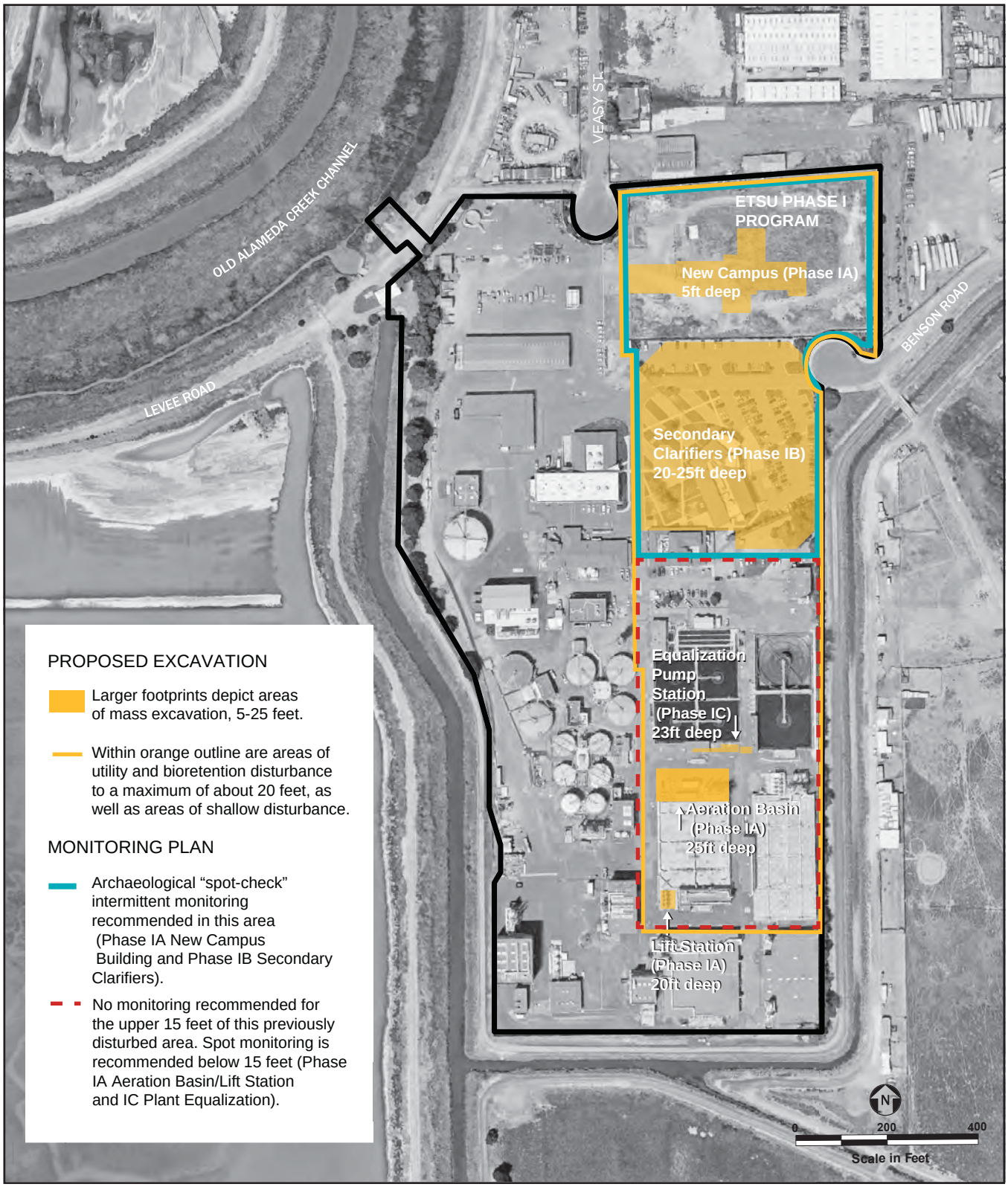
It is also recommended that any future geotechnical investigations in previously untested areas (e.g., the new Campus building) be monitored by an archaeologist. In the event that a potentially significant cultural site exists beneath the Project property and can be incidentally identified in a geotechnical boring, early detection would greatly reduce costs, and negative findings may reduce the frequency of spot monitoring.

If resources are identified—whether during archaeological monitoring or through accidental discovery by the crew—their potential significance would be evaluated and data would be recovered accordingly. If the archaeologist identifies an intact and potentially significant archaeological resource, he or she shall develop a treatment plan in consultation with the Union Sanitary District, the SWRCB, tribal representatives (in the event of a prehistoric site) and the State Historic Preservation Officer (SHPO). This plan would likely entail a program of systematic data recovery in which cultural materials are documented and removed.

Procedures Regarding Discovery of Human Remains

If human remains are encountered, the following procedures will be implemented:

a. Per the stipulations of the California Health and Safety Code Section 7050.5(b), the Alameda County Coroner's Office will be contacted immediately; this will occur whether or not a Most Likely Descendant has already been appointed.



Source: Hazen and Sawyer

3. Archaeological Monitoring Plan
Union Sanitary District ETSU Phase I Program

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b. The Coroner's Office has two working days in which to examine the identified remains. If the Coroner determines that the remains are Native American, then—if a Most Likely Descendant has not yet been appointed—the Office will notify the Native American Heritage Commission (NAHC) within 24 hours.
c. Following receipt of the Coroner's Office notice, the NAHC will contact a Most Likely Descendant. The Most Likely Descendant then has 48 hours in which they can make recommendations to the project sponsor and consulting archaeologist regarding the treatment and/or re-interment of the human remains and any associated grave goods.
d. Appropriate treatment and disposition of Native American human remains and associated grave goods will be collaboratively determined in consultation between the appointed Most Likely Descendant, the consulting archaeologist, and the landowner or authorized representative. The treatment of human remains may potentially include the preservation, excavation, analysis and/or reburial of those remains and any associated artifacts.
e. If the remains are determined not to be Native American, the Coroner, archaeological research team, and USD will collaboratively develop a procedure for the appropriate study, documentation, and ultimate disposition of the historic human remains.

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Appendix I: Native American Correspondence

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Debbie Pilas-Treadway
Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, California 95691

January 29, 2018

Subject: **Sacred Lands File & Native American Contacts List Request for Union Sanitary District Emergency Outfalls/Standby Power/Digester 7 Project, located in Union City, Alameda County, California**

Dear Ms. Pilas-Treadway:

I am writing with regard to the proposed Union Sanitary District Emergency Outfalls/Standby Power/Digester 7 Project, located in Union City, Alameda County, California. Archeo-Tec is performing a Phase I archaeological study of the Project at the request of its sponsor, Union Sanitary District (USD).

The proposed Project consists of three areas of impact within the Union Sanitary District's facility. Renovations to an **Emergency Outfall** gate opening to Alameda Creek in the northwest corner of the USD facility would entail ground disturbance to a maximum of 11 feet within and around the outfall's footprint. The **Standby Power Generation System Upgrade** would construct an approximately 220- by 100-foot generator building with a depth of impact of 6 feet below surface just east of the outfalls. Associated pipeline trenches would reach 3-4 feet below surface. **Digester 7** is a proposed new digester in the western portion of the USD facility. Excavation would reach a depth of 40 feet; associated pipelines would reach a maximum depth of 4 feet.

Attached please find a map of the project area. The property is located on the "Newark, CA" 7.5-minute USGS and within Township 4S, Range 2W (Mount Diablo Meridian).

Please review the Sacred Lands File and notify us of any sacred lands that would be affected by the Project, as well as individuals or groups whom we should contact. As always, we can accept the results by email at archeo-tec@archeo-tec.com or by fax at (510) 858-7248.

Sincerely,

Emily Wick
Archeo-Tec Consulting Archaeologists

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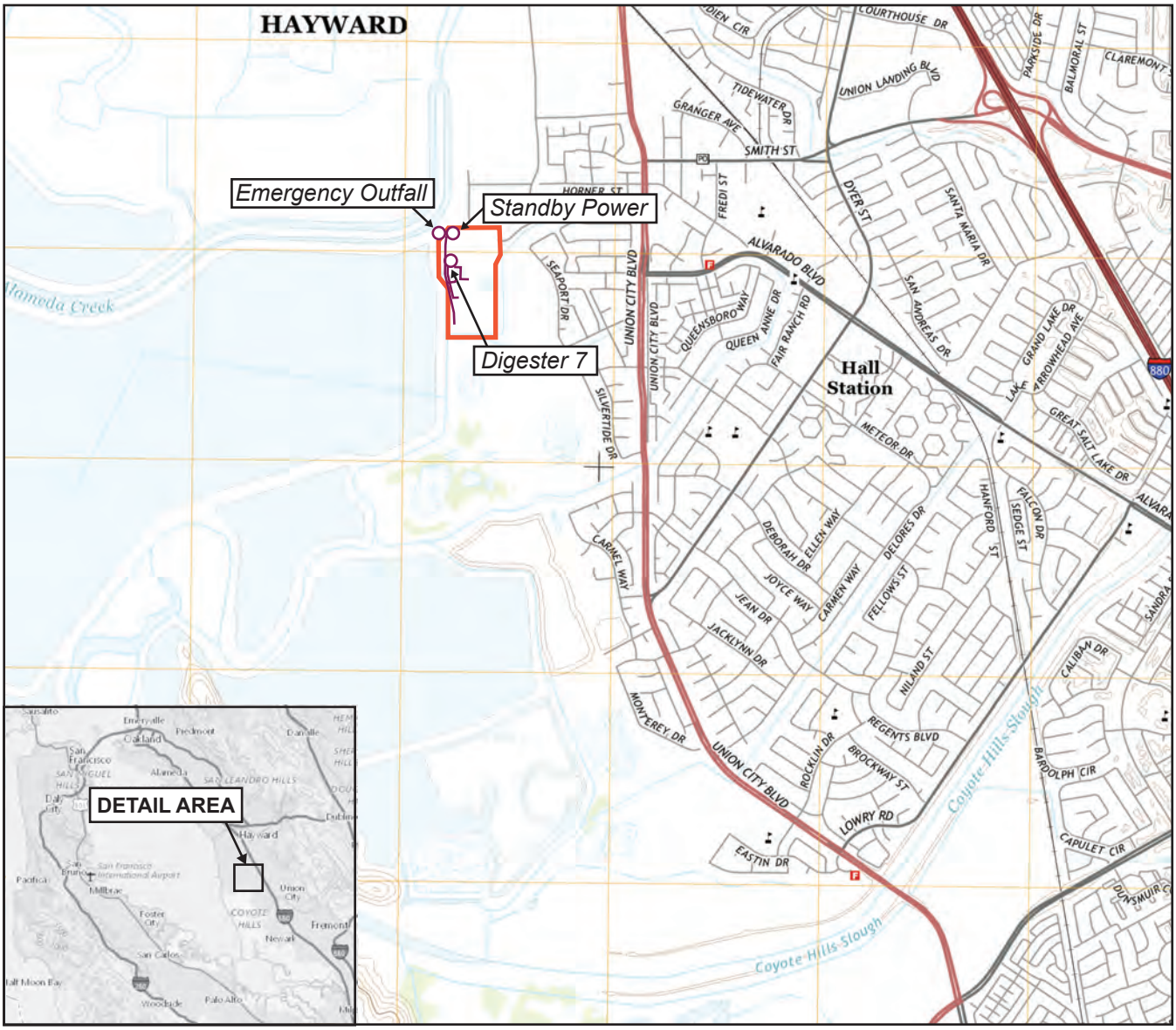
Union Sanitary District Project Location Map

January 29, 2018



Images: USGS.gov

Detail from Newark Quadrangle, 7.5 Minute Map CA 2015

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2

1000 500 0 METERS 1000 2000

1 0.5 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

Area of Potential Effects: USD Campus

Approximate Excavation Locations

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

February 20, 2018

Emily Wick
Archeo-Tec Consulting Archaeologist

Email to: archeo-tec@archeo-tec.com

RE: Union Sanitary District Project, Alameda County

Dear Ms. Wick,

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not preclude the presence of cultural resources in any project area. Other sources for cultural resources should also be contacted for information regarding known and/or recorded sites.

Enclosed is a list of Native Americans tribes who may have knowledge of cultural resources in the project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at 916-573-1033 or frank.lienert@nahc.ca.gov.

Sincerely,

Frank Lienert
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contacts
2/20/2018

Coastanoan Rumsen Carmel Tribe
Tonv Cerda. Chairperson
244 E. 1st Street
Pomona , CA 91766
rumsen@aol.com
(909) 524-8041 Cell
(909) 629-6081
Ohlone/Costanoan

Indian Canvon Mutsun Band of Costanoan
Ann Marie Savers. Chairperson
P.O. Box 28
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ams@indiancanyon.org
(831) 637-4238
Ohlone/Costanoan

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein. Chairperson
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(650) 851-7747 Office
(650) 332-1526 Fax
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North Vallev Yokuts Tribe
Katherine Erolinda Perez. Chairperson
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canutes@verizon.net
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Ohlone/Costanoan
Northern Valley Yokuts
Bav Miwok

Muwekma Ohlone Indian Tribe of the SF Bav Area
Rosemarv Cambra. Chairperson
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Milpitas , CA 95036
muwekma@muwekma.org
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Ohlone / Costanoan

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152
Fremont , CA 94539
chochenyo@AOL.com
(510) 882-0527 Cell
(510) 687-9393 Fax
Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was pr oduced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed Union Sanitary District Project, Alameda County

Subject: Union Sanitary District Projects, Union City
From: Archeo-Tec <archeo-tec@archeo-tec.com>
Date: 2/22/2018 4:09 PM
To: rumsen@aol.com
BCC: sent@archeo-tec.com

Dear Chairperson Cerda,

I am writing with regard to a trio of proposed projects within Union Sanitary District's facility in Union City, Alameda County, California. One of the projects (Emergency Outfall Improvements Project) is subject to Section 106 regulations because it would affect a navigable waterway, and therefore requires a permit from U.S. Army Corps of Engineers.

The three proposed projects are all located within the existing Union Sanitary District (USD) facility, which is shown on the attached map. Renovations to an **Emergency Outfall** gate opening to Alameda Creek in the northwest corner of the USD facility would entail ground disturbance to a maximum of 11 feet within and around the outfall's footprint. The **Standby Power Generation System Upgrade Project** would construct an approximately 220- by 100-foot generator building with a depth of impact of 6 feet below surface just east of the outfalls. Associated pipeline trenches would reach 3-4 feet below surface. Finally, the **Digester 7 Project** would construct a new digester in the western portion of the USD facility. Excavation would reach a depth of 40 feet; associated pipelines would reach a maximum depth of 4 feet.

A records search at the Northwest Information Center (NWIC) found one archaeological site located approximately one mile east of the Project: one of Nelson's shellmounds, which appears to have not been investigated as it does not have a site record. No other archaeological sites are recorded within one mile of the Project.

We have already contacted the Native American Heritage Commission and a search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. We are interested to know if you have information about culturally significant resources on this site, or can recommend others who might share such information. Please send any response you may have within the next 30 days.

Sincerely,
Michelle Staley

Archeo-Tec
5283 Broadway
Oakland, CA 94618
(510) 601-6185 phone
(510) 858-7248 fax

Attachments:

USD Projects Location Map.pdf 7.3 MB

Subject: Union Sanitary District Projects, Union City
From: Archeo-Tec <archeo-tec@archeo-tec.com>
Date: 2/22/2018 4:11 PM
To: Amah Mutsun TB of Mission SJB <amahmutsuntribal@gmail.com>
BCC: sent@archeo-tec.com

Dear Chairperson Zwierlein,

I am writing with regard to a trio of proposed projects within Union Sanitary District's facility in Union City, Alameda County, California. One of the projects (Emergency Outfall Improvements Project) is subject to Section 106 regulations because it would affect a navigable waterway, and therefore requires a permit from U.S. Army Corps of Engineers.

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Subject: Union Sanitary District Projects, Union City
From: Archeo-Tec <archeo-tec@archeo-tec.com>
Date: 2/22/2018 4:26 PM
To: Katherine Erolinda Perez <canutes@verizon.net>
BCC: sent@archeo-tec.com

Dear Chairperson Perez,

I am writing with regard to a trio of proposed projects within Union Sanitary District's facility in Union City, Alameda County, California. One of the projects (Emergency Outfall Improvements Project) is subject to Section 106 regulations because it would affect a navigable waterway, and therefore requires a permit from U.S. Army Corps of Engineers.

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Subject: Union Sanitary District Projects, Union City
From: Archeo-Tec <archeo-tec@archeo-tec.com>
Date: 2/22/2018 4:14 PM
To: Rosemary Cambra <muwekma@muwekma.org>
BCC: sent@archeo-tec.com

Dear Chairperson Cambra,

I am writing with regard to a trio of proposed projects within Union Sanitary District's facility in Union City, Alameda County, California. One of the projects (Emergency Outfall Improvements Project) is subject to Section 106 regulations because it would affect a navigable waterway, and therefore requires a permit from U.S. Army Corps of Engineers.

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Archeo-Tec
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Oakland, CA 94618
(510) 601-6185 phone
(510) 858-7248 fax

Attachments:

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Subject: Union Sanitary District Projects, Union City
From: Archeo-Tec <archeo-tec@archeo-tec.com>
Date: 2/22/2018 4:16 PM
To: Andy Galvan <chochenyo@aol.com>
BCC: sent@archeo-tec.com

Dear Mr. Galvan,

I am writing with regard to a trio of proposed projects within Union Sanitary District's facility in Union City, Alameda County, California. One of the projects (Emergency Outfall Improvements Project) is subject to Section 106 regulations because it would affect a navigable waterway, and therefore requires a permit from U.S. Army Corps of Engineers.

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Attachments:

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Subject: Union Sanitary District Projects, Union City
From: Archeo-Tec <archeo-tec@archeo-tec.com>
Date: 2/22/2018 4:18 PM
To: Ann Marie Sayers <ams@indiancanyon.org>
BCC: sent@archeo-tec.com

Dear Chairperson Sayers,

I am writing with regard to a trio of proposed projects within Union Sanitary District's facility in Union City, Alameda County, California. One of the projects (Emergency Outfall Improvements Project) is subject to Section 106 regulations because it would affect a navigable waterway, and therefore requires a permit from U.S. Army Corps of Engineers.

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A records search at the Northwest Information Center (NWIC) found one archaeological site located approximately one mile east of the Project: one of Nelson's shellmounds, which appears to have not been investigated as it does not have a site record. No other archaeological sites are recorded within one mile of the Project.

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USD Projects Location Map.pdf 7.3 MB

Appendix H

Noise and Vibration Technical Report

Union Sanitary District Alvarado Wastewater Treatment Plant
Phase 1 - Enhanced Treatment and Site Upgrade

Union City, CA

ENVIRONMENTAL NOISE AND VIBRATION IMPACT TECHNICAL BACKGROUND REPORT

26 February 2021

Prepared for: Paul Scheidegger
Scheidegger & Associates
pscheidegger00@comcast.net

Prepared by: **Salter**
Jeremy Decker, PE – Vice President
jdecker@salter-inc.com

Salter Project 20-0419

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Acoustics
Audiovisual
Telecommunications
Security

INTRODUCTION

This technical background report presents the results of our noise and vibration impact assessment. The Project is Phase 1 of the Union Sanitary District Enhanced Treatment and Site Upgrade (ETSU) program at the Alvarado Wastewater Treatment Plant (AWTP) in Union City, California. It summarizes the policies and standards applicable to the Project, noise data obtained from our on-site acoustical measurements, and our evaluation of potential noise impacts resulting from the Project on existing land-uses. Those readers not familiar with the fundamental concepts of environmental noise may refer to Appendix A.

PROJECT DESCRIPTION AND SETTING

The USD site is located in Union City near the eastern shore of the San Francisco Bay. The site is bound to the east, west, and south by open space. To the north, the land is zoned as "light industrial," though it appears to have some residences within the light industrial zone. A potential religious facility might also be located in this light industrial zone. Additional residential developments are located to the east and northeast of the site, greater than 1,000 feet from the proposed equipment. The Project primarily consists of the following scope, as divided into three projects:

- Phase 1A
  - Aeration basin (AB) modifications
  - New AB 8
  - Blower replacement
  - New campus building
- Phase 1B
  - New secondary clarifiers
  - New effluent facility
- Phase 1C
  - New Primary effluent equalization

Phase 1 has been split into three projects by USD. All the projects in Phase I are linked from a process, site, and timing perspective. However, Phase 1A is the focus of the current analysis as the detailed design progresses. Phases 1B and 1C are addressed at a "program" level, anticipating that the design will continue to be refined.

SUMMARY

It is expected that Project noise can be reduced to meet the City noise standards and avoid a significant increase in ambient noise at the surrounding noise-sensitive receptors. Based on the analysis and assumptions regarding future Project equipment, the following table summarizes the level of mitigation that would be needed. An updated noise analysis should be performed during the detailed design phase as the equipment is selected to confirm the details of necessary noise mitigation.

Table 1: Summary of Project noise mitigation needed (see Mitigation 1 below).

Mitigation Measure	Summary
1 Operational Traffic Noise	None Needed
2 Operational Equipment Noise	Process fans are to be selected to generate a maximum of 85 dB[1] at a distance of 3 feet. HVAC noise is to be confirmed by a noise study during the later design phases.
3 Construction Noise	Standard mitigation measures of the City should be adequate for Phase 1A. If impact pile driving is required for Phase 1B, it would exceed City Standards, and will require further study as that phase progresses.
4 Operational Vibration	Standard vibration isolation measures should be implemented at equipment.
5 Construction Vibration	Standard mitigation measures of the City should be adequate.

ACOUSTICAL CRITERIA

The State of California and the City of Union City establish guidelines, regulations, and policies designed to limit noise exposure at noise sensitive land uses. State CEQA guidelines set forth criteria that are used to determine whether a Project will have a significant impact on the existing environment. Local City regulations address transmission to adjacent properties.

[1] dB (Decibel) – A unit that describes the magnitude of a sound with respect to a reference sound level near the threshold of hearing. Decibels are based on a logarithmic scale and therefore cannot be added arithmetically. All sound levels listed in this report are A-weighted (unless specified otherwise). A weighting is a standard weighting that accounts for the sensitivity of human hearing to the range of audible frequencies. People perceive a 10 dB increase in sound level to be twice as loud.

State – CEQA Guidelines and Impact Criteria

The California Environmental Quality Act (CEQA) contains guidelines to evaluate the significance of noise attributable to a proposed Project, primarily equipment and construction noise. CEQA asks the following applicable questions related to noise and vibration (CEQA Guidelines Appendix G). Would the Project result in:

1. 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, noise ordinance, or applicable standards of other agencies;
2. Generation of excessive groundborne vibration or groundborne noise levels;

Local – Union City General Plan

The Safety Element of the adopted Union City 2040 General Plan includes standards and policies applicable to the Project as listed below.

Table 2 (excerpt from Table S-8.1): Exterior Noise Exposure Standards for New Development

Land Use Type	Highest Level of Exterior Noise Exposure that is Regarded as "Normally Acceptable" (DNL)
Residential: Low density Single-Family Homes, Duplex, Mobile Home	60
Residential: Townhomes and Multi-Family Apartments, Mixed use, Condominiums	65
Churches	60
Industrial	75

Policy S-8.7 Reduce Impacts from New Noise Generating Uses: The city may require operational limitations and implementation of noise buffering measures for new uses with the potential to generate significant noise (including, but not limited to, industrial uses, auditoriums, concert halls, amphitheaters, sports arenas, outdoor spectator sports fields, and outdoor spectator sports) near existing noise sensitive land uses as identified in Policy S-8.1. A noise impact analysis may be required to evaluate potential noise impacts and identify appropriate buffering measures.

Policy S-8.8 Limit Construction House: To minimize the potential noise impacts of construction activities on surrounding land uses, the City shall limit construction activities between the hours of 8:00 a.m. and 8:00 p.m. on Monday through Friday, 9:00 a.m. and 8:00 p.m. on Saturdays, and 10:00 a.m. and 6:00 p.m. on Sundays and holidays. The City Manager may make specific exceptions to the construction hours when utility work in the streets would have a severely negative impact on traffic flow and public safety.

Policy S-8.9 Construction Noise Control Measures: The City shall include the following noise control measures as standard conditions of approval for projects involving construction [See list incorporated into mitigation measure to address construction noise].

Policy S-8.10 Construction Vibration Control Measures: The City shall include the following measures as standard conditions of approval for applicable projects involving construction to minimize exposure to construction vibration [See list incorporated into mitigation measure to address construction vibration].

Policy S-8.13 Enforce Community Noise Ordinance: The City shall strive to reduce the negative effects of noise sources through the enforcement of the Community Noise Ordinance.

Local – Union City Noise Ordinance

Chapter 9.40 of the Union City Municipal Code includes the following noise standards:

9.40.041 Residential property noise limits.

No person shall produce, suffer or allow to be produced by any machine, animal or device, or any combination of same, on residential property, a noise level more than ten (10) dBA above the local ambient at any point outside of the property plane.

9.40.042 Commercial and industrial property noise limits. No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on commercial or industrial property, a noise level more than twelve dBA above the local ambient at any point outside of the property line.

9.40.043 Public property noise limits.

A. No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on public property, a noise level more than fifteen dBA above the local ambient at a distance of twenty-five feet or more, unless otherwise provided in this chapter.

B. Sound performances and special events not exceeding eighty dBA measured at a distance of fifty feet are exempt from this chapter when approval therefore has been obtained from the appropriate governmental entity, except as provided elsewhere in this Code.

C. Vehicle horns, or other devices primarily intended to create a loud noise for warning purposes, shall not be used when the vehicle is at rest, or when a situation endangering life, health, or property is not imminent.

9.40.050 Daytime exceptions. Any noise source which does not produce a noise level exceeding seventy dBA at a distance of twenty-five feet from the noise source under its most noisy condition of use shall be exempt from the provisions of Article 4 between the hours of eight a.m. and eight p.m. daily except Sundays and holidays, when the exemption herein shall apply between ten a.m. and six p.m.

9.40.053 Construction.[2] Notwithstanding any other provision of this chapter, between the hours of eight a.m. and eight p.m. daily except Saturday, when the exemption herein shall apply between nine a.m. and eight p.m. and Sundays and holidays, when the exemption herein shall apply between ten a.m. and six p.m., construction, alteration, or repair activities which are authorized by valid City permit shall be allowed if they meet at least one of the following noise limitations:

A. No individual piece of equipment shall produce a noise level exceeding eighty-three dBA at a distance of twenty-five feet. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to twenty-five feet from the equipment as possible.

B. The noise level at any point outside the property plane of the Project shall not exceed eighty-six dBA.

"Local ambient" is defined in Article 3 as the lowest sound level repeating itself at a certain location during a six-minute period as measured with a precision sound level meter, using slow response and "A" weighting. However, for purposes of this chapter, in no case shall the local ambient be considered or determined to be less than 40dB. We are reporting the measured L90 noise level to represent the ambient level.

"Noise level" is defined as the maximum continuous sound level or repetitive peak sound level, produced by a source or group of sources as measured with a precision sound level meter. In order to measure a noise level, the controls of the precision sound level meter should be arranged to the setting approximate to the type of noise being measured. Article 8 specifies noise measurements to be made with a sound level meter using the 'A' weighted network at slow meter response (except fast meter response is to be used for impulsive noise).

EXISTING (AMBIENT) NOISE ENVIRONMENT

The noise environment at the site is most impacted by distant traffic and equipment noise. Noise levels were measured at several locations around the site between 15 and 19 November 2018. Locations are shown on the site map, Figure 1, below. Measured hourly ambient noise levels (L_{90}) at each location were between approximately 40 dB and 50 dB depending on the time of day. Measured average daily noise levels (DNL, per the City Safety Element development standards) are listed in Table 3 below.

[2] We understand that these construction regulations are incorporated into the Union Sanitary District use permit (UP-5-95).

Figure 1: Noise Measurement Locations

Table 3: Existing Noise Environment Surrounding the Project Site

Location	Daily Average Noise Levels	Hourly "Local Ambient" Noise Levels (L_{90})	Hourly Average Ambient Noise Levels (L_{eq})
1	DNL 58 to 62 dB	L_{90} 39 to 52 dB	L_{eq} 44 to 61 dB
2*	DNL 56 to 60 dB	L_{90} 39 to 48 dB	L_{eq} 44 to 59 dB
3	DNL 53 to 59 dB	L_{90} 39 to 52 dB	L_{eq} 44 to 67 dB
4	DNL 57 to 62 dB	L_{90} 36 to 51 dB	L_{eq} 44 to 68 dB

*Note: Noise level at this location is estimated and based on correlation of short-term measurement data (1 hour) with simultaneous measurement at long-term measurement data at other locations.

Based on our findings, we determined that the Community Noise Ordinance limit for noise emitted to neighboring residential land-uses at night would be 50 dB, 10 dB above the prescribed minimum "local ambient" of 40 dB for nighttim. For operational activities that would only occur during daytime hours, the limit would be 55 dB, 10 dB above the 45 dB baseline daytime "local ambient."

EXISTING NOISE-SENSITIVE RECEPTORS

The following noise-sensitive receptors were identified for use in our analysis with approximate distances listed in Table 4.

Receptor 1: The nearest potential sensitive receptor is a residence along Veasy Street. Though this area is zoned as light industrial, this property and some others appear to be used as single-family residences. This receptor can also apply to a tentatively approved religious facility directly north of the site (if it is constructed).

Receptor 2: Farther north, along Horner Street there are a couple properties that appear to be used as single-family residential properties. Therefore, these are also evaluated as a sensitive receptor.

Receptor 3a/3b: East of the site, residences are located along Shorebird Drive.

Receptor 4: Northeast of the site, residences are located along Horner Street (east of Whipple Road).

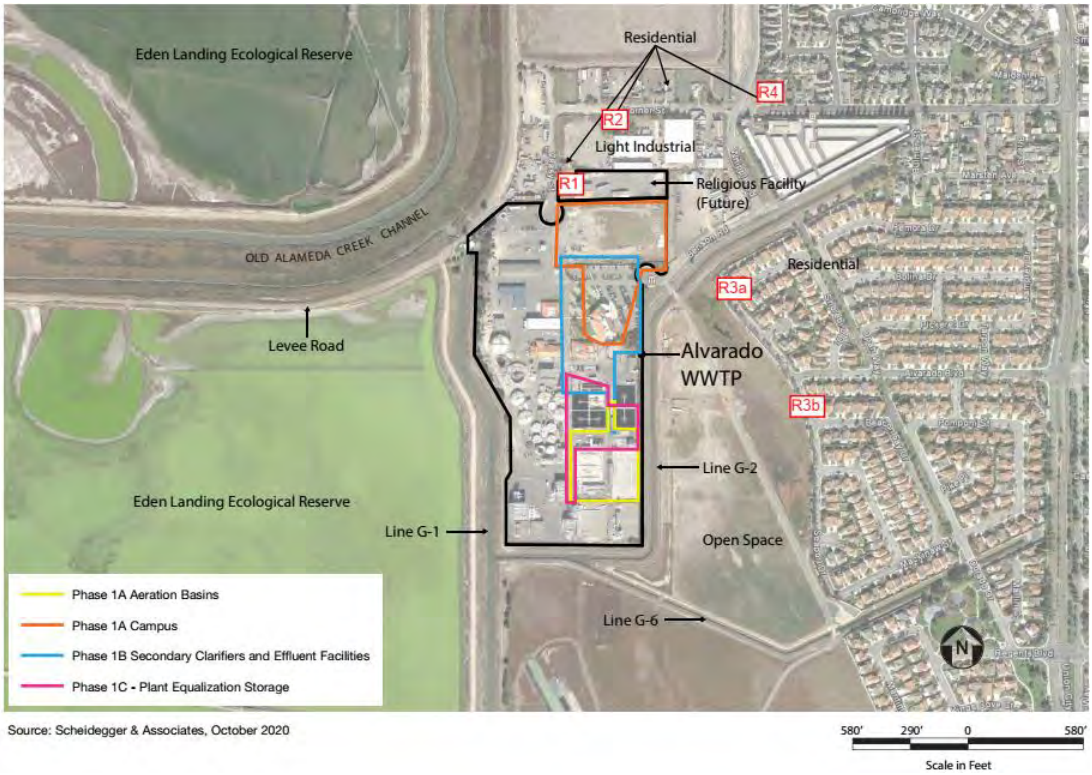


Figure 2: Noise-Sensitive Receptor Locations

Table 4: Approximate Distances from Receptors to Noise Sources

Receptor	Distance to Admin Building	Distance to AP/PE Fans
R1	100 to 250 feet	1,000 feet
R2	500 feet	1,400 feet
R3a/b	450 feet	800 feet
R4	800 feet	1,700 feet

METHODOLOGY

Summary of Project-Specific Noise and Vibration Impact Statements

To evaluate whether the Project will have a significant impact, the following impact statements were developed:

Impact 1: Operational Noise ("temporary"). Project traffic could result in a significant increase in noise that exceeds local standards.

Impact 2: Operational Noise ("permanent"). Project equipment noise could exceed local standards.

Impact 3: Construction Noise. Construction equipment and activities could generate noise that exceeds the local standards.

Impact 4: Operational Groundborne Vibration. Operation of the Project equipment could expose persons to excessive groundborne vibration.

Impact 5: Construction Groundborne Vibration. The construction of the Project could expose persons to excessive groundborne vibration.

Noise Impact Thresholds of Significance

The Project might result in a significant impact if it increases noise at the neighboring sensitive receptors above the levels listed in Tables 5a and 5b:

Table 5a: Threshold of Significance for Average Daily Noise at Noise-Sensitive Receptors

Receptor	Average Daily Noise Limit
Residences	DNL 60 dB

Table 5b: Threshold of Significant "Temporary" Increase for Residential Receptors

Time	Ambient Noise Level	Allowable Increase	Noise Limit
Daytime	L_{90} 45 dB	+10 dB (per City Noise Ordinance)	55 dB
Nighttime	L_{90} 40 dB		50 dB

Vibration Impact Thresholds of Significance

Regarding Impacts 4 and 5, the City does not define a vibration levels that is considered excessive. Therefore, we offer significance criteria based on information published by the State and our experience. The Caltrans "Transportation and Construction Vibration Guidance Manual" (September 2013) includes guidelines for the assessment of construction vibration. We are referencing these for the evaluation of vibration levels measured during Project construction activities. They relate to both potential damage and human perception. Tables 4 and 5 below are excerpts from the Caltrans manual with applicable thresholds highlighted, which range between 0.3 to 1.0 PPV (in/sec) for potential damage to residential structures and 0.01 to 0.25 PPV (in/sec) for human perception (PPV is 'peak particle velocity').

Table 5a: Guideline Vibration Damage Potential Threshold Criteria (Maximum PPV, in/sec)

Structure and Condition	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12 PPV	0.08 PPV
Fragile buildings	0.2 PPV	0.1 PPV
Historic and some old buildings	0.5 PPV	0.25 PPV
Older residential structures	0.5 PPV	0.3 PPV
New residential structures	1.0 PPV	0.5 PPV
Modern industrial/commercial buildings	2.0 PPV	0.5 PPV

Table 5b: Guideline Vibration Annoyance Potential Criteria (Maximum PPV, in/sec)

Subjective Effect	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04 PPV	0.01 PPV
Distinctly perceptible	0.25 PPV	0.04 PPV
Strongly perceptible	0.9 PPV	0.1 PPV
Severe	2.0 PPV	0.4 PPV

NOISE IMPACTS AND MITIGATION MEASURES

The Project includes upgrades to operational facilities, demolition of the existing administration building, and construction of a new administration building. The impact analysis addresses the following potential sources of noise and vibration:

- Operational truck traffic noise
- Operational noise from facility blower fans and admin building HVAC equipment
- Demolition and construction noise and vibration

Impact 1: Operational Noise ("temporary"). Project traffic could result in a significant increase in noise that exceeds local standards.

Currently, the site produces approximately 4 trucks per day of biosolids. According to the Project traffic study, Phase 1 program is estimated to add two trucks per day. The project truck routes are indicated in the image at right. The traffic study also indicates a minor increase in passenger vehicle traffic (operational), though these increases would constitute a fraction of the existing traffic volumes on local roadways.

The increase in traffic noise on local roadways associated Phase 1 is expected to be less than one decibel. The project traffic alone is estimated to generate noise levels of approximately DNL 50 dB (50 feet away from the roadway centerline), well below the City standard of DNL 60 dB. Cumulatively, Project operational traffic would not be expected to increase noise levels on existing roadways by more than one decibel and would not be expected to increase existing noise beyond DNL 60 dB.

Significance 1: Less-than-significant.

Mitigation 1: No mitigation needed.

Impact 2: Operational Noise ("permanent"). Project equipment noise could exceed local standards.

Project equipment includes blower fans that are part of the treatment facility and HVAC equipment that would serve the buildings.

1. Treatment facility fans:
    a. Odor Control Fans
        i. Centrifugal FRP Fume Exhausters at each of 3 locations: 3 total fans, 2 operating, 1 standby
        ii. AB 1-4 East Basins (19k cfm, 50 hp, 12" w.c. SP – each) at existing AB1-2 scrubbers
        iii. AB 5-8 West Basins (19k cfm, 50 hp, 12" w.c. SP – each) at northwest corner of AB 8
        iv. PE EQ (17k cfm, 50 hp, 12" w.c. SP – each) at west corner of CCC tank
    b. West Blower Building
        i. Three turbo blowers and two positive displacement blowers
        ii. Design plan is to limit each fan noise to 85 dB at a distance of 3 feet away from the blower
2. Building Ventilation
    a. West blower building ventilation – expected to be moderate building exhaust
    b. Admin building HVAC – expected to include air-conditioning, heating, and smaller exhaust fans

Treatment Facility Fans: For our analysis, we assumed worst-case conditions that all 11 treatment facility blowers operate simultaneously and all might have direct line-of-sight to sensitive receptors. We calculate that the blower noise could reach 47 dB at the nearest receptor. Average daily noise from the fans alone would be approximately DNL 53 dB. These levels would meet the City Ordinance limit of 50 dB for nighttime noise and the DNL 60 dB standard for residential land-uses. Most likely, noise levels will be further below the calculated level as some shielding is expected to be provided by intervening structures, buildings, and the concrete block sound-wall along Receptors R3a/3b. In addition, directivity of the blower outlets could be utilized to direct the noise away from sensitive receptors.

Admin Building HVAC: Mechanical equipment associated with the project could exceed noise standards. A detailed analysis and specific mitigation measures cannot be assembled until the mechanical systems are designed at the time of construction document plan review. Therefore, a performance criterion is proposed to reduce the potential noise impact. Based on the current site plan and the expected equipment setback from the nearest sensitive receptor (generally R1 and the potential future religious facility), we expect that the equipment could be designed to meet the City standards. Based on our experience, equipment needed to serve buildings of this size may generate noise levels between 75 dB and 85 dB at a distance of 3 feet. At a potential setback distance of 100 feet and located behind a noise barrier or parapet wall that breaks line-of-sight, these noise levels would be reduced to between 40 dB and 50 dB. If operated during daytime hours (estimated to be 7am to 7pm), the average daily noise level would also be quieter than DNL 50 dB. Even if the equipment ran 24 hours per day, it would only reach DNL 56 dB. These levels would meet City Standards.

West Blower Building Ventilation: This ventilation system is expected to be smaller and quieter than the facility blower fans. Therefore, it would also meet the City Standards.

Significance 2: Less-than-significant with mitigation. All of the following measures are to be implemented:

Mitigation 2a: Each of the 11 treatment blower fans are to be selected to generate a maximum sound level of 85 dB (A-weighted sound pressure) at a distance of 3 feet from the outdoor emanating point (e.g., discharge opening). Alternatively, a refined analysis of the final design could be performed to address the actual configurations and/or incorporate additional noise reduction measures to reduce noise to meet the City noise standards.

Mitigation 2b: Cumulatively with other operational noise sources, the admin building ventilation equipment is to be designed to meet the applicable noise limits. A detailed noise analysis of the final design will be performed to address the final design and incorporate additional noise reduction measures to reduce noise to meet the City noise standards. A qualified professional should be involved during the design of the project to advise the design team regarding effective noise-reduction measures, if needed.

Mitigation 2c: Though West Blower Building equipment noise is expected to meet the City Standards, a noise study report will be prepared during the design phase of the project to confirm cumulative noise would be reduced to meet the City Standards. A qualified professional should be involved during the design of the project to advise the design team regarding effective noise-reduction measures, if needed.

Impact 3: Construction Noise. Construction equipment and activities could generate noise that exceeds the local standards.

Typical Activities: Construction activities would include use of heavy equipment for demolition, excavation, grading, foundation construction, building erection, and other activities. Neighboring land-uses with direct line-of-sight to construction activities and construction traffic could be affected by construction noise. Potential construction noise impacts would vary with distance. Table 6 summarizes the expected construction phases, equipment, and typical noise levels.

Table 6: Typical Maximum Construction Noise Levels

Phase	Equipment	Noise at 50'	Noise at 100'	Noise at 600'
Demolition, Excavation, Grading	Excavator, Scraper, Compactor, Water Truck, Blade /Grader,Dump Trucks	85	79	63
Utilities	Excavator, Rubber Tire Loader, Water Truck, Backhoe, Dump Truck	80	74	58
Foundations	Forklift, Compressor, Cement Mixer/Truck, Concrete Finisher, Concrete Boom Pump, Crane	85	79	63
Building Exterior	Gradall/Crane, Hand/Power Tools	85	79	63
Building Interior	Gradall, Metal Stud Saw (indoors), Paint Sprayer, Hand/Power Tools	80	74	58
Hardscape and Landscape	Backhoe, Compactor, Dump Truck, Cement Mixer/Truck, Bobcat	80	68	58

Pursuant to the site use permit (UP-5-95) and the Municipal Code, construction activities are to be limited to standard daytime hours. These are between the hours of 8:00 a.m. and 8:00 p.m. on Monday through Friday, 9:00 a.m. and 8:00 p.m. on Saturdays, and 10:00 a.m. and 6:00 p.m. on Sundays and holidays. During these standard daytime construction hours, construction activities are exempt from the standard Noise Ordinance limits (Section 9.40.043) and instead must meet one of the two following standards (see Section 9.40.053):

1. No individual piece of equipment shall produce a noise level exceeding 83 dBA at a distance of 25'. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to twenty-five feet from the equipment as possible.
2. The noise level at any point outside the property plane of the Project shall not exceed 86 dBA.

Some construction equipment may generate intermittent noise levels up to 80 dBA to 85 dBA at a distance of 50 feet. These levels would meet the City Noise Ordinance limit of 86 dB outside the property plane and thus meet the City Noise Ordinance regulations for daytime activity. At a distance of 600 feet, these projected construction noise levels would be reduced to 60 dBA to 65 dBA or quieter, which would then be in-line with typical environmental events (e.g., vehicle passbys).

Nonetheless, noise-generating activities over the construction period, though temporary, could increase ambient noise levels at neighboring sensitive land-uses. Reasonable measures to manage construction activities should be implemented to reduce the potential noise impact, as feasible.

Deep Foundations: Structural piles or piers may be required for the foundations, particularly for the new campus building (Phase 1A) and the secondary clarifiers (Phase 1B). Some installation methods (particularly impact driving) can generate high noise levels and exceed the City daytime construction noise limit of 86 dB. The following table summarizes the distances at which example foundation construction methods would exceed the City limit of 86 dB. These distances are roughly depicted on the figure below to show the scale of the potential noise impact areas of each type of method. Soil mixing is another foundation preparation scheme that could be implemented to moderate noise levels (i.e., similar to those described in Table 6 above).

Table 7: Deep Foundation Construction Methods – Distances at which they would exceed 86 dB

Deep Foundation Installation Method	Noise Level at 100 feet	Distance 86 dB Noise Contour
Impact pile driving	95 to 110 dB	300 to 1600 feet (depending on size and cushion blocks)
Vibratory pile driver or Vibro-displacement	85 to 95 dB	100 to 300 feet
Rammed aggregate pier	80 to 85	50 to 100 feet
Auger-cast piles	75 to 80	50 feet

Figure 3: Approximate 86 dB Noise Contours for Foundation Methods (1,600 ft, 300 ft, and 100 ft)

Truck Traffic: Construction truck traffic noise is not addressed by City Standards. Though a temporary impact, construction truck traffic noise can be compared to the City Land-use Compatibility Guidelines. The cumulative construction truck traffic plan projects that excavation and related activities could result in up to 200 truck trips per day at the site (i.e., 100 round-trips). This truck traffic alone is estimated to generate noise levels of approximately DNL 58 dB (50 feet away from the roadway centerline), below the City standard of DNL 60 dB and in-line with existing ambient noise levels. Cumulatively, this truck traffic would not be expected to significantly increase noise levels on existing roadways. A maximum three decibel increase is possible. We note that these peak truck traffic volumes would be temporary.

Significance 3: Less-than-significant with mitigation. Construction impacts are expected to be temporary and vary through various phases. Mitigation measures outlined below, are expected to reduce construction noise, to the extent feasible, to be less than significant.

Mitigation 3a: In addition, to reduce potential noise impact from construction-related activities, they are to be conducted in accordance with the following (and as required by the City Municipal Code):

1. Properly muffle and maintain all construction equipment powered by internal combustion engines.
2. Prohibit unnecessary idling of combustion engines.
3. Locate all stationary noise-generating construction equipment such as air compressors as far as practical from existing nearby residences and other noise-sensitive land uses. Such equipment shall also be acoustically shielded.
4. Select quiet construction equipment particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order.
5. Residences adjacent to project sites shall be notified in advance in writing of the proposed construction schedule before construction activities commence. The construction schedule shall comply with Policy S-8.8.
6. The project applicant shall designate a “noise disturbance coordinator” responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the disturbance coordinator shall be posted at the construction site.

Mitigation 3b: For Phase 1A, a quieter deep foundation installation method such as drilled displacement columns, auger cast piles, or soil mixing (not impact pile driving) is to be used.

Mitigation 3c: Since Phase 1B is being analyzed at the program level, a detailed noise mitigation plan is to be developed as the design is refined. The plan will include an analysis of alternative and quieter deep foundation installation methods. If impact pile driving is required for structural reasons due to soil conditions, a more detailed analysis shall be performed to account for the anticipated type and size of the piles, quantity, locations, and potential noise reduction methods such as temporary sound barriers, shrouds, or jackets, and monitoring if needed.

Impact 4: Operational Groundborne Vibration. Operation of the Project equipment could expose persons to excessive groundborne vibration.

Vibration equipment has the potential to generate vibration at neighboring properties. However, with industry-standard vibration isolation measures, it is very unlikely that the equipment would generate perceptible vibration at the nearest sensitive receptor.

Significance 4: Less-than-significant with mitigation.

Mitigation 4: Vibration-generating equipment is to be adequately vibration isolated using spring isolation mounts and hangers per ASHRAE guidelines (in the ASHRAE Applications Handbook) to reduce ground-borne vibration levels at neighboring properties.

Impact 5: Construction Groundborne Vibration. The construction of the Project could expose persons to excessive groundborne vibration.

Construction activities would include site preparation work, minor excavation, foundation work, and new building framing. Tables below present typical vibration levels[3] that could be expected from construction equipment at distances of 25 and 100 feet. However, vibration levels would vary depending on soil conditions, construction methods, and equipment used at the site.

Table 8: Example Construction Vibration Levels Compared to Building Damage Thresholds

Equipment	PPV at 25 ft. (in/sec)	Threshold Limits
Vibratory Roller	0.210	0.3 to 0.5 for continuous sources; 0.5 to 1.0 for transient sources
Vibratory Driver	0.10 to 0.15	
Hoe Ram	0.089	
Large bulldozer	0.089	
Caisson drilling	0.089	
Loaded trucks	0.076	
Jackhammer	0.035	
Small bulldozer	0.003	

[3] From the Caltrans "Transportation and Construction Vibration Guidance Manual" (September 2013) and the "Transit Noise and Vibration Impact Assessment" report by the United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, May 2006. Estimated levels at setbacks greater than 25 feet are estimated per the Caltrans published formula $PPV_{equipment} = PPV_{ref}(25/D)^n$, where PPV_{ref} is the reference PPV at 25 feet, D is the distance from the equipment to the receiver (in feet), and n is a reference value of 1.1.

Table 9: Example Construction Vibration Levels Compared to Human Perception Thresholds

Equipment	PPV at 100 ft. (in/sec)	Threshold Limits
Vibratory Roller	0.046	0.01 to 0.04 for continuous sources; 0.04 to 0.25 for transient sources
Vibratory Driver	0.01 to 0.02	
Hoe Ram	0.019	
Large bulldozer	0.019	
Caisson drilling	0.019	
Loaded trucks	0.017	
Jackhammer	0.008	
Small bulldozer	0.001	

As indicated in Table 7, vibration levels would not be expected to exceed the threshold limits related to building damage at any nearby sensitive receptor. As indicated in Table 8, very few vibration levels are expected to exceed the threshold limits related to human perception, and only at the receptors closest to the proposed administrative building, which is not expected to require high vibration generating activities.

We understand that, if employed, impact or vibratory pile driving would not be located within 100 feet of any sensitive receptors, and no vibration impact would be expected.

Significance 5: Less-than-significant with mitigation. Construction vibration impacts are expected to be temporary and vary through various phases. Mitigation measures outlined below, are expected to reduce construction vibration, to the extent feasible, to be less than significant.

Mitigation 5: Limit construction activities with the highest potential to produce significant vibration (e.g., such as a vibratory roller) to less-sensitive daytime hours. In addition, to reduce potential vibration impact from construction-related activities, they are to be conducted in accordance with the following (and as required by the City Municipal Code):

1. Avoid the use of vibratory rollers (i.e., compactors) within 50 feet of buildings that are susceptible to damage from vibration.
2. Schedule construction activities with the highest potential to produce vibration to hours with the least potential to affect nearby institutional, educational, and office uses that the Federal Transit Administration identifies as sensitive to daytime vibration (FTA 2006).
3. Notify neighbors of scheduled construction activities that would generate vibration.

CONCLUSION

Based on the acoustical criteria and thresholds of significance, this project is not expected to have significant noise or vibration impacts. Those that might exceed the significance criteria can be mitigated by integrating noise reduction measures into the design and construction plans as described above.

* * *

APPENDIX A – FUNDAMENTAL CONCEPTS OF ENVIRONMENTAL NOISE

This section provides background information to aid in understanding the technical aspects of this report. Three dimensions of environmental noise are important in determining subjective response. These are:

- The intensity or level of the sound
- The frequency spectrum of the sound
- The time-varying character of the sound

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing. The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or hertz (Hz). Most of the sounds, which we hear in the environment, do not consist of a single frequency, but of a broad band of frequencies, differing in level. The name of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands, which separate the audible frequency range (from about 20 to 20,000 Hz) into ten segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Surprisingly, the simplest method correlates with human response practically as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively de-emphasizes the importance of frequency components below 1000 Hz and above 5000 Hz. This frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and at extreme high frequencies relative to the mid-range.

The weighting system described above is called "A"-weighting, and the level so measured is called the "A-weighted sound level" or "A-weighted noise level." The unit of A-weighted sound level is sometimes abbreviated "dBA." In practice, the sound level is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting characteristic. All U.S. and international standard sound level meters include such a filter. Typical sound levels found in the environment and in industry are shown in Figure A-1.

Although a single sound level value may adequately describe environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise is a conglomeration of distant noise sources, which results in a relatively steady background noise having no identifiable source. These distant sources may include traffic, wind in trees, industrial activities, etc. and are relatively constant from moment to moment. As natural forces change or as human activity follows its daily cycle, the sound level may vary slowly from hour to hour. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities such as single vehicle pass-bys, aircraft flyovers, etc. which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, statistical noise descriptors were developed. "L10" is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L10 is considered a good measure of the maximum sound levels caused by discrete noise

events. "L50" is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period; it represents the median sound level. The "L90" is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period and is used to describe the background noise.

As it is often cumbersome to quantify the noise environment with a set of statistical descriptors, a single number called the average sound level or "L_{eq}" is now widely used. The term "L_{eq}" originated from the concept of a so-called equivalent sound level which contains the same acoustical energy as a varying sound level during the same time period. In simple but accurate technical language, the L_{eq} is the average A-weighted sound level in a stated time period. The L_{eq} is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the different response of people to daytime and nighttime noise. During the nighttime, exterior background noise levels are generally lower than in the daytime; however, most household noise also decreases at night, thus exterior noise intrusions again become noticeable. Further, most people trying to sleep at night are more sensitive to noise. To account for human sensitivity to nighttime noise levels, a special descriptor was developed. The descriptor is called the L_{dn} (Day/Night Average Sound Level), which represents the 24-hour average sound level with a penalty for noise occurring at night. The L_{dn} computation divides the 24-hour day into two periods: daytime (7:00 am to 10:00 pm); and nighttime (10:00 pm to 7:00 am). The nighttime sound levels are assigned a 10 dB penalty prior to averaging with daytime hourly sound levels.

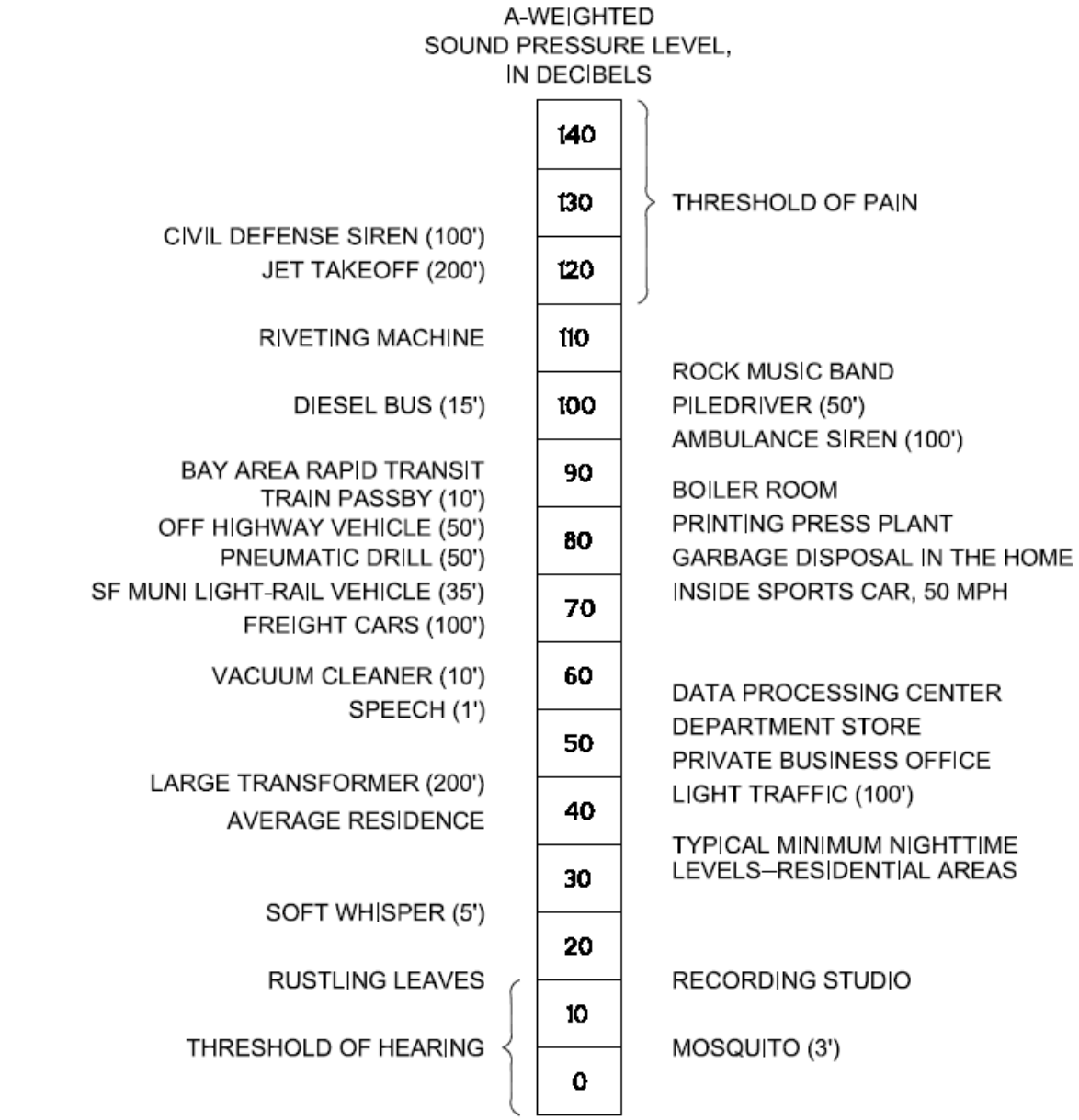
The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as startle, hearing loss

The sound levels associated with environmental noise usually produce effects only in the first two categories. Unfortunately, there has never been a completely predictable measure for the subjective effects of noise nor of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over time.

Thus, an important factor in assessing a person's subjective reaction is to compare the new noise environment to the existing noise environment. In general, the more a new noise exceeds the existing, the less acceptable the new noise will be judged.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report. Except in carefully controlled laboratory experiments, a change of only 1 dB in sound level cannot be perceived. Outside of the laboratory, a 3 dB change is considered a just-noticeable difference. A change in level of at least 5 dB is required before any noticeable change in community response would be expected. A 10 dB change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse community response.



TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND INDUSTRY

FIGURE A1

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Appendix I

Transportation Impact Analysis

Transportation Impact Analysis

Union Sanitary District Enhanced Treatment and Site Upgrade (ETSU) Phase 1 Program

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February 23, 2021

Union Sanitary District Enhanced Treatment and Site Upgrade (ETSU) Program

TRANSPORTATION IMPACT ANALYSIS

1) EXECUTIVE SUMMARY

This traffic impact study describes the existing and future conditions for transportation with and without the proposed Union Sanitary District (USD) Enhanced Treatment and Site Upgrade (ETSU) Phase 1 Program at the Alvarado Wastewater Treatment Plant (WWTP) located at 5072 Benson Road in Union City. The study presents information on the regional and local roadway networks and provides an analysis of the effects on transportation facilities associated with the Phase 1 Program. This study also describes the regulatory setting; the criterion used for determining the significance of environmental impacts; and summarizes potential environmental impacts. This study has been conducted in accordance with the requirements and methodologies set forth by the Alameda County, Union City, Caltrans, and the applicable provisions of CEQA.

The following is a summary of findings of the transportation impact analysis: 1) The analysis of traffic operations indicated that during the peak construction period of Phase 1 the eastbound direction of Bettencourt Drive is forecast to degrade from the existing LOS D operations to LOS F during the PM peak hour due to the combination of workers and trucks exiting the site. To address the poor operations forecast on this segment during the peak construction phase it is recommended that outbound truck traffic from WWTP be restricted to no more than 5 trucks per hour during the peak commute period between 4:00 and 6:00 PM (no more than a 1% increase to traffic); 2) No internal site circulation or access issues have been identified that would cause traffic safety problems or any unusual traffic congestion; 3) The Phase 1 Program is not expected to significantly impact or change the design of any existing bicycle/pedestrian facilities or create any new safety problems in the area; 4) The Phase 1 Program would not interfere with any existing bus routes and would not remove or relocate any existing bus stops; 5) The construction activities associated with the Phase 1 Program are not forecast to result in any significant traffic or safety impacts; and 6) Development of the Phase 1 Program is not expected to result in any significant impacts regarding emergency vehicle access.

2) PROGRAM DESCRIPTION

As mentioned above, the proposed Phase 1 Program would take place at the Alvarado WWTP located at 5072 Benson Road in Union City. **Figure 1** shows the location of the WWTP and the surrounding roadway network and **Figure 2** shows the existing site plan for the Alvarado

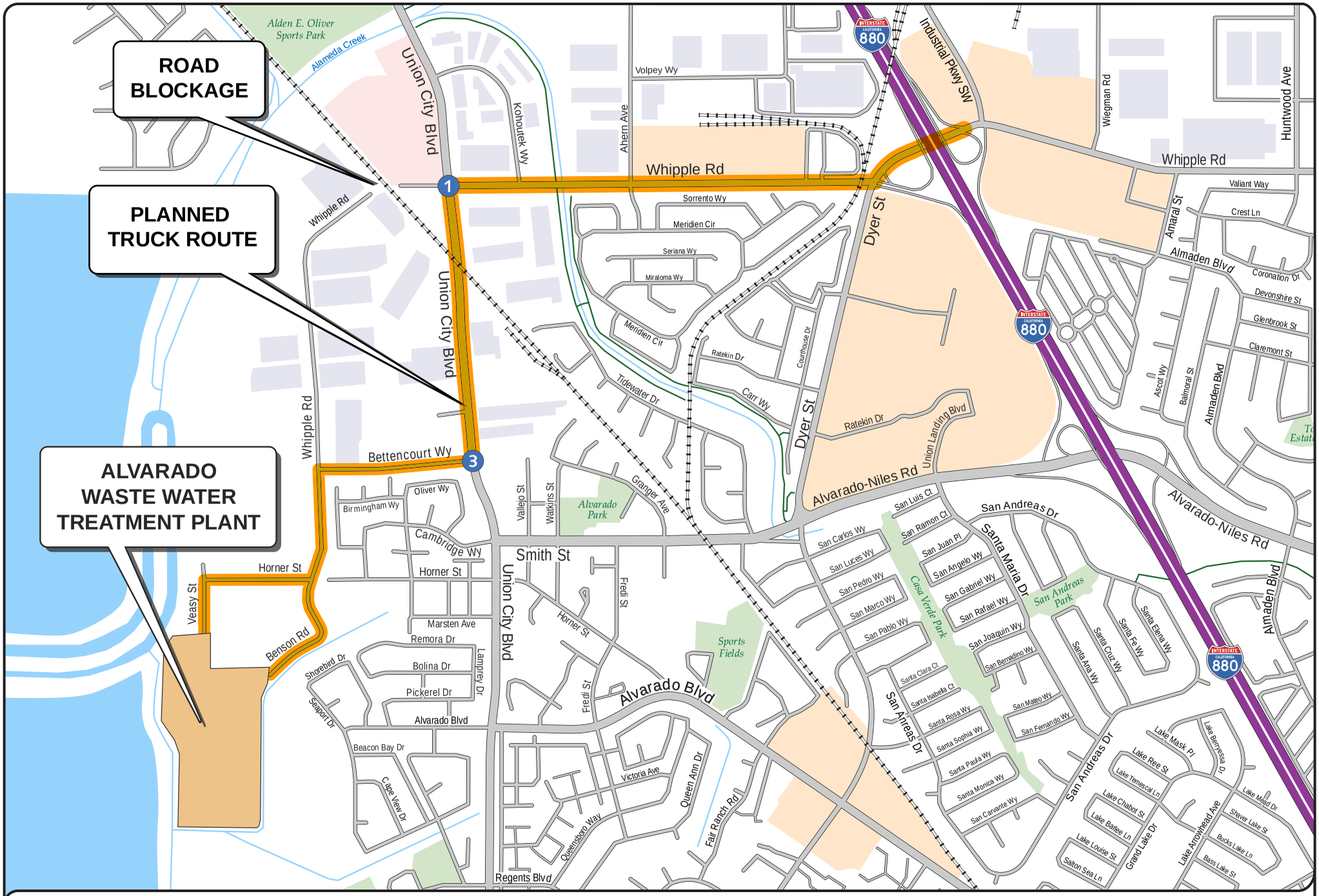


FIGURE 1 | PROJECT LOCATION AND PLANNED TRUCK ROUTE
TRANSPORTATION IMPACT ANALYSIS
Union Sanitary District ETSU Phase 1 Program

Abrams Associates
TRAFFIC ENGINEERING, INC.

FIGURE 2 | EXISTING ALVARADO WWTP SITE PLAN
TRANSPORTATION IMPACT ANALYSIS
Union Sanitary District ETSU Phase 1 Program

Abrams Associates
TRAFFIC ENGINEERING, INC.

WWTP. The ETSU Program was developed to meet the wastewater treatment and disposal needs for USD over the next 20 to 40 years. The secondary treatment process improvements will be programmed in a phased approach, in order to meet both near-term needs and future challenges posed by capacity limitations, future nutrient removal, and effluent discharge. The ETSU Phase 1 Program is the subject of the Initial Study/Mitigated Negative Declaration and this transportation impact analysis. **Figure 3** shows the locations of the planned Phase 1 improvements at the Alvarado WWTP.

The ETSU Program is comprised of three phases as follows:

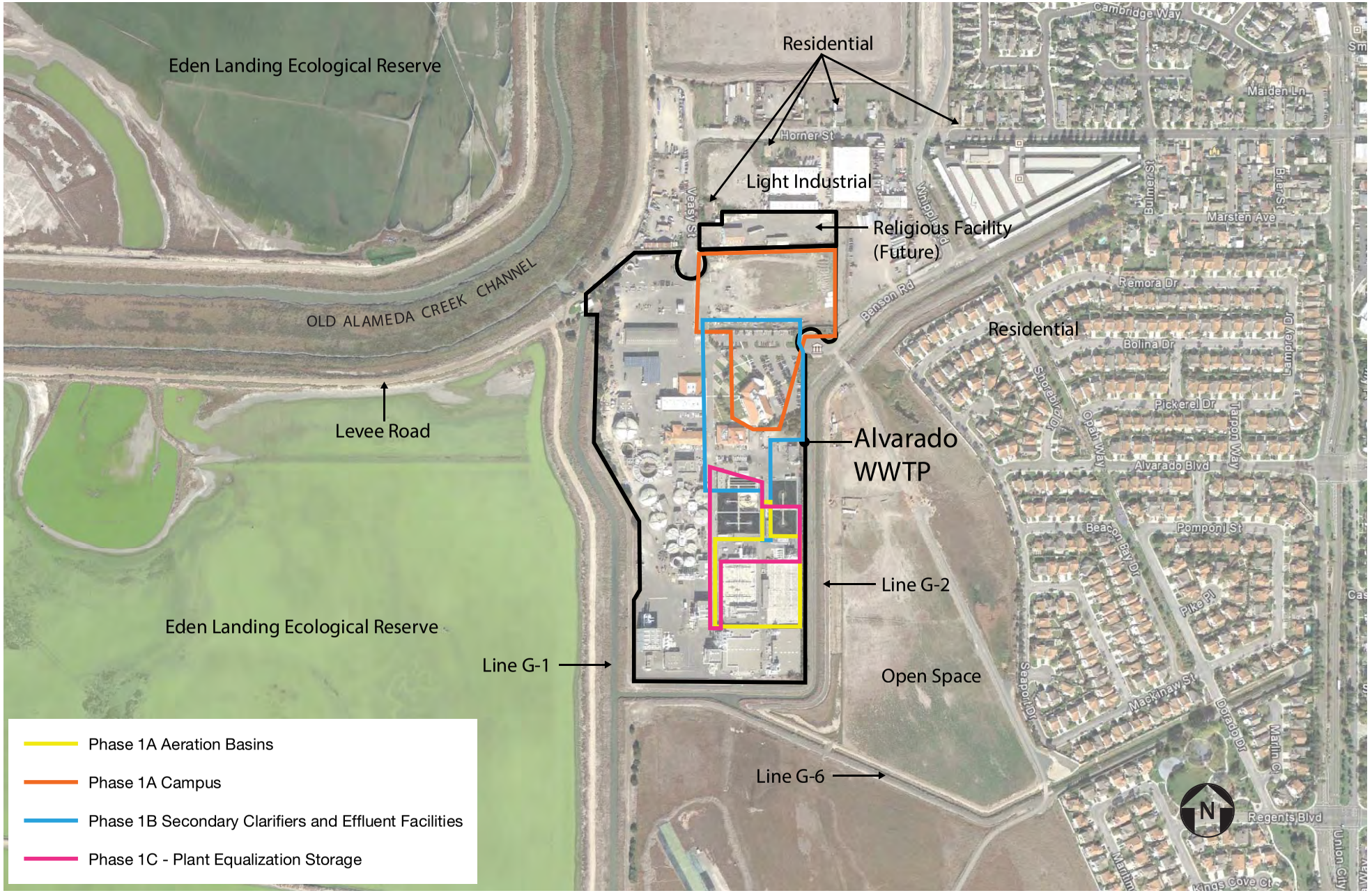
Phase 1 - Phase 1 is the most immediate priority for the WWTP and calls for implementation of the first phase of Secondary Treatment Process Improvements by 2027. Phase I will focus on improvements to the aeration basins and new secondary clarifiers to provide for improved process control/settling, early action nutrient removal and improved effluent quality. Construction of the new clarifiers will require removal of the existing Administration and Control Buildings and replacement of these buildings in a new campus layout on USD-owned property to the north of the current active plant site.

Phase 2 - Phase 2 improvements at the WWTP are intended to address future numerical nutrient limits and provide capacity for projected flows and loading for 2040. Phase II would need to be implemented sometime between 2026 and 2040 depending on the timing of the regulatory trigger.

Phase 3 - Phase 3 improvements would be triggered if more stringent nutrient limits are imposed in the future. If these limits are not imposed, elements of Phase III would be implemented at the appropriate time to address the flows and loads experienced beyond 2040 to buildout.

3) ENVIRONMENTAL SETTING

This section of the report describes the roadways, traffic conditions and other existing transportation characteristics in the vicinity of the WWTP. The primary basis of the analysis is the daily and peak hour level of service for the key roadway segments along the truck route from the I-880 freeway to the WWTP. The periods identified as the “peak” hours are generally between 7:15 AM and 8:15 AM and between 4:45 PM and 5:45 PM in the afternoon for the transportation facilities described. Throughout this report, the peak hours will be identified as the AM and PM peak hours. The peak hours described above represent the highest one-hour volumes recorded during the peak periods, which were based on pre-Covid counts conducted in October of 2018 while schools were in session.



Source: Scheidegger & Associates, October 2020

FIGURE 3 | LOCATION OF PROPOSED IMPROVEMENTS
TRANSPORTATION IMPACT ANALYSIS
Union Sanitary District ETSU Phase 1 Program

Abrams Associates
TRAFFIC ENGINEERING, INC.

3.1 Program Study Roadway Segments

Based on the Phase 1 Program trip generation and the potential for traffic impacts, a list of study segments was prepared based on the program's potential for significant traffic and transportation impacts. **Figure 1** shows proposed truck route from I-880 to the WWTP. There are three existing roadway segments included in the analysis.

Program Study Roadway Segments

1. Whipple Road from Union City Boulevard to I-880
2. Union City Boulevard from Whipple Boulevard to Bettencourt Way
3. Bettencourt Way from Union City Boulevard to Whipple Road

3.2 Existing Roadway Network

As discussed previously, the WWTP location and the surrounding roadway network are illustrated in **Figure 1**. The following is a more detailed description of the major roadways that may be affected by the program:

- **Interstate 880 –** Interstate 880 (I-880) is a north/south eight-lane freeway extending between I-80 near the Bay Bridge and the City of San Jose. Traffic generated in Union City uses I-880 to travel to and from San Francisco (via the Bay Bridge), the Tri-Valley (via State Route 238 and I-580), and also the South Bay. Interchanges in the study area include Whipple Road/ Dyer Street, Alvarado-Niles Road.

- **Union City Boulevard –** Union City Boulevard is a north-south four-lane arterial with a raised center median. Union City Boulevard is a major truck route that links to Hesperian Boulevard in Hayward and Ardenwood Boulevard in Fremont. In the immediate area it is fronted by a mix of light industrial uses and distribution centers. Throughout the Union City Boulevard corridor, office, commercial, light industrial and residential uses abut the roadway. Union City Boulevard provides bicycle lanes between Alvarado Boulevard and Whipple Road, and provides "Share the Road" signage south of Alvarado Boulevard. The posted speed limit is 45 miles per hour for most of the length of Union City Boulevard, except north of Alvarado Boulevard where the posted speed limit is 35 miles per hour. On-street parking is permitted north of Horner Street, except for commercial vehicles over three tons.

- **Whipple Road –** Whipple Road is an east-west four-lane arterial with a raised center median. Whipple Road provides access for several distribution centers within the WWTP vicinity. The posted speed limit is 40 miles per hour, and on-street parking is permitted, except for commercial vehicles over three tons. Striped bicycle lanes are provided in both directions of Whipple Road. It is important to note that west o Union City Boulevard Whipple Road has not been connected due to active railroad tracks

blocking vehicular access. As shown on **Figure 1**, all traffic from the area served by Whipple Road to the east of Union City Boulevard (including the WWTP) must use Bettencourt Way.

- **Bettencourt Way –** Bettencourt Way is an east-west two lane collector street that extends west from Union City Boulevard and terminates at Whipple Road. This road provides the primary access to the Alvarado WWTP as the northern end of Whipple Road no longer connects to Union City Boulevard. The posted speed limit is 35 miles per hour in the study area, and on-street parking is permitted.

3.3 Roadway Segment Analysis Methodology

Alameda County has designated the Alameda County Transportation Commission (ACTC) as the agency responsible for monitoring the network of key roadways that carry the majority of the County's traffic. This network, the Congestion Management Plan (CMP) network, was created to monitor roadway performance in relation to established level-of-service (LOS) standards and recommend improvement when LOS is found to be deficient. The Highway Capacity Manual's (HCM) recommended practice for evaluation of traffic operations on urban streets involves calculating free-flow speeds of the roadway and assigning a LOS.

Since study roadways are arterial, collector, or residential streets with light industrial and business uses around the study area, the average morning (AM) peak hour, evening (PM) peak hour, and average daily traffic (ADT) conditions have been used as the operations measure to evaluate traffic operations along the roadways. Because the program would not result in any appreciable change to long term operational traffic volumes at the WWTP (only an increase in near-term construction volumes) a detailed analysis of current and future intersection LOS conditions was not conducted. **Tables 1 and 2** present the volume thresholds for road segment LOS for the bidirectional average daily and directional peak hour traffic, respectively, that are applicable for the study roadway network and used for analysis of the transportation impacts of this program.

Level of service is an expression, in the form of a scale, of the relationship between the capacity of a roadway segment to accommodate the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with "A" indicating relatively free flow of traffic and "F" indicating stop-and-go traffic characterized by traffic jams. As the amount of traffic moving through a given roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the roadway segment is reached.

TABLE 1
AVERAGE DAILY TRAFFIC (ADT) LOS DEFINITIONS FOR ROADWAY SEGMENTS

Roadway Classification	Number of Lanes (Total)	ADT Level of Service Capacity Threshold					
		A	B	C	D	E	F
Arterial	4	0 - 21,600	21,600 – 25,200	25,200 – 28,800	28,800 – 32,400	32,400 – 36,000	> 36,000
Collector Street	2	0 – 5,250	5,250 – 6,125	6,125 – 7,000	7,000 – 7,875	7,875 – 8,750	> 8,750

TABLE 2
DIRECTIONAL PEAK HOUR LOS DEFINITIONS FOR ROADWAY SEGMENTS

Roadway Classification	Number of Lanes (Total)	Peak Hour Level of Service Capacity Threshold					
		A	B	C	D	E	F
Arterial	2	0 – 1,080	1,080 – 1,260	1,260 – 1,440	1,440 – 1,620	1,620 – 1,800	> 1,800
Collector Street	1	0 – 260	260 – 310	310 – 350	350 – 390	390 – 440	> 440

Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near-capacity situation is labeled level of service (LOS) E. Beyond LOS E, the roadway segment capacity has been exceeded, and arriving traffic may exceed the ability of the roadway to accommodate it.

3.4 Existing Roadway Segment Capacity Conditions

The existing average daily traffic (ADT) and the AM and PM peak hour directional volumes at each of the program study roadway segments can be seen in **Figures 4, 5, and 6.** Traffic counts in the area were previously conducted in October of 2018. **Tables 3** summarizes the LOS results for the existing average daily traffic (ADT) and **Table 4** summarizes the existing AM and PM peak hour conditions. As shown in **Tables 3 and 4**, all of the study segments currently have acceptable daily traffic operations (mid-LOS D or better) during the weekday with the exception of southbound Union City Boulevard during the AM peak hour and eastbound Bettencourt Way in the PM peak hour. Please note these roadway segments are forecast to continue operating at LOS E once traffic returns to pre-pandemic levels.

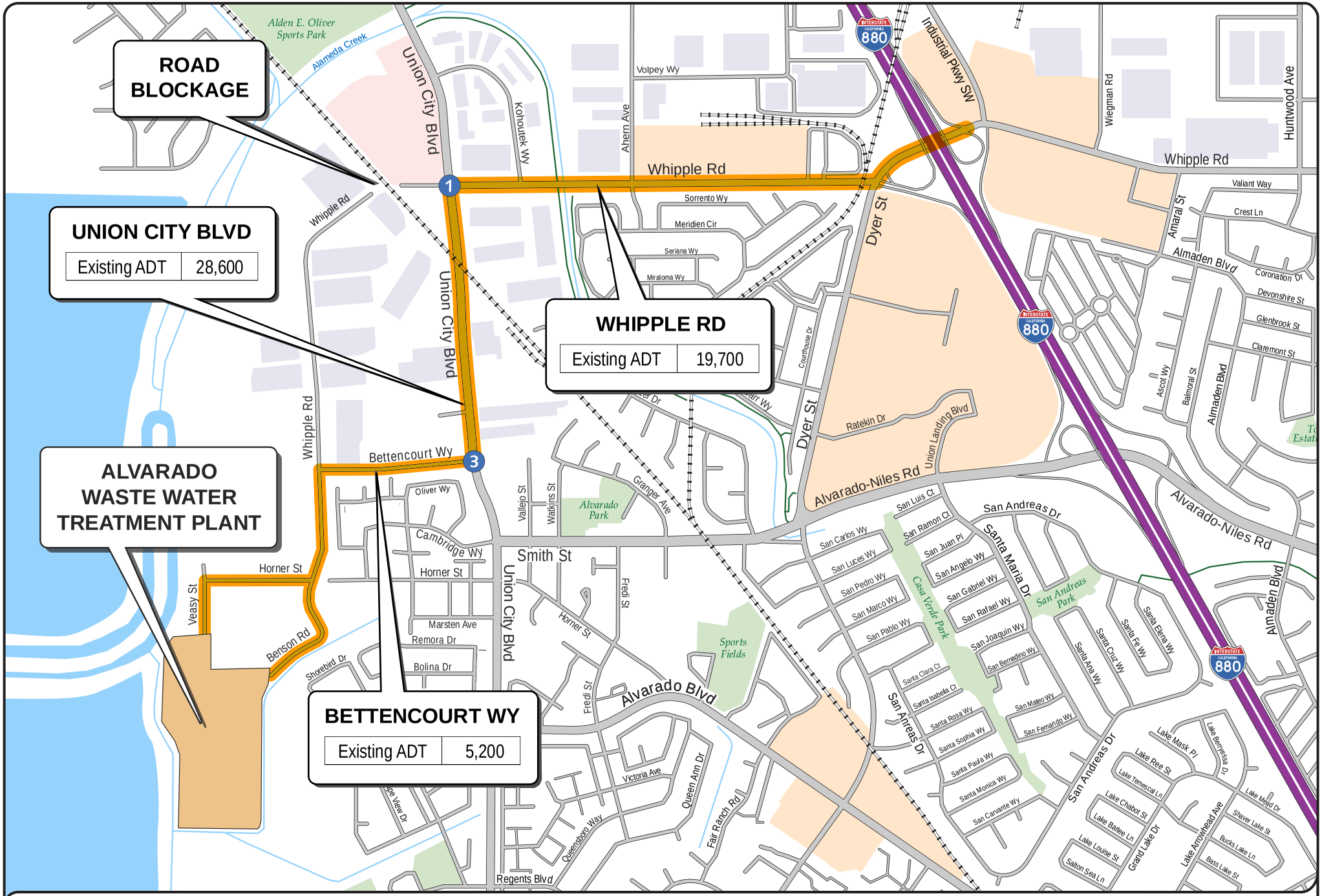


FIGURE 4 | EXISTING TRUCK ROUTE SEGMENT AVERAGE DAILY TRAFFIC VOLUMES
TRANSPORTATION IMPACT ANALYSIS
Union Sanitary District ETSU Phase 1 Program

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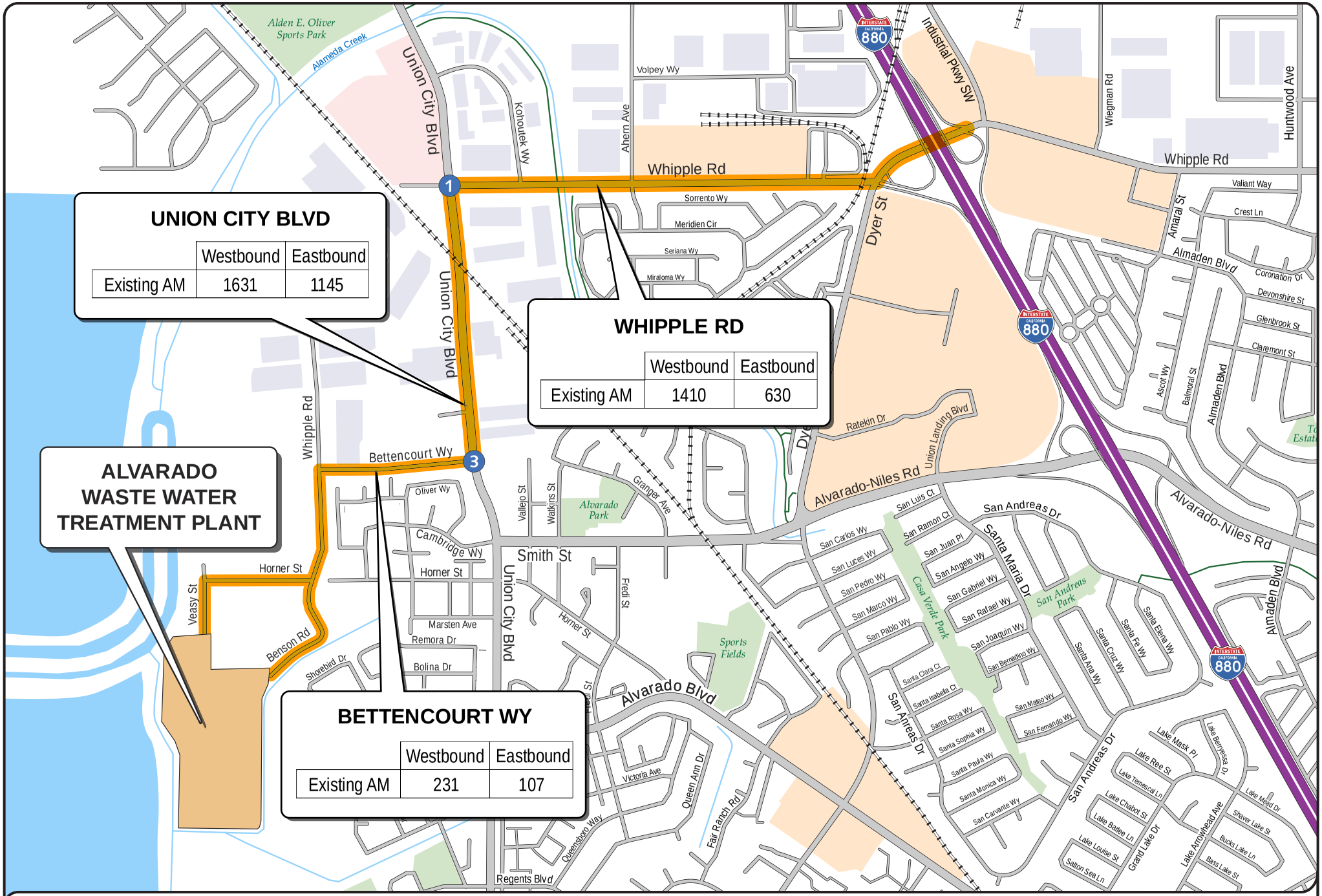

FIGURE 5 | EXISTING AM PEAK HOUR TRUCK ROUTE SEGMENT DIRECTIONAL TRAFFIC VOLUMES

TRANSPORTATION IMPACT ANALYSIS

Union Sanitary District ETSU Phase 1 Program

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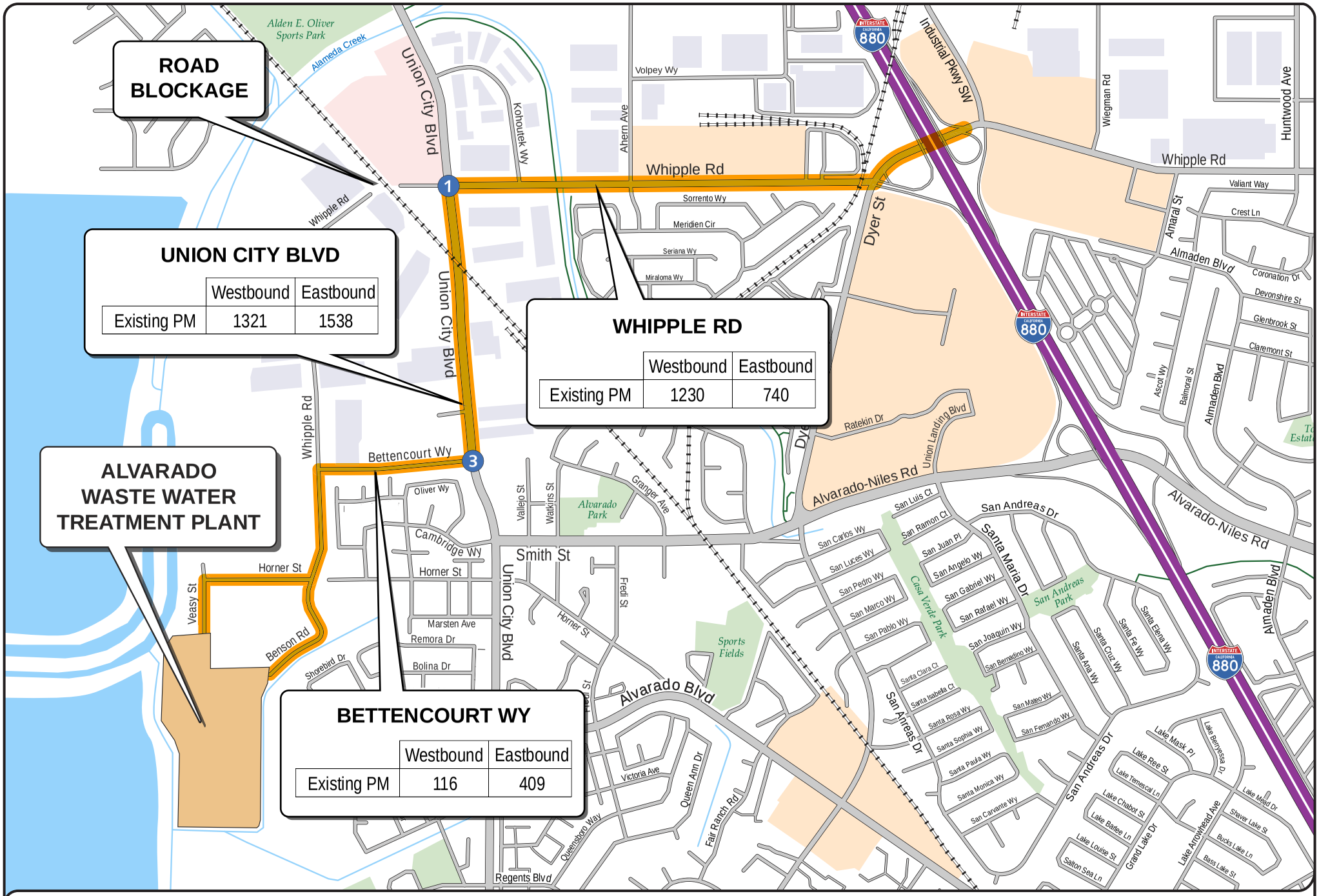

FIGURE 6 | EXISTING PM PEAK HOUR TRUCK ROUTE SEGMENT DIRECTIONAL TRAFFIC VOLUMES

TRANSPORTATION IMPACT ANALYSIS

Union Sanitary District ETSU Phase 1 Program

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TABLE 3
EXISTING DAILY TRAFFIC (ADT) LEVEL OF SERVICE CONDITIONS

Study Roadway Segments	Roadway Classification	ADT	LOS
Whipple Road	Arterial – 4 Lanes	19,700	A
Union City Boulevard	Arterial – 4 Lanes	28,600	C
Bettencourt Way	Collector – 2 Lanes	5,200	A

SOURCE: Abrams Associates, 2021

TABLE 4
EXISTING DIRECTIONAL PEAK HOUR LEVEL OF SERVICE CONDITIONS

Study Roadway Segments	Roadway Classification	Peak Hour	Existing Conditions			
			WB/SB	LOS	EB/NB	LOS
Whipple Road	Arterial – 2 Lanes	AM	1410	C	630	A
		PM	1230	B	740	A
Union City Boulevard	Arterial – 2 Lanes	AM	1631	E	1145	B
		PM	1321	C	1538	D
Bettencourt Way	Collector – 1 Lane	AM	231	A	107	A
		PM	116	A	409	E

SOURCE: Abrams Associates, 2021

3.5 Pedestrian and Bicycle Facilities

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following three classes:

Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.

Class II – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.

Class III – Provides a route designated by signs or permanent markings and shared with pedestrians and motorists.

Union City Boulevard between Alvarado Boulevard and Paseo Padre Parkway is designated as a “planned” segment of the San Francisco Bay Trail. No marked bicycle lanes are provided along this segment of Union City Boulevard; bicyclists share the road with automobile traffic, with “Share the Road” signage. The funded Union City Boulevard Class 2 Bike Lanes Gap

Closure Project would construct Class 2 bike lanes along this segment of Union City Boulevard from about 600 feet south of Alvarado Boulevard to Fremont City limits to close a two-mile gap in the existing Class 2 facilities and would include a two-foot wide painted striped buffer between the bike and auto lanes. No other bicycle lanes exist in the study area. Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Sidewalks are provided on most of the existing roadways in the study area, with the exception of Benson Road, Horner Street, and Veasy Street. Please note there are marked crosswalks and pedestrian signal heads at the signalized Union City Boulevard study intersections.

3.6 Transit Service

Bus transit service in the study area is provided by AC Transit and Union City Transit with the nearest bus stops located on Union City Boulevard. AC Transit provides Transbay service within the WWTP vicinity. Transbay routes provide commuter service on weekdays between downtown San Francisco and East Bay communities. They typically operate westbound into San Francisco during the morning commute hours and eastbound out of San Francisco during the evening commute hours. Routes 97 and SB have stops within the WWTP vicinity on Union City Boulevard in the vicinity of Bettencourt Way. Route SB only operates between 5:30 AM and 8:00 AM during the morning commute and between 4:00 PM and 7:00 PM during the evening commute. Frequency of service is approximately every 20 minutes in the morning and every 30 minutes in the evening.

Union City Transit provides local service exclusively within Union City. Route 1 operates through the WWTP vicinity along Union City Boulevard. Route 1 provides direct access to the Union City BART station and the Union Landing Shopping Center via Alvarado-Niles Road. Transfers to AC Transit lines 97 and 210 provide connections to neighboring cities and beyond. Lines 5, 7, and 9 operate along Union City Boulevard, and provide service to areas to the north, Union City BART, and areas to the south of the program area via Dyer Street, Union City Boulevard, and Alvarado-Niles Road.

4) REGULATORY CONTEXT

Existing policies, laws and regulations that apply to the proposed program are summarized below.

4.1 State

The California Department of Transportation (Caltrans) has jurisdiction over State highways. Therefore, Caltrans controls all construction, modification, and maintenance of State Highways and freeways such as I-880. Any improvements to these roadways would require Caltrans' approval. The Guide for the Preparation of Traffic Impact Studies provides consistent guidance for Caltrans staff who review local development and land use change proposals. The Guide also

informs local agencies about the information needed for Caltrans to analyze the traffic impacts to state highway facilities which include freeway segments, on- or off-ramps, and intersections.

4.2 Local

City of Union City General Plan - The Circulation Element included in the City of Union City General also identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will continue to have adequate capacity to serve planned growth. The City of Union City identifies a threshold of mid-LOS D for arterial and collector streets within the City (excepting regional routes such as I-880, Mission Boulevard, and Decoto Road).

4.3 Significance Criteria

The goal of the City of Union City is to maintain a mid-LOS D during the peak hours. In addition, according to CEQA guidelines, a project would also have a significant impact if it would:

- Conflict with a plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle and pedestrian facilties.
- Would the project conflict with or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b)?
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment).
- Result in inadequate emergency vehicle access.

5) IMPACTS AND MITIGATION MEASURES

5.1 Long Term Program Trip Generation

The proposed program would not result in an increase in long term employees on the site so no additional long-term changes to traffic generation are forecast to occur with the replacement of the administration and control buildings on the site. However, the USD anticipates an increase in the amount of biosolids produced by the facility. Currently, approximately 4 trucks a day of biosolids are produced at the existing WWTP. With the ETSU program improvements the trip generation is forecast to increase to 6 trucks per day by 2028, the first year after Phase 1 construction is completed, for an increase of 2 trucks per day. This amount of trucks would increase the traffic volumes on roadways in the area by less than 1 percent and is not anticipated to result in any noticeable changes to traffic operations in the area.

5.2 Near Term Program Construction Trip Generation

The proposed Phase 1 Program would result in a substantial amount of truck and employee traffic to and from the site during construction and a detailed analysis of potential impacts to the roadways used to access the WWTP site was conducted as part of this analysis. The locations of the various program components are shown in Figure 3. The peak period of construction is projected to be the first two quarters of 2023. Please note the forecasts account for the Standby Power Project which would occur during the peak period of construction and is expected to generate about 27 trucks per day. The forecast trip generation during the peak construction period (the period when Phases 1A and 1B overlap) is presented in **Table 5**.

TABLE 5
PEAK PERIOD CONSTRUCTION TRIP GENERATION CALCULATIONS

Trip Generation Component	Daily Trips			Peak Hour Trips				
	Vehicle Trips	PCE[1] Rate	PCE Daily Trips	PCE Peak Hour Trips	AM In	AM Out	PM In	PM Out
Workers[2]	160	1.0	160	120	60	0	0	60
Trucks	200	2.0	400	64	16	16	16	16
Totals	360		560	184	76	16	16	76

Notes: 1 The Passenger Car Equivalent (PCE) assumption for trucks is based on recommendations in the Highway Capacity Manual and assumes that a portion of the program generated trucks would be empty and that there would be a mixture of truck types.

2 The vehicle trips associated with the workers represent 80 workers' access to the site and assumes that 75% of employee trips occur during the peak hour.

The total trip generation reflects all construction vehicle trips that would be counted at the WWTP access driveways both inbound and outbound. The Phase 1 Program is forecast to generate approximately 100 passenger car equivalent (PCE) vehicle trips during the AM and PM peak hours. For the purposes of determining the reasonable worst-case impacts of traffic on the surrounding street network from a proposed program, the trips generated by this proposed development are estimated for the peak commute hours that occur from 7:15 AM and 8:15 AM and from 4:45 PM and 5:45 PM. These peak hours represent the peak hours of "*adjacent street traffic*". These are the time periods when the program traffic would generally contribute to the greatest amount of congestion.

5.3 Existing Plus Program Traffic Capacity Conditions

This scenario evaluates the existing (pre-Covid) traffic conditions with the addition of construction traffic from the proposed Phase 1 Program. The existing plus program volumes for each of the study segments are presented in **Figures 7, 8, and 9**. The average daily traffic capacity calculations for the existing plus program scenario are shown in **Table 6** and the peak hour traffic capacity calculations are shown in **Table 7.** As shown in these tables, with the addition of Phase 1 Program traffic all study segments would continue to have acceptable conditions (mid-LOS D or better) with the exception of southbound Union City Boulevard during the AM peak hour and eastbound Bettencourt Way in the PM peak hour. During the AM peak hour southbound Union City Boulevard would continue to operate at LOS E with the addition of program traffic. However, this segment would operate at LOS with or without implementation of the ETSU Program. The peak period of construction is forecast to increase the peak volumes on this segment by only about 2%. However, during the PM peak hour the eastbound segment of Bettencourt Way is forecast to degrade from LOS E to LOS F and the Phase 1 Program is forecast to increase these volumes by over 10%.

TABLE 6
EXISTING PLUS PROGRAM DAILY TRAFFIC (ADT) LEVEL OF SERVICE CONDITIONS

Study Roadway Segments	Roadway Classification	Existing		Existing Plus Project	
		ADT	LOS	ADT	LOS
Whipple Road	Arterial – 4 Lanes	19,700	A	20,153	A
Union City Boulevard	Arterial – 4 Lanes	28,600	C	29,053	D
Bettencourt Way	Arterial – 2 Lanes	5,200	A	5,760	B

SOURCE: Abrams Associates, 2021

TABLE 7
EXISTING PLUS PROGRAM DIRECTIONAL PEAK HOUR LEVEL OF SERVICE CONDITIONS

Study Roadway Segments	Roadway Classification	Peak Hour	Existing Conditions				Existing Plus Project Conditions			
			WB/SB	LOS	EB/NB	LOS	WB/SB	LOS	EB/NB	LOS
Whipple Road	Arterial – 2 Lanes	AM	1410	C	630	A	1446	D	646	A
		PM	1230	B	740	A	1246	B	776	A
Union City Boulevard	Arterial – 2 Lanes	AM	1631	E	1145	B	1667	E	1161	B
		PM	1321	C	1538	D	1337	C	1574	D
Bettencourt Way	Collector – 1 Lane	AM	231	A	107	A	307	C	123	A
		PM	116	A	409	E	132	A	485	F

SOURCE: Abrams Associates, 2021

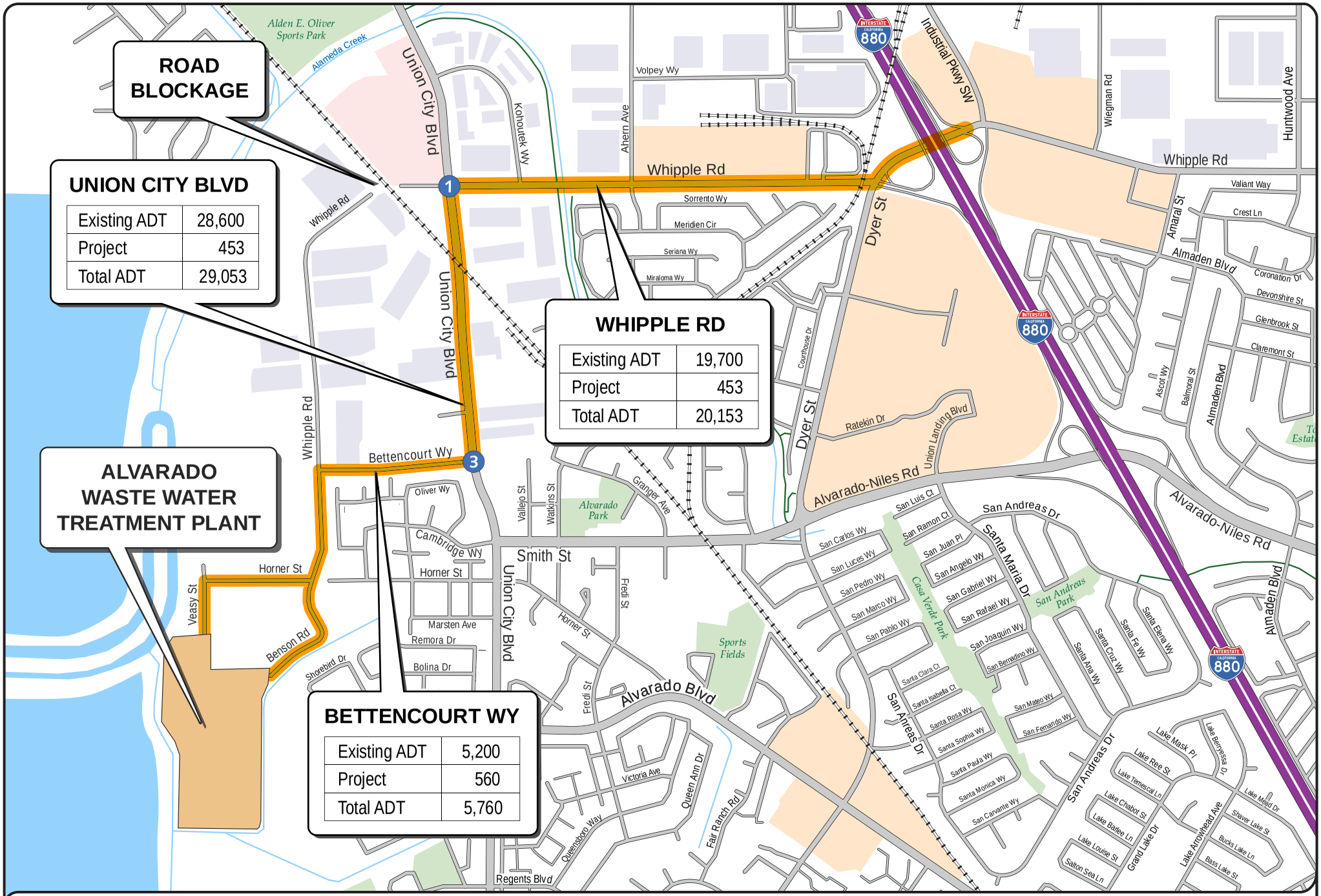

FIGURE 7 | EXISTING PLUS PROJECT TRUCK ROUTE SEGMENT AVERAGE DAILY TRAFFIC VOLUMES

TRANSPORTATION IMPACT ANALYSIS

Union Sanitary District ETSU Phase 1 Program

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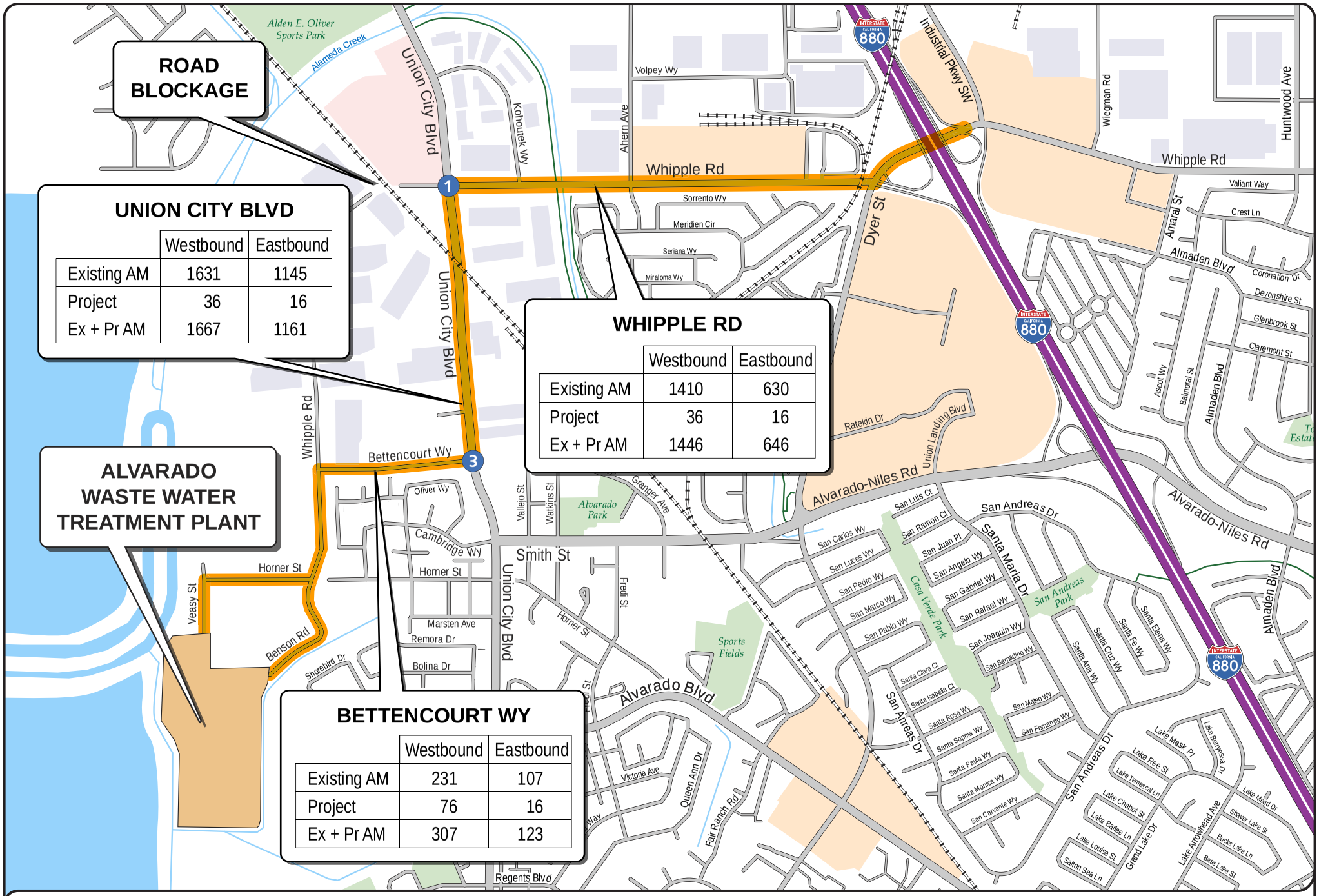

FIGURE 8 | EXISTING PLUS PROJECT AM PEAK HOUR TRUCK ROUTE SEGMENT DIRECTIONAL TRAFFIC VOLUMES

TRANSPORTATION IMPACT ANALYSIS

Union Sanitary District ETSU Phase 1 Program

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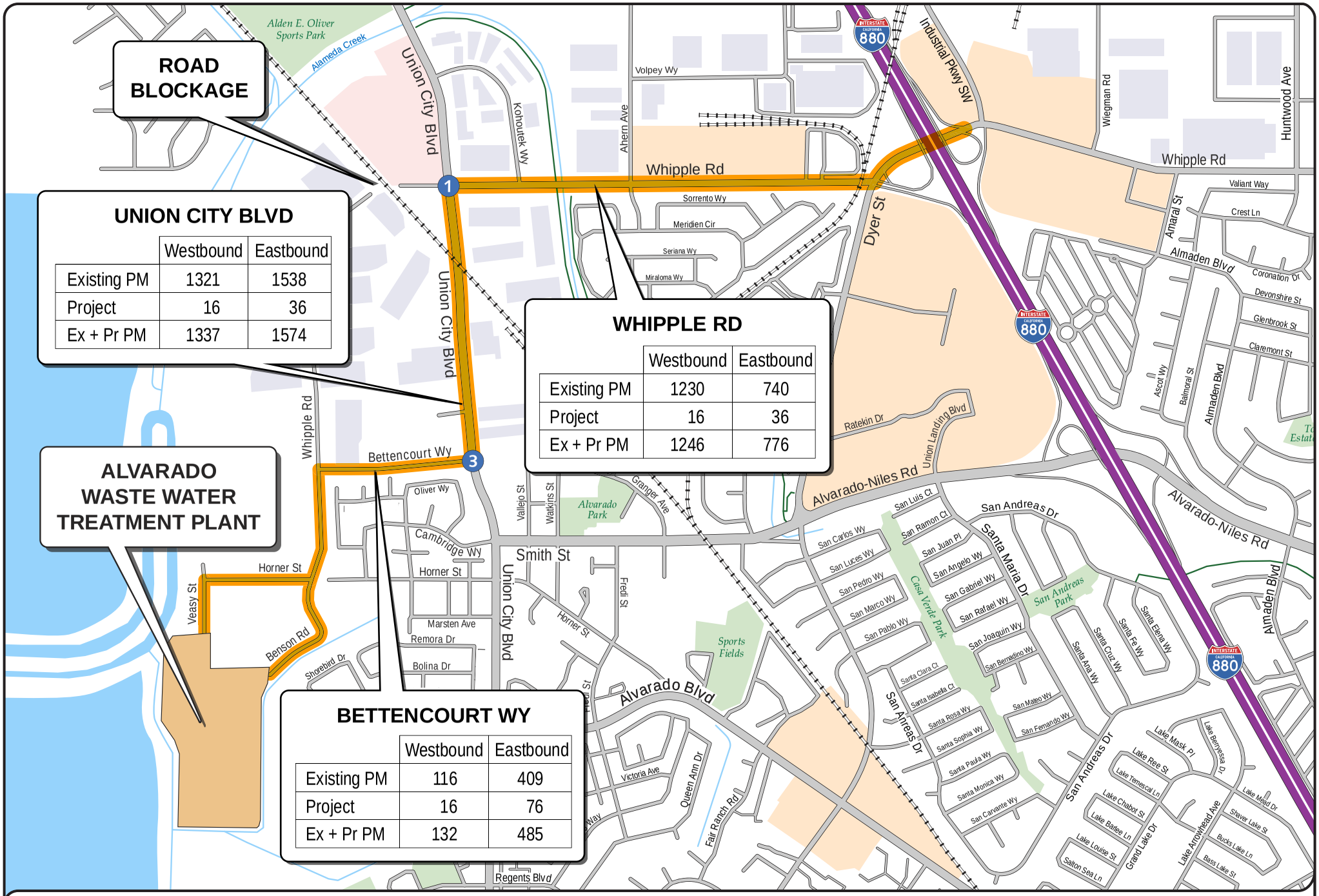

FIGURE 9 | EXISTING PLUS PROJECT PM PEAK HOUR TRUCK ROUTE SEGMENT DIRECTIONAL TRAFFIC VOLUMES

TRANSPORTATION IMPACT ANALYSIS

Union Sanitary District ETSU Phase 1 Program

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5.4 Internal Circulation, Pedestrian, Bicycle, and Transit Impacts

The access to the site will continue to be via the two existing entrances on Benson Road and Veasy Street and no internal site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay. It should be noted that the cul-de-sacs at the ends of Veasy Street and Benson Drive are proposed to be removed as part of the project and the fire department has given preliminary approval for this plan since fire trucks would be able to continue through the site without turning around. However, this will be subject to final Fire Department approval of the plans. At the existing site entrances there were no safety or capacity problems identified.

The proposed ETSU Phase 1 Program could generate additional pedestrian and bicycle traffic in the area from employees who may choose to travel by alternative modes, thereby potentially increasing conflicts between vehicles, bicycles, and pedestrians. However, although the proposed program may increase pedestrian and bicycle traffic in the WWTP vicinity it is not expected to significantly impact or change the design of any existing bicycle facilities or create any new safety problems for pedestrians or bicyclists in the area.

The proposed ETSU Phase 1 Program would not interfere with any existing bus routes and would not remove or relocate any existing bus stops. The proposed Phase 1 Program could also potentially help support existing bus services with additional transit ridership and would not conflict with any transit plans or goals of Alameda County. The amount of additional ridership from the proposed Phase 1 Program would not be expected to significantly impact existing bus operations in the area. Therefore, the program is not expected to significantly impact or change existing transit operations or any adopted plans related to transit.

5.5 Vehicle Miles Traveled

One performance measure that can be used to quantify the transportation impacts of a project is vehicle miles traveled (VMT). This section presents the extent of the VMT-related transportation impacts caused by the Project. The City has the authority to set VMT thresholds in the CEQA analysis but because VMT is a relatively new method for measuring transportation impacts under CEQA, less data exists to estimate VMT than trip generation based on use and location. However, VMT is still a particularly useful metric for evaluating the impacts of growth on greenhouse gas (GHG) emissions because it can be used to estimate fuel consumption by motor vehicles. Increases in VMT have been shown to cause proportional increases in greenhouse gas emissions and air pollution. The Office of Planning and Research (OPR) released their final proposed Guidelines in a Technical Advisory on Evaluating Transportation Impacts in CEQA, dated December 2018.

While the City of Union City hasn't formally adopted VMT as a threshold, per CEQA Guidelines section 15064.3(c), the provisions of this section regarding VMT took effect statewide on July 1, 2020, and, as of that time, a project's effect on automobile delay shall not constitute a significant

impact. While the Union City and Alameda County have not formally adopted screening criteria various other agencies have interpreted the screening criteria in the CEQA guidelines as follows: "*Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, the following types of projects should be expected to cause a less-than-significant impact under CEQA and would not require further VMT analysis*:

iv. Public facilities (e.g. emergency services, passive parks (low-intensity recreation, open space), libraries, community centers, public utilities and government buildings)."[1]

Therefore, subject to City approval, this project would be considered a public utility project which can therefore be assumed to have a less than significant impact on VMT under CEQA and would not require additional VMT analysis.

5.6 Program-Specific Impacts and Mitigation Measures

Neither the Phase 1A-1B Improvements project or the other ETSU Phase 1 Program phases would result in any significant transportation impacts that could be addressed by the Construction Traffic Control Plan and the impacts of the various program phases, both individually and cumulatively, would be less than significant. The traffic operations would not be degraded on any roadways in the study area with the exception of the eastbound direction of Bettencourt Way, which is forecast to degrade from LOS E to LOS F during the PM peak hour. The following is a list of potential transportation impacts of the program.

TR-1 Impacts related to bicycle and pedestrian facilities.

Although the proposed Phase 1 Program could increase vehicle and pedestrian and bicycle traffic in the WWTP vicinity it is not expected to significantly impact or change the design of any existing bicycle or pedestrian facilities or create any new safety problems for bicyclists or pedestrians in the area.

Mitigation Measure(s)
None required.

TR-2 Impacts related to transit facilities.

The proposed program has the potential to increase patronage on AC Transit and Union City Transit bus routes. However, based on this analysis the project would not result in degradation of the level of service (or a significant increase in delay) on any roadway segments currently being utilized by buses in the area. Since the program would not be forecast to result in any significant changes to travel speeds in the area, the program would not be expected to result in any significant impacts to transit service.

Mitigation Measure(s)
None required.

[1] *VMT Analysis Methodology for Land Use Projects in Contra Costa County*, Fehr & Peers Associates, Walnut Creek, CA, July 1, 2020

TR-3 Construction activities associated with the proposed program would result in an increase in traffic to and from the site.

The increase in traffic as a result of construction activities associated with the proposed ETSU Phase 1 Program has been quantified assuming the worst-case scenario with the maximum amount of trucks and employees that would occur during any phase of construction, over an approximate 6-year construction period. The following are two traffic control measures that are proposed to be incorporated into the project by USD:

Q1. The Contractor shall prepare a traffic control plan (TCP) for review and approval by USD. The TCP will comply with USD standard specifications and address inconvenience to the general public, traffic flow with necessary safety devices and measures, obstruction of fire lanes, parking, and haul routes (with input from the City of Union City).

Q2. USD shall restrict outbound truck traffic from the WWTP to no more than 5 trucks per hour during the peak commute period between 4:00 and 6:00 PM, thereby restricting the truck traffic increase to no more than 1% of the traffic volumes. Please note this restriction would apply to all construction phases (starting in mid-summer 2021 through quarter 1 of 2026) except for ETSU Phase 1C which has a much lower impact (approximately 2 trucks per day) and will take place after all other projects are completed.

Heavy Equipment

The project will require heavy equipment be transported on and off the site throughout the construction of the proposed program. Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the WWTP during construction, specifically on eastbound Bettencourt Way during the PM peak hour. To address the poor LOS forecast to occur on this segment during the peak construction phase outbound truck traffic from the site USD shall implement Control Measure Q2 to restrict outbound truck traffic to no more than 5 vehicles per hour during the peak commute period between 4:00 and 6:00 PM. Please note this restriction would apply to all construction phases (starting in mid-summer 2021 through quarter 1 of 2026) except for ETSU Phase 1C which has a much lower impact (approximately 2 trucks per day) and will take place after all other projects are completed. With the PM peak hour restriction in place the truck traffic then would then result in an increase of no more than 1% to the traffic volumes on eastbound Bettencourt Way resulting in a ***less-than-significant*** impact.

Employees

The weekday work is expected to begin around 8:00 AM and end around 4:00 PM although workers would typically begin arriving around 7:00 AM to prepare for the day's activities. The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. Therefore, the employee traffic to and from the site would not be forecast to lead to significant impacts or decreased traffic safety, resulting in a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

TR-4 Impacts related to site access and circulation.

Based on this analysis the proposed access plan should function well and there should be no capacity or safety problems at the project entrances. The project access points were reviewed for safety based on Caltrans standards. Based on the analysis of traffic operations there were no queuing problems or other capacity issues identified that would warrant further improvements or changes at the project entrances. Please note that the level of service and Caltrans signal warrants were also carefully reviewed to confirm that additional traffic signals would not be required as a result of implementation of the ETSU Phase 1 Program. Based on a review of the proposed site plan it was determined that the site circulation should function well and would not cause any safety or operational problems. The WWTP site design has been required to conform to applicable design standards and the plan is not expected to create any significant impacts to pedestrians, bicyclists or traffic operations. Therefore, impacts related to site access and circulation to the proposed project would be ***less-than-significant***.

Mitigation Measure(s)
None required.

TR-5 Impacts regarding emergency vehicle access on and surrounding the proposed project site.

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The land use plan for the proposed project includes entrances on both Benson Road and Veasy Street. It should be noted that the cul-de-sacs at the ends of Veasy Street and Benson Drive are proposed to be removed as part of the project and the fire department has given preliminary approval for this plan. All lane widths within the project would meet the minimum width that can accommodate emergency vehicles but the final emergency vehicle access plan would require approval from the Fire Department. Subject to approval from the Fire Department the development of the proposed ETSU Phase 1 Program is expected to have ***less-than-significant*** impacts regarding emergency vehicle access.

Mitigation Measure(s)
None required.